THIS DRAWING SET HAS NOT BEEN RELEASED FOR CONSTRUCTION

Port City Nissan

Drive Up Service Bay and Vehicle Storage Parking

120 Spaulding Turnpike
PORTSMOUTH, NEW HAMPSHIRE
Assessor's Parcel 236-033

Issued for TAC

Plan Issue Date:

October 15, 2018

Owner/Applicant:

Two-Way Realty, LLC

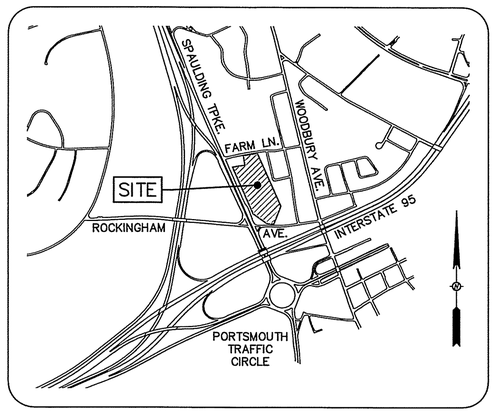
120 Spaulding Turnpike
Portsmouth, NH 03801

Civil Engineer:

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335

Architect:

Rossignol Architecture
207-337-0995



LOCUS MAP
Not to Scale

Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Existing Features Plan (By MSC)	1 of 1	1	10/19/11
Overall Site Plan	C-1	1	10/15/18
Detailed Site Plan	C-2	1	10/15/18
Detailed Grading Plan	C-3	0	10/15/18
Floor Plan (By Rossignol Architecture)	A-1	0	06/16/18
Elevations (By Rossignol Architecture)	A-2	0	06/16/18
Detail Sheet	C-4	0	10/15/18
Detail Sheet	C-5	0	10/15/18
Detail Sheet	C-6	0	10/15/18
Site Lighting (by Visual Light)	1 of 1	0	10/09/18
Conditional Use Permitting Plan	CU-1	0	10/15/18

Permit Summary

City of Portsmouth Conditional Use Permit – Pending
US-EPA Storm Water Pollution Prevention Plan (SWPPP) – Not Required

P3980

LEGEND

AC	AIR CONDITIONER
BK.2562/PG.2783	BOOK NO./PAGE NO.
CMP	CORRUGATED METAL PIPE
INV	INVERT
HDPE	HIGH DENSITY POLYETHYLENE
N/F	NOW OR FORMERLY
RCP	REINFORCED CONCRETE PIPE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
PSNH	PUBLIC SERVICE OF NEW HAMPSHIRE
NET	NEW ENGLAND TELEPHONE
PVC	POLYVINYL CHLORIDE
□	CATCHBASIN
▲	WETLAND FLAG LOCATION
—□—	FENCE
♿	HANDICAP PARKING
⑱	PARKING COUNT
	UTILITY POLE
	GUY POLE/WIRE
☼	LIGHT POLE
MAP 236 LOT 36	ASSESSORS MAP & PARCEL NUMBER
▬ ▬	WETLAND SETBACK LINE
— —	PROPERTY LINE
Ⓢ	SEWER MANHOLE
—D—	DRAIN LINE
—S—	SEWER LINE
——	EASEMENT
— —	SETBACK
▬ ▪ ▪ ▬	ZONE LINE
▲	WETLAND
—··—··—	EDGE OF WETLAND
— —30— —	CONTOUR
	SHRUB LINE
	TREE LINE

NOTES:

1. THE PARCEL IS LOCATED IN THE GENERAL BUSINESS (GB) AND THE SINGLE RESIDENCE B (SRB) ZONES AS SHOWN.
2. THE PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 236 AS LOTS 33, 37 AND 38.
3. THE PARCELS ARE LOCATED IN FLOOD ZONE X (AREAS OF MINIMAL FLOODING) AS SHOWN ON INSURANCE RATE MAP COMMUNITY – PANEL NUMBER 33015C0430E WITH AN EFFECTIVE DATE MAY 17, 2005.
4. OWNER OF RECORD:

MAP 236 LOT 33
RICHARD P. FECTEAU
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801
RCRD BK.3054 PG. 760

MAP 236 LOT 37
TWO WAY REALTY, L.L.C.
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801
RCRD BK.4248 PG. 2745

MAP 236 LOT 38
FIVE WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801
RCRD BK.5201 PG. 1779

5. ZONING REQUIREMENTS:

	GENERAL BUSINESS:	SINGLE RESIDENCE B:
MINIMUM AREA:	43,560 S.F.	15,000 S.F.
MINIMUM FRONTAGE:	200'	100'
MINIMUM DEPTH:	100'	100'
SETBACKS:		
FRONT	30'	30'
SIDE	30'	10'
REAR	50'	30'
MAXIMUM HEIGHT OF STRUCTURE:	60'	35'
MAXIMUM STRUCTURE COVERAGE PER LOT:	30%	20%
MINIMUM OPEN SPACE PER LOT:	20%	40%

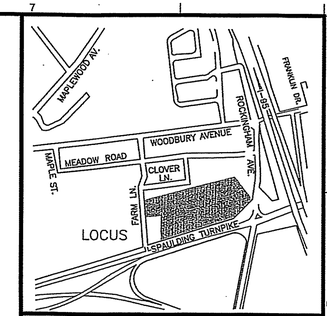
6. TOTAL PARCEL AREA:

	MAP 236 LOT 33	MAP 236 LOT 37	MAP 236 LOT 38
	408,785 S.F.	22,937 S.F.	13,499 S.F.
	9.3844 ACRES	0.5265 ACRES	0.3099 ACRES

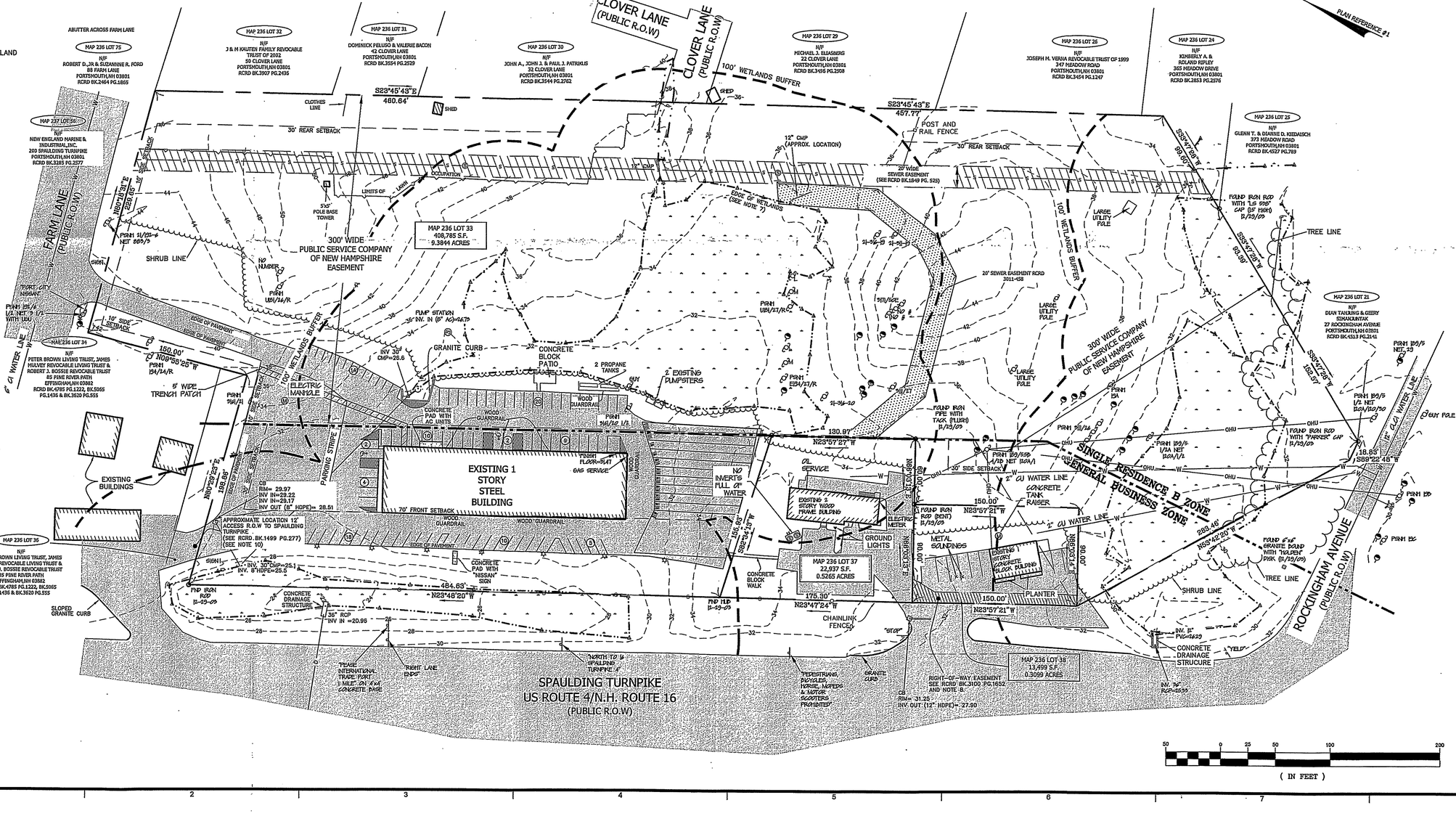
7. WETLAND DELINEATION WAS DONE BY JAMES LONG OF GZA ENVIRONMENTAL ON SEPTEMBER 1, 2011, AND FIELD LOCATED BY MSC CIVIL ENGINEERS & LAND SURVEYORS, INC.
8. MAP 236 LOT 37 HAS THE BENEFIT OF THE FOLLOWING EASEMENTS OVER, IN AND ACROSS MAP 236 LOT 38.
   1) EASEMENT TO THE GRANTEE, ITS AGENTS AND EMPLOYEES WITH NECESSARY EQUIPMENT TO ENTER UPON AND HAVE ACCESS FOR THE REPAIR AND RECONSTRUCTION OF A CERTAIN WATER PIPELINE LAID OUT BY THE GRANTORS FOR THE BENEFIT OF THE GRANTEE.
   2) TO THE EXTENT ALLOWED BY THE STATE OF NEW HAMPSHIRE, A RIGHT-OF-WAY FOR PASSAGE WITH INGRESS TO AND EGRESS FROM SAID PREMISES ABOVE DESCRIBED OVER THE TWO FIFTY FOOT POINTS OF ACCESS GRANTED BAIRD ET AL, BY THE STATE OF NEW HAMPSHIRE. IN USING THIS RIGHT OF WAY, THE GRANTEE AGREES THAT NO SUCH USE SHALL CROSS THE LAND OF THE GRANTORS SITUATE EASTERLY OF SAID WATER LINE NOW USED BY THE GRANTORS, THEIR LESSEE AND OTHERS AS A PARKING AREA FOR THE BUSINESS CONDUCTED AT SAID LOCATION.
   3) A RIGHT-OF-WAY EASEMENT AS DESCRIBED IN RCRD BK.3100 PG.1652.
9. MAP 236 LOT 37 HAS THE BENEFIT OF A "TURNPIKE ENCROACHMENT PERMIT" NUMBER SPAU-01-97 WHICH LIMITS THE EASEMENT DESCRIBED IN RCRD BK.3100 PG.1653.
10. MAP 236 LOT 33 HAS THE BENEFIT OF A 12' WIDE RIGHT-OF-WAY TO ACCESS THE SPAULDING TURNPIKE. THE ROW IS NOT DEFINED AS TO LOCATION, THEREFORE IT IS SHOWN APPROXIMATELY HEREON.

PLAN REFERENCES:

1. "PLAT OF LAND FOR PORT CITY NISSAN IN PORTSMOUTH, N.H.", BY PARKER SURVEY ASSOC., INC. 13 HAMPTON RD, EXETER, N.H., DATED: SEPT. 1995, SCALE: 1"=50. PLAT NOT RECORDED
2. "SITE PLAN FOR PORT CITY NISSAN IN PORTSMOUTH, N.H.", BY PARKER SURVEY ASSOC., INC. 13 HAMPTON RD, EXETER, N.H., DATED: MAY 1997, SCALE: 1"=50. SITE PLAN NOT RECORDED
3. "REQUEST FOR VARIANCE FOR PORT CITY NISSAN/SUZUKI. 120 SPAULDING TURNPIKE. COUNTY OF ROCKINGHAM, PORTSMOUTH, NH" BY MILLETTE, SPRAGUE & COLWELL, INC. DECEMBER 1, 2004
4. "SITE PLAN FOR JANICE WOOD. SPAULDIN TURNPIKE, PORTSMOUTH, N.H." RICHARD P. MILLETTE AND ASSOCIATES. SEPTEMBER 14, 1983.
5. "A SURVEY AND PLAT OF RIGHT-OF-WAY EASEMENT OVER LAND OF ROBERT M. & BARBARA B. BAIRD. SITUATED IN THE CITY OF PORTSMOUTH, N.H." PREPARED BY: R.S.L. LAYOUT & DESIGN, INC. JULY 12, 1995, REVISED TO JULY 19, 1995. SAID PLAN RECORDED AT RCRD PLAN D-24063.



LOCATION PLAN



MSC
CIVIL ENGINEERS & LAND SURVEYORS, INC.
170 COMMERCE WAY
SUITE 102
PORTSMOUTH, NH 03801
PHONE: 603-431-2222
FAX: 603-431-0910
www.mscengineers.com

STATE OF NEW HAMPSHIRE
LICENSED LAND SURVEYOR
J. COREY COLWELL
No. 844
J. Corey Colwell

EXISTING FEATURES PLAN

REV.	DATE	DESCRIPTION
1	10-19-11	REVISE PER CLIENT REVIEW

DRAWN BY: SMO
CHECKED BY: JCC

TAX MAP 236 LOTS 33, 37 & 38
PROPERTY OF RICHARD P. FECTEAU, TWO WAY REALTY, LLC & FIVE WAY REALTY, LLC
120, 100 & 80 SPAULDING TURNPIKE
PORTSMOUTH
COUNTY OF ROCKINGHAM
NEW HAMPSHIRE

DATE: SEPTEMBER 20, 2011

PROJECT NO. 11052

SCALE: 1" = 50'

Dec 05, 2012 - 4:25pm
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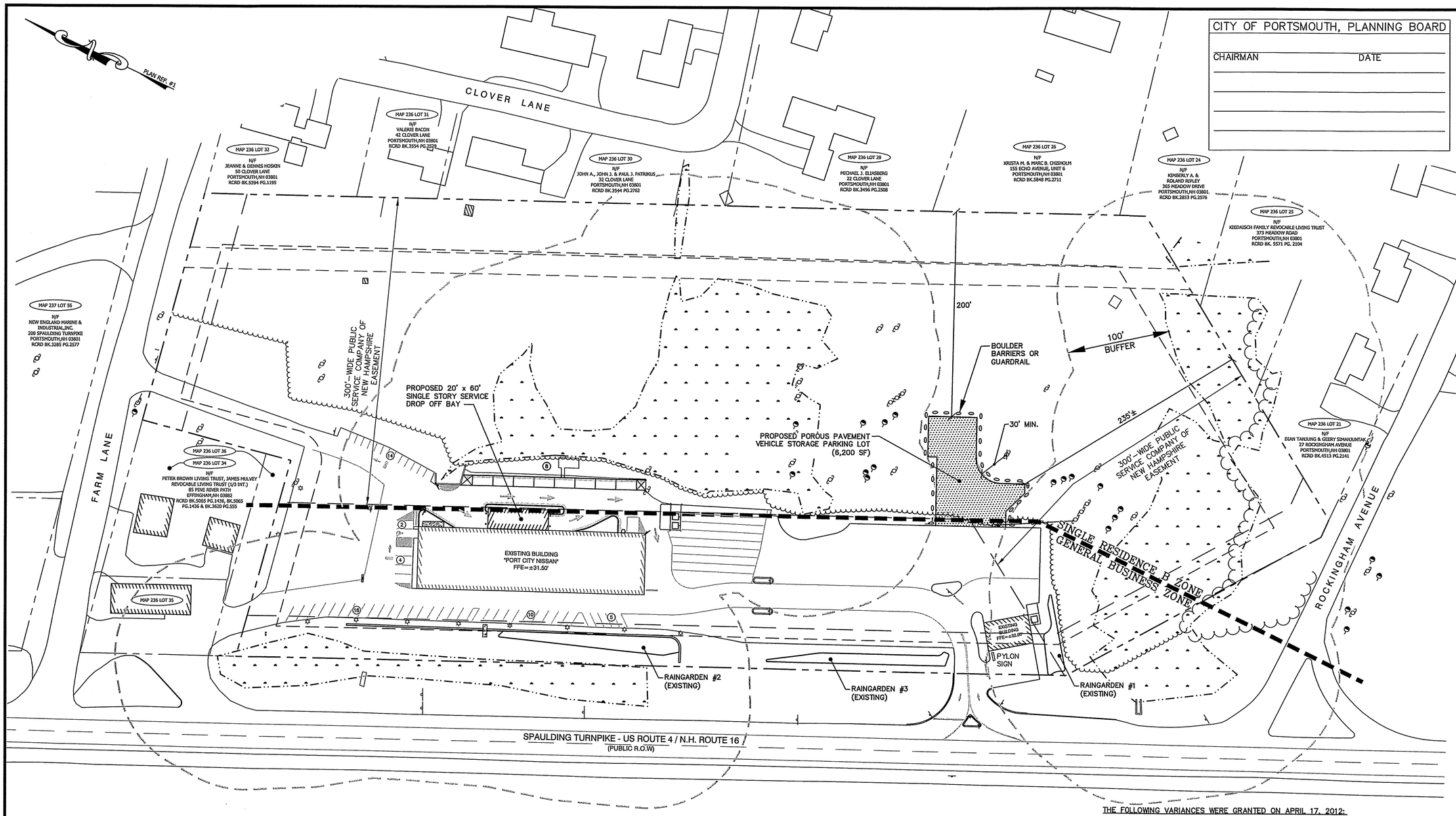


SITE NOTES

1. DESIGN INTENT – THIS PLAN IS INTENDED TO DEPICT THE PROJECT SITE TO INCLUDE THE ADDITION OF A ±1200 S.F. DRIVE UP SERVICE BAY AND 6,200 SF VEHICLE STORAGE AREA. SEE DETAILED SITE PLAN FOR ADDITIONAL SITE IMPROVEMENTS.
2. THE BASE PLAN USED HEREON WAS DEVELOPED FROM "EXISTING FEATURES PLAN FOR 120, 100 & 80 SPAULDING TURNPIKE" BY MSC, REVISED THROUGH 10/19/11 & "PORT CITY NISSAN SITE EXPANSION" PLANS BY ALTUS ENGINEERING, INC., DATED FEBRUARY 13, 2013.
3. ABUTTING HOUSES, DRIVEWAYS, AND PROPERTY LINES WERE OBTAINED FROM THE PORTSMOUTH DPW'S GIS DATABASE. THEY ARE NOT SURVEY LOCATED, SHOULD NOT BE CONSIDERED COMPLETELY ACCURATE, AND ARE SHOWN HERE ONLY FOR THE PURPOSE OF DEFINING THE SURROUNDING CONTEXT OF THE PROJECT SITE.
4. WETLAND DELINEATION BY JAMES LONG, 9/1/2011. DELINEATION CONFIRMED IN BY MICHAEL CUOMO, CERTIFIED WETLAND SCIENTIST No. 004, OCTOBER 2018.
5. ZONE: GB & SRB (GENERAL BUSINESS & SINGLE RESIDENCE B)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

6. DIMENSIONAL REQUIREMENTS (GB ZONE):

MIN. LOT AREA:	43,560 S.F. (1 AC.), ** 87,120 (2 AC.) REQUIRED FOR VEHICLE SALES (445,222 S.F./10.22 AC. PROVIDED)		
	REQUIRED	EXISTING	PROPOSED
MIN. STREET FRONTAGE:	200'	809'±	809'±
MIN. LOT DEPTH:	100'	450'±	450'±
FRONT SETBACK:	30'	69'±/22'±	69'±/22'±
SIDE SETBACK:	30'	136'±/289'±	136'±/289'±
REAR SETBACK:	50'	320'±/390'±	320'±/372'±
FRONT PARKING:	40'	36'±/0'	36'±/0'
WETLANDS BUFFER:	100'	46'±/62'±(BLDGS)	46'±/44'±
WET LIMITED CUT ZONE:	50'	2'±(PAVEMENT)	2'±
WET VEGETATED BUFFER:	25'	2'±(PAVEMENT)	2'±
MAX. BUILDING HEIGHT:	60'	< 60'	< 60'
MAX. BUILDING COVERAGE:	30%	3.29%	3.51%
		(14,651 S.F.)*	(15,641 S.F.)
MIN. OPEN SPACE:	20%	76.0%	76.1%
		(350 S.F. ADD'L PAVEMENT IN GB ZONE) (338,365 S.F.)	(338,790 S.F.)
		(775 S.F. ADD'L LANDSCAPING – GB ZONE)	

* PER PREVIOUSLY APPROVED PLANS, NOT AS–BUILT
** 15,000 S.F. MIN. LOT AREA REQUIRED FOR SINGLE RESIDENCE B ZONE

DIMENSIONAL REQUIREMENTS (SINGLE RESIDENCE B ZONE):

	REQUIRED	EXISTING	PROPOSED
MIN. STREET FRONTAGE:	100'	229'±	229'±
MIN. LOT DEPTH:	100'	300'± ***	300'± ***
FRONT SETBACK:	30'	N/A ***	N/A ***
SIDE SETBACK:	10'	N/A ***	N/A ***
REAR SETBACK:	30'	N/A ***	N/A ***
(IN THE AREA OF PROPOSED VEHICLE STORAGE AREA)			
WETLANDS BUFFER:	100'	100'+	100'
WET LIMITED CUT ZONE:	50'	50'	50'
WET VEGETATED BUFFER:	25'	25'	25'
MAX. BUILDING HEIGHT:	35'	N/A ***	N/A ***
MAX. BUILDING COVERAGE:	20%	0% ****	0% ****
MIN. OPEN SPACE:	40%	76.0% * (338,365 S.F.)	74.7% (326,930 S.F.)

(5,850 S.F. ADDITIONAL PAVEMENT & 315 S.F. ADDITIONAL LANDSCAPING IN SINGLE RESIDENCE ZONE)
*** IN SINGLE RESIDENCE B ZONE ONLY.
**** NOT INCLUDING SHED & STRUCTURE ENCROACHMENTS ON PARCEL OF 150 SF±.

THE FOLLOWING VARIANCES WERE GRANTED ON APRIL 17, 2012:

SECTION 10.571 – ACCESSORY USE IN THE FRONT YARD SETBACK.

SECTION 10.592.20 – VEHICLE SALES USE WITHIN 200' OF ANY RESIDENTIAL OR MIXED RESIDENTIAL DISTRICT.

SECTION 10.843.21 – VEHICLE SALES USE, PARKING, OUTDOOR STORAGE AND OUTDOOR DISPLAY OF VEHICLES OR EQUIPMENT WITHIN 40' OF STREET RIGHT–OF–WAY.

SECTION 10.1113.31 – OFF–STREET PARKING AREAS, ACCESSWAYS, MANEUVERING AREAS AND TRAFFIC AISLES WITHIN 100' OF A RESIDENTIAL DISTRICT.

SECTION 10.1113.41 – OFF–STREET PARKING AREAS, ACCESSWAYS, MANEUVERING AREAS AND TRAFFIC AISLES WITHIN 40' OF FRONT LOT LINE.

SECTION 10.1243 – MORE THAN ONE FREESTANDING SIGN PER LOT.

THE FOLLOWING VARIANCES WERE GRANTED ON JULY 24, 2018:

SECTION 10.591 – TO ALLOW VEHICLE STORAGE WITHIN A RESIDENTIAL ZONE WHERE 100 FEET IS REQUIRED.

SECTION 10.592.20 – TO ALLOW A MOTOR VEHICLE DEALERSHIP TO BE LESS THAN 200 FEET FROM A RESIDENTIAL DISTRICT.

SECTION 10.440 – USE #10.60 TO ALLOW OUTDOOR MOTOR VEHICLE STORAGE IN A RESIDENTIAL DISTRICT.

P3980

CITY OF PORTSMOUTH, PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER
10/15/18

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	9/04/18
1	TAC	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980–PARK–EXP.DWG

SCALE: 22"x34" 1" = 50'

OWNERS/APPLICANTS:

TWO–WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

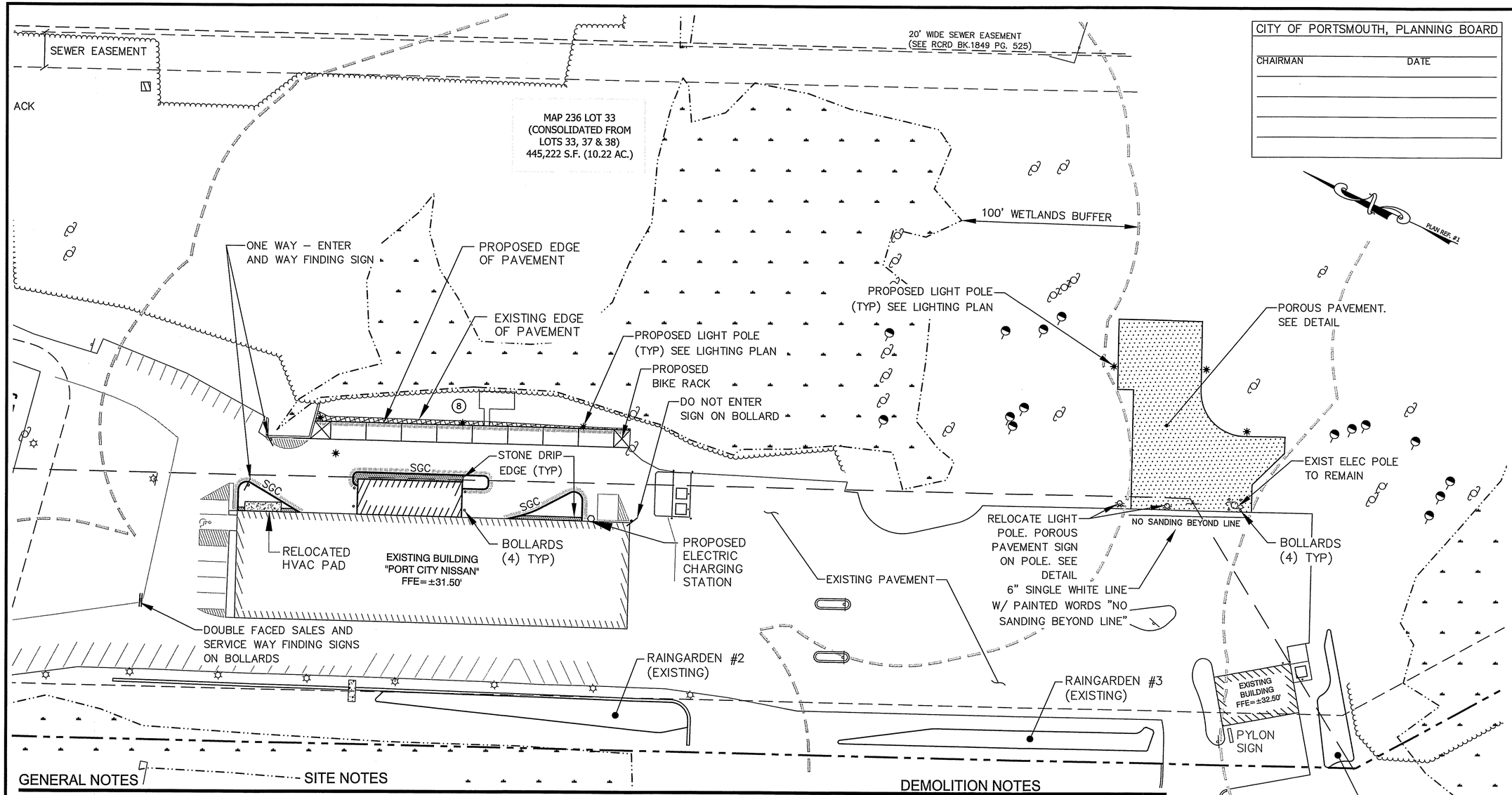
PORT CITY NISSAN DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

OVERALL PLAN

SHEET NUMBER:

C-1



CITY OF PORTSMOUTH, PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
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STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – 10/15/18

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REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980–PARK–EXP SITE.DWG

SCALE: 22"x 34" 1" = 30'

OWNERS/APPLICANTS:

TWO–WAY REALTY, LLC

120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN
DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING

MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

DETAILED SITE PLAN

SHEET NUMBER:

C-2

GENERAL NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. THE LANDOWNER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH LOCAL, STATE AND FEDERAL WETLAND PERMITTING REQUIREMENTS INCLUDING PROTECTION OF NATURAL RESOURCES AND THEIR BUFFERS. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL PERMIT CONDITIONS AND REQUIREMENTS.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. CONTRACTOR SHALL NOTIFY CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS PRIOR TO COMMENCING CONSTRUCTION.
4. CONTRACTOR SHALL INSTALL AND MAINTAIN A TEMPORARY SECURITY FENCE AROUND THE PERIMETER OF THE WORK AREA THROUGHOUT CONSTRUCTION.
5. CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY SEDIMENT AND EROSION CONTROL ITEMS TO PREVENT SEDIMENT FROM CONSTRUCTION ACTIVITIES FROM LEAVING THE SITE. CONTROLS SHALL BE INSPECTED ON A REGULAR BASIS AND AFTER ALL RAIN EVENTS OF 0.25 INCHES OR GREATER. ANY DEFICIENCIES IN THE CONTROLS SHALL BE ADDRESSED IMMEDIATELY AND BROUGHT TO THE ATTENTION OF THE OWNER. ALL STORM DRAINS WITHIN OR ADJACENT TO THE WORK AREA, WITH THE POTENTIAL TO RECEIVE RUNOFF FROM EXPOSED CONSTRUCTION AREAS, SHALL RECEIVE STORM DRAIN INLET PROTECTION.
6. CONTRACTOR SHALL PREVENT TRACKING OF DIRT ONTO ANY PUBLIC OR PRIVATE ROADWAYS. IF TRACKING OF DIRT FROM CONSTRUCTION VEHICLES IS PRESENT ON THE OPEN STREETS, CONTRACTOR WILL BE REQUIRED TO SWEEP THE ROADWAY AT NO ADDITIONAL EXPENSE TO THE OWNER.
7. POROUS PAVEMENT REQUIRES SPECIALIZED MAINTENANCE TO MAINTAIN BOTH ITS EFFECTIVENESS AND LONGEVITY. INCLUDED IN THE STORMWATER MANAGEMENT MAINTENANCE PLAN THERE ARE DETAILED REQUIREMENTS TO ENSURE THAT THE POROUS SURFACE REMAINS VIABLE.

SITE NOTES

1. ONE BICYCLE RACK WILL BE PROVIDED. SEE DETAIL.
2. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
3. ALL CONDITIONS OF THIS APPROVAL SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
4. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
5. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
6. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR RESOLUTION.
8. AREA OF DISTURBANCE UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.
9. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN UPLAND AREAS SHOWN THEREON. NO SNOW STORAGE SHALL BE PROVIDED IN THE LANDSCAPED ISLAND BETWEEN THE DRIVEWAY ENTRANCE AND EXIT THAT WOULD RESTRICT SITE VEHICULAR AND PEDESTRIAN SIGHT DISTANCE. IF ADEQUATE ON-SITE SNOW STORAGE IS NOT AVAILABLE, THE SNOW SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.
10. PAVEMENT MARKINGS SHALL BE CONSTRUCTED USING WHITE, YELLOW, OR BLUE TRAFFIC PAINT (WHERE SPECIFIED) MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F OR EQUAL. PAINTED ISLANDS AND LOADING ZONES SHALL BE 4"-WIDE DIAGONAL WHITE LINES 3'-0" O.C. BORDERED BY 4"-WIDE WHITE LINES. PARKING STALLS SHALL BE SEPARATED BY 4"-WIDE WHITE LINES. SEE DETAILS FOR HANDICAP SYMBOLS, SIGNS AND SIGN DETAILS. PAVEMENT MARKINGS SHALL BE INSTALLED AT LEAST 14-DAYS AFTER INSTALLATION OF WEARING COURSE PAVEMENT. CONTRACTOR SHALL APPLY TWO (2) COATS OF ALL PAVEMENT MARKINGS.
11. PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
12. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION. ANY AND ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF BOTH THE ARCHITECT AND CIVIL ENGINEER FOR RESOLUTION.
13. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
14. THE SITE PLAN PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
15. THE PROPOSED LIGHTING SHALL BE DARK SKY FRIENDLY.
16. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PUSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
17. SITEWORK CONTRACTOR SHALL PREPARE A LICENSED LAND SURVEYOR (LLS) STAMPED AS-BUILT SITE PLAN & PROVIDE A DIGITAL (CAD FORMAT) COPY FOR THE CITY'S G.I.S. DATA BASE FOR THE ENTIRE SITE. DATUM SHALL BE IN STATE PLANE COORDINATE SYSTEM AND NAD83.
18. EXISTING BUILDINGS AND EXPANSION ARE ALL SINGLE STORY. 1,200 SF GSA IS ALL DEVOTED TO THE AUTOMOTIVE DEALERSHIP USE.

DEMOLITION NOTES

1. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
3. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
4. ALL STRUCTURES, CURBING, CONCRETE, PAVEMENT AND SUBBASE MATERIALS SHALL BE REMOVED FROM PROPOSED LANDSCAPE AREAS AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPE AND/OR STORMWATER MANAGEMENT PURPOSES AND MEETING THE PROJECT SPECIFICATIONS.
5. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, MONITORING WELLS, ETC. SHALL BE ADJUSTED TO FINISH GRADE.
6. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
7. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
8. SEE EROSION CONTROL PLANS FOR EROSION CONTROL REQUIREMENTS TO BE IN PLACE PRIOR TO START OF DEMOLITION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO; SILT FENCING, STABILIZED CONSTRUCTION SITE EXITS, AND STORM DRAIN INLET PROTECTION.
9. ALL DEMOLISHED MATERIALS OR MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS SPECIFIED.
10. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS AND CODES.
11. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DISCONNECTIONS/INSTALLATIONS WITH EVERSOURCE. CONTACT NICK KOSKO @ 603-332-4227, EXT. 5555334

DEMOLITION NOTES - continued

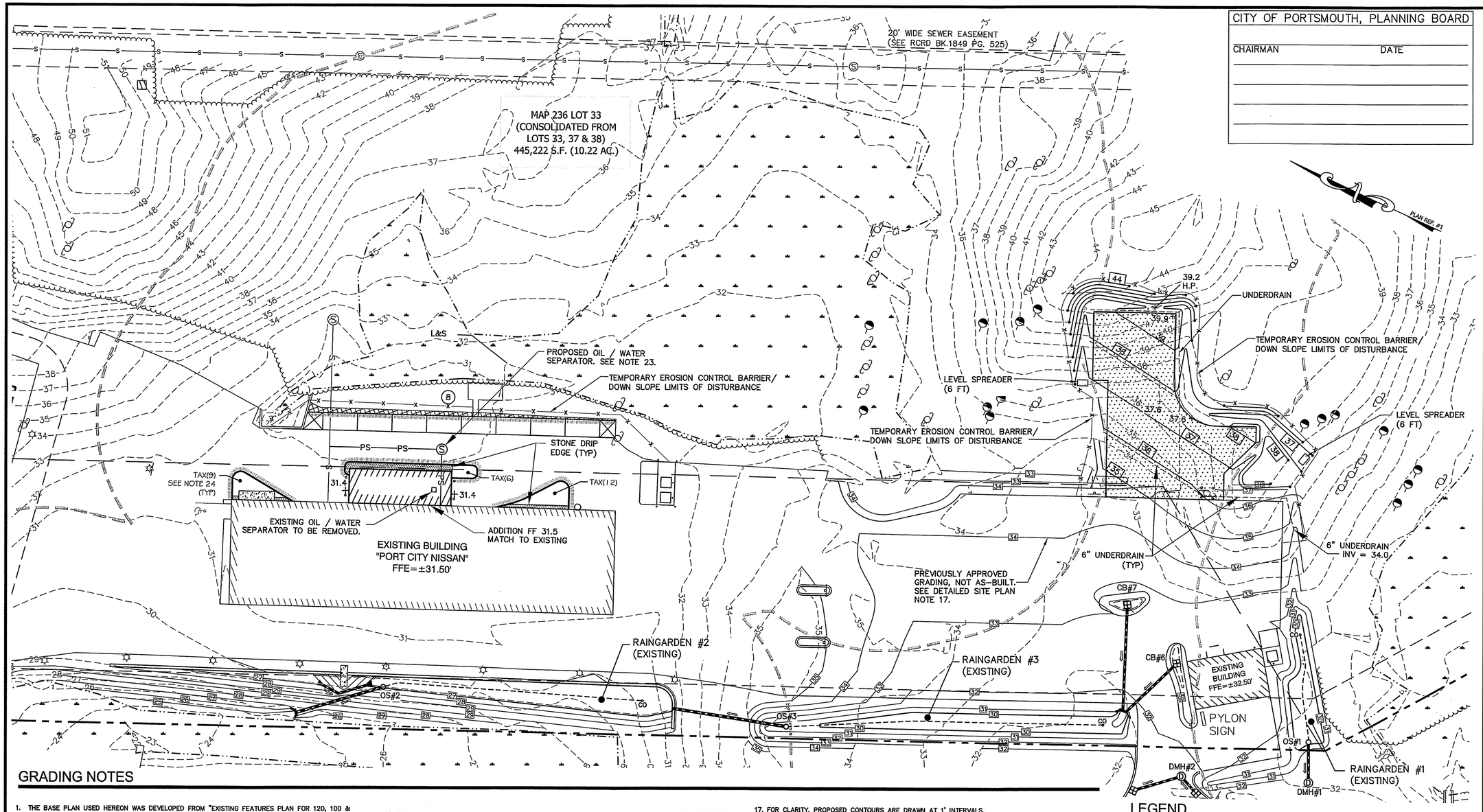
12. CONTRACTOR SHALL COORDINATE ALL NATURAL GAS DISCONNECTIONS/INSTALLATIONS WITH UNITIL CORPORATION. CONTACT DAVID BEAULIEU @ 603-294-5144
13. CONTRACTOR SHALL COORDINATE ALL CABLE DISCONNECTIONS/INSTALLATIONS WITH COMCAST. CONTACT MIKE COLLINS @ 603-679-5695 EXT 1037
14. CONTRACTOR SHALL COORDINATE ALL TELE-COMMUNICATION DISCONNECTIONS AND INSTALLATION WITH FAIRPOINT COMMUNICATIONS. CONTACT JOE CONSIONE @ 603-427-5255

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

P3980



GRADING NOTES

1. THE BASE PLAN USED HEREON WAS DEVELOPED FROM "EXISTING FEATURES PLAN FOR 120, 100 & 80 SPAULDING TURNPIKE" BY MSC, REVISED THROUGH 10/19/11 & APPLICATION DRAWINGS BY ALTUS ENGINEERING, INC.
2. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
3. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
4. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
5. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
6. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
7. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES & STRUCTURES. PRESERVE AND PROTECT LINES TO BE RETAINED.
8. THE CONTRACTOR SHALL READ AND FOLLOW ALL RECOMMENDATIONS IN THE PROJECT'S GEOTECHNICAL REPORT.
9. DEWATERING ACTIVITIES, IF NECESSARY, SHALL BE DONE IN ACCORDANCE WITH EPA AND NHDES REGULATIONS & GUIDELINES.
11. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
12. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS OR WETLAND BUFFERS INTENDED TO REMAIN NATURAL. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
13. ALL DRAINAGE PIPE SHALL BE ADS N-12 OR EQUAL APPROVED BY THE ENGINEER.
14. ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
15. UNLESS OTHERWISE SPECIFIED, ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE A MINIMUM OF SIX (6") INCHES OF LOAM, LIMESTONE, FERTILIZER, SEED, AND HAY MULCH USING APPROPRIATE SOIL STABILIZATION TECHNIQUES. SEE DETAILS FOR ADDITIONAL INFORMATION.
16. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.
17. FOR CLARITY, PROPOSED CONTOURS ARE DRAWN AT 1' INTERVALS.
18. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
19. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
20. DEWATERING ACTIVITIES, IF NECESSARY, SHALL BE DONE IN ACCORDANCE WITH EPA AND NHDES REGULATIONS & GUIDELINES.
21. ALL CATCH BASIN, GATE VALVE COVERS, AND MANHOLE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISHED GRADE. ANY RIM OR VALVE COVER ABOVE SURROUNDING FINISHED GRADE WILL NOT BE ACCEPTED.
22. ALL NEW INTERNAL FLOOR DRAINS SHALL BE EVAPORATIVE AND SHALL NOT TIE INTO THE EXTERNAL STORM DRAIN SYSTEM.
23. EXISTING OIL/WATER SEPARATOR IS WITHIN THE LIMITS OF THE NEW BUILDING ADDITION. IT IS UNDERSIZED AND DOES NOT CONFORM TO CURRENT DESIGN STANDARDS. LOCATIONS OF CONNECTIONS ARE UNKNOWN AND WILL BE DETERMINED WITH TEST PIT EXCAVATIONS PRIOR TO CONSTRUCTION. FINDINGS AND FINAL DESIGN SKETCH OF THE PROPOSED OIL/WATER SEPERATOR, (WITH INVERT ELEVATIONS) WILL BE SUBMITTED TO PORTSMOUTH DPW FOR APPROVAL PRIOR TO CONSTRUCTION.
24. LANDSCAPE ISLANDS:

    TAX – Taxus Media "Ever–Low" 18"–24" B&B

LEGEND

SEE EXISTING FEATURES PLAN FOR ADDITIONAL EXISTING FEATURES NOT SHOWN

- PROPERTY LINE
- EXISTING EASEMENT
- FRESHWATER WETLAND BOUNDARY
- BUILDING/FRONT PARKING SETBACK
- 100' CITY WETLAND BUFFER
- 100 EXISTING CONTOUR
- 100 PROPOSED CONTOUR
- 100.00 PROPOSED SPOT GRADE/TOP & BOTTOM OF WALL (104.00TW / 100.00BW)
- SILTFENCE/SEDIMENT BARRIER/CONSTRUCTION FENCE DOWN SLOPE LIMITS OF DISTURBANCE

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

P3980

CITY OF PORTSMOUTH, PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER
10/15/18

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980-PARK-EXP SITE.DWG

SCALE: 22"x 34" 1" = 30'

OWNERS/APPLICANTS:

TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN
DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

DETAILED GRADING PLAN

SHEET NUMBER:

C-3

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

PORT CITY NISSAN
DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
120 SPAULDING 120 SPAULDING TURNPIKE
PORTSMOUTH, NEW HAMPSHIRE

LONGITUDE: 070° 46' 16" W
LATITUDE: 043° 03' 16" N
TAX MAP 236 LOT 33

OWNERS/APPLICANTS:
TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

DESCRIPTION

The project consists of the expansion of an existing car dealership to include a drive-thru service dropoff area and the construction of a new parking area adjacent to the existing parking area together with associated site improvements.

DISTURBED AREA

The total area to be disturbed for the building & parking improvements is approximately ±20,000 SF (±0.46 acres).

PROJECT PHASING

The proposed project will be completed in one phase.

NAME OF RECEIVING WATER

The site drains to unnamed wetlands tributary to Hodgson Brook.

SEQUENCE OF MAJOR ACTIVITIES

1. Cut and clear trees.
2. Install temporary erosion control measures including silt fences, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
3. Stump and grub wooded areas (some stumps may require grinding). Dispose of stumps in an approved offsite location. Strip loam and stockpile.
4. Demolish existing items as shown on Site Plans and reclaim pavement.
5. Rough grade site including placement of borrow materials.
6. Construct drainage structures, culverts, utilities, swales & pavement base course materials.
7. Construct building expansion. See Architectural Drawings.
8. Install base course paving & curbing. Install landscaping.p
9. Install top course paving.
10. Install pavement markings and signs.
11. Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
12. When all construction activity is complete and site is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, & level spreaders prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built-up sediment shall be removed from silt fence or other barriers when it has reached one-third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. An area shall be considered stable if one of the following has occurred:
   a. Base coarse gravels have been installed in areas to be paved;
   b. A minimum of 85% vegetated growth as been established;
   c. A minimum of 3 inches of non-erosive material such as stone of riprap has been installed; – or –
   d. Erosion control blankets have been properly installed.
9. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
   a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
   b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation –
   Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

2. Seeding –
   a. Utilize annual rye grass at a rate of 40 lbs/acre.
   b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
   c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance –
   Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Silt Fence
   a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM-51	0.3 gal/sf/min (min)

   * Requirements reduced by 50 percent after six (6) months of installation.

   Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

   b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).

   c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.

   d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.

   e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

   f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.

   g. The trench shall be backfilled and the soil compacted over the filter fabric.

   h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

2. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

3. Maintenance –
   a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.

   b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.

   c. Sediment deposits must be removed when deposits reach approximately one-third (1/3) the height of the barrier.

   d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.

   e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

E. PERMANENT SEEDING –

1. Bedding – stones larger than 1½", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

2. Fertilizer – lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:

   Agricultural Limestone @ 100 lbs. per 1,000 s.f.
   10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (recommended):

Type	Lbs. / Acre	Lbs. / 1,000 sf
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

   Seed Mixture (For slope embankments):
   Grass Seed: Provide fresh, clean, new–crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified:

Type	Min. Purity (%)	Min. Germination (%)	Kg./Hectare (Lbs/Acre)
Creeping Red Fescue (c)	96	85	45 (40)
Perennial Rye Grass (a)	98	90	35 (30)
Redtop	95	80	5 (5)
Alsike Clover	97	90(e)	5 (5)
		Total	90 (80)

   a. Ryegrass shall be a certified fine–textured variety such as Pennfine, Fiesta, Yorktown, Diplomat, or equal.
   b. Fescue varieties shall include – Creeping Red and/or Hard Reliant, Scaldis, Koket, or Jamestown.

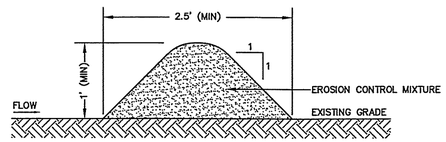
4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;

2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and

3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

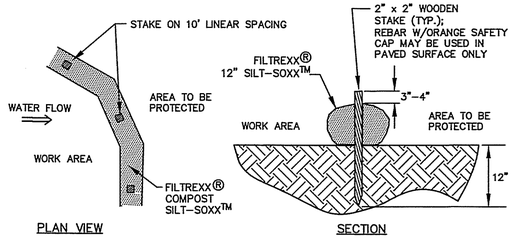


NOTES

1. ORGANIC FILTER BERMS MAY BE UTILIZED IN LIEU OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. THE EROSION CONTROL MIXTURE USED IN FILTER BERMS SHALL BE A WELL–GRADED MIX OF PARTICLE SIZES THAT MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, AND/OR ACCEPTABLE MANUFACTURED PRODUCTS AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH. EROSION CONTROL MIXTURE SHALL MEET THE FOLLOWING STANDARDS:
   a) THE ORGANIC CONTENT SHALL BE 80–100% OF DRY WEIGHT.
   b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70–85% PASSING A 0.75" SCREEN.
   c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
   d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
   e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
   f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5% OR AT THE BOTTOM OF SLOPES NO STEEPER THAN 3:1 AND UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE) AND A MINIMUM OF 36" WIDE. ON LONGER AND/OR STEEPER SLOPES, THE BERM SHALL BE TALLER AND WIDER TO ACCOMMODATE THE POTENTIAL FOR ADDITIONAL RUNOFF (MAXIMUM HEIGHT SHALL NOT EXCEED 2').
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BERM.
7. ORGANIC FILTER BERMS MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED PROVIDED ANY SEDIMENT DEPOSITS TRAPPED BY THEM ARE REMOVED AND DISPOSED OF PROPERLY.

ORGANIC FILTER BERM

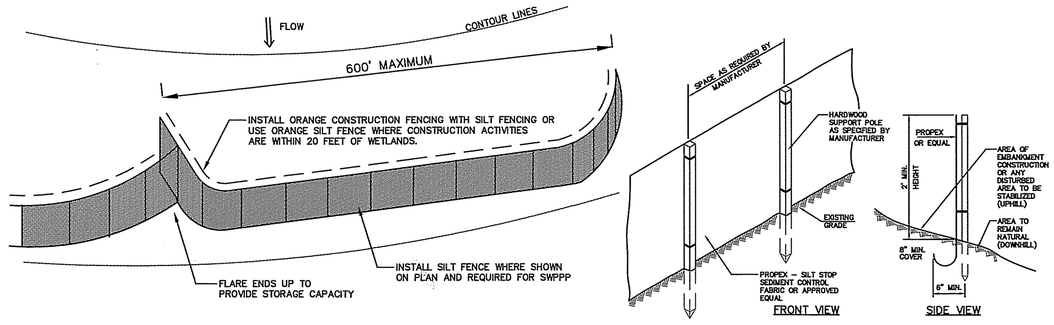
NOT TO SCALE



NOTES:
1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

FILTREXX SILTSOXX DETAIL

NOT TO SCALE



SILT AND ORANGE CONSTRUCTION FENCE LAYOUT DETAIL

NOT TO SCALE

P3960

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7434 LICENSED PROFESSIONAL ENGINEER – 12/15/15

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL TAC SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980–DETAILS.DWG

SCALE: NOT TO SCALE

OWNER/APPLICANT:

TWO–WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN
DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

DETAIL SHEET

SHEET NUMBER:

C-4

CONSTRUCTION SPECIFICATIONS

1. A WIRE MESH SHALL BE PLACED OVER THE DROP INLET OR CURB OPENING SO THAT THE ENTIRE OPENING AND A MINIMUM OF 12 INCHES AROUND THE OPENING ARE COVERED BY THE MESH. THE MESH SHALL BE ORDINARY HARDWARE CLOTH OR WIRE MESH WITH OPENINGS UP TO 1/2 INCH.
2. THE WIRE MESH SHALL BE COVERED WITH CLEAN COARSE AGGREGATE SUCH AS SEPTIC STONE OR SCREENED GRAVEL FOR A MINIMUM DEPTH OF 12 INCHES.
3. THE COARSE AGGREGATE SHALL EXTEND AT LEAST 18 INCHES ON ALL SIDES OF THE DRAIN OPENING.

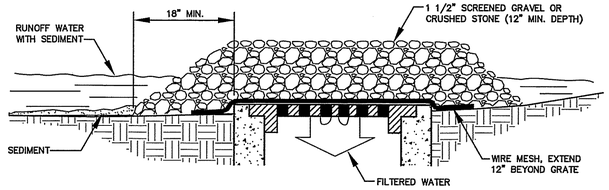
MAINTENANCE

1. ALL STRUCTURES SHALL BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY.
2. SEDIMENT SHALL BE REMOVED FROM THE TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP.
3. THE SEDIMENT SHALL BE DISPOSED OF A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.
4. THE TEMPORARY TRAPS SHALL BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

ALTERNATE BMP FILTER PRODUCTS:

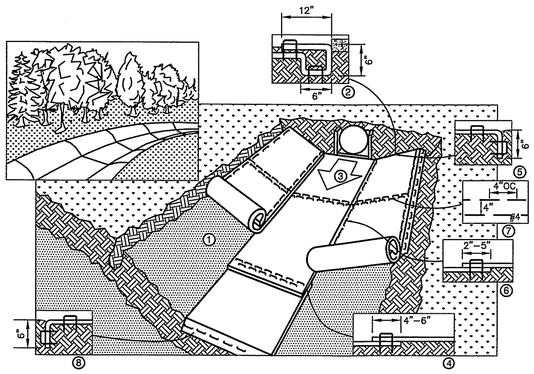
1. "DANDY BAG", "DANDY SACK" OR "DANDY POP" BY DANDY PRODUCTS AT WWW.DANDYPRODUCTS.COM. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. "SILT SACK" BY THE BMP STORE AT WWW.THEBMPSTORE.COM. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
3. ANY ALTERNATE INLET PROTECTION METHOD APPROVED IN WRITING BY THE ENGINEER.

UNACCEPTABLE INVERT PROTECTION METHODS;
A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.



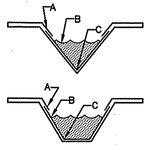
INLET SEDIMENT FILTER

NOT TO SCALE



NOTES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (DEPENDING ON BLANKET TYPE) AND STAPLED. TO INSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



CRITICAL POINTS:

A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

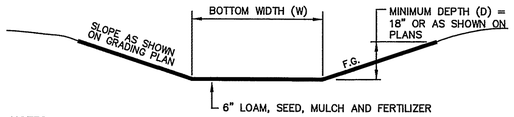
NOTES:

* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

EROSION CONTROL BLANKET - SWALE

NOT TO SCALE

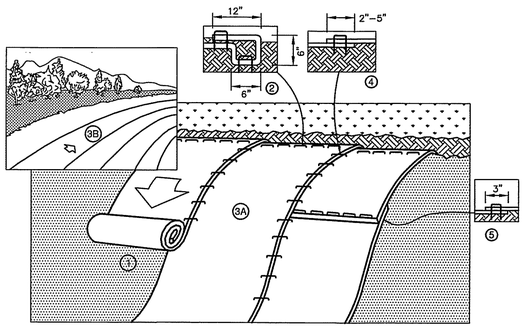


NOTES

1. THE FOUNDATION AREA OF THE SWALE SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL.
2. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA AND BE FREE OF IRREGULARITIES.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED SWALE.
4. VEGETATION SHALL BE ESTABLISHED IN THE SWALE OR AN EROSION CONTROL MATTING INSTALLED PRIOR TO DIRECTING STORMWATER TO IT.
5. MAINTENANCE OF THE VEGETATION IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE SWALE. MOWING SHALL BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHALL NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE SWALE.
6. THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER ANY STORM GREATER THAN 0.5" OF RAINFALL IN 24 HOURS TO DETERMINE ITS CONDITION. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

VEGETATED SWALE

NOT TO SCALE

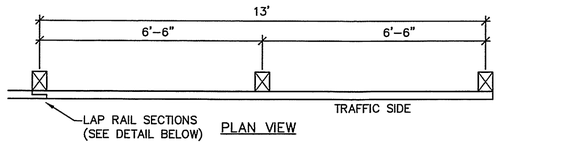


NOTES

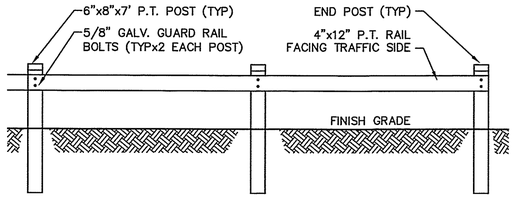
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET - SLOPE

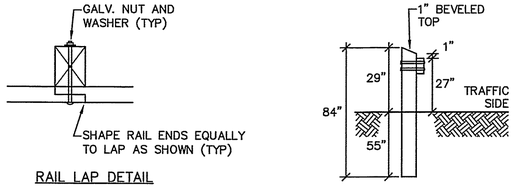
NOT TO SCALE



PLAN VIEW



FRONT VIEW



RAIL LAP DETAIL

SIDE VIEW

NOTES

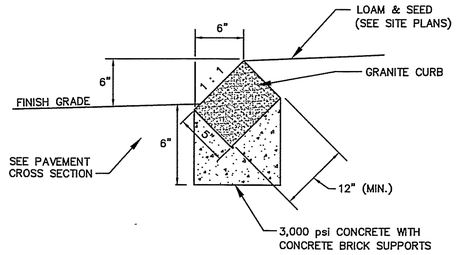
1. ALL POST AND RAIL MATERIAL SHALL BE PRESSURE TREATED.
2. BOLT LENGTH IS DETERMINED BY 8" POST AND RAIL THICKNESS PLUS 1 INCH FOR NUT AND WASHER.
3. ALL MATERIAL TO MEET OR EXCEED NHDOT SECTION 606 – GUARDRAIL.

WOOD BEAM GUARDRAIL

NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



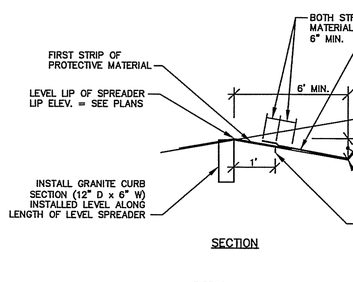
NOTES

1. SEE SITE PLAN FOR LIMITS OF CURBING
2. ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART

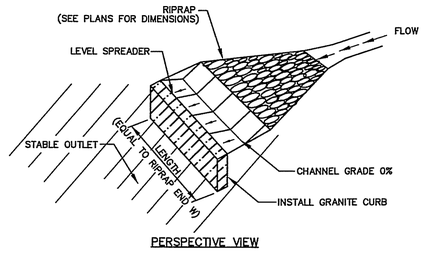
RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'–28'	1'–6"
29'–41'	2'
42'–55'	3'
56'–68'	4'
69'–82'	5'
83'–96'	6'
97'–110'	7'
OVER 110'	8'

SLOPED GRANITE CURB

NOT TO SCALE



SECTION



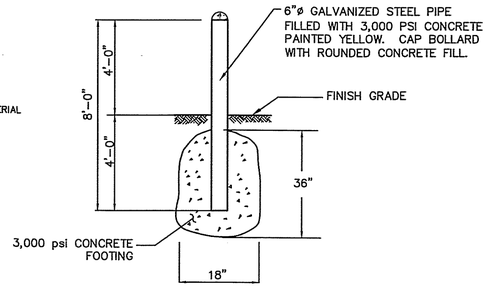
PERSPECTIVE VIEW

NOTES

1. FOR STAPLE REQUIREMENTS SEE MANUFACTURER'S STANDARDS & SPECIFICATIONS FOR PROTECTIVE MATERIALS.
2. AREAS BELOW LEVEL SPREADERS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

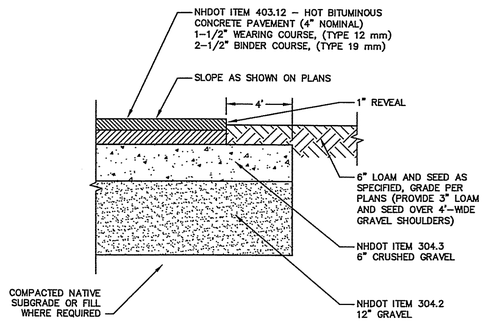
LEVEL SPREADER

NOT TO SCALE



BOLLARD

NOT TO SCALE



PAVEMENT CROSS SECTION

NOT TO SCALE

P3980

ALTUS ENGINEERING, INC.

133 COURT STREET. PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – 10/15/18

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL TAC SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980-DETAILS.DWG

SCALE: NOT TO SCALE

OWNER/APPLICANT:

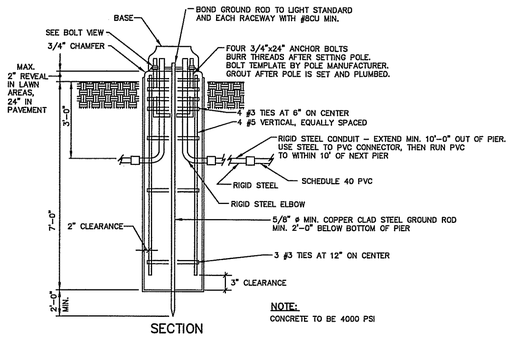
TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

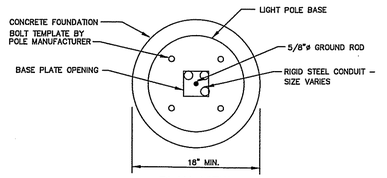
TITLE: DETAIL SHEET

SHEET NUMBER: C-5

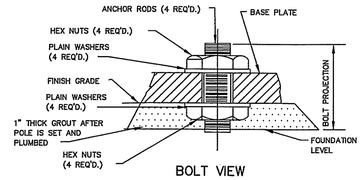


SECTION

NOTE:
CONCRETE TO BE 4000 PSI

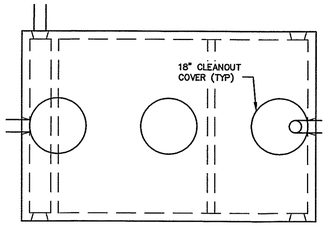


PLAN VIEW

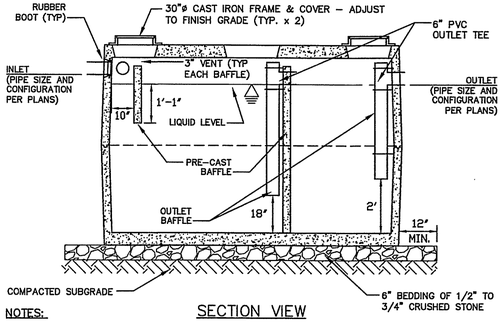


BOLT VIEW

LIGHT POLE BASE DETAIL NOT TO SCALE



PLAN VIEW

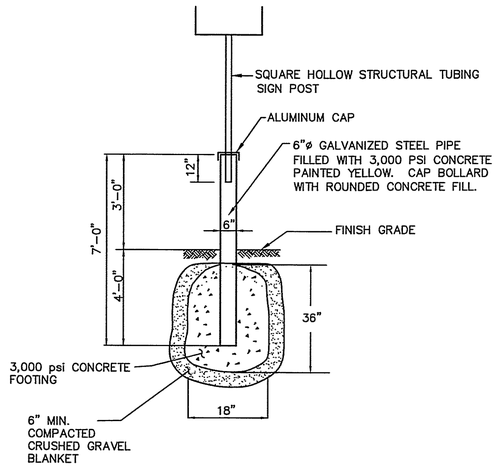


SECTION VIEW

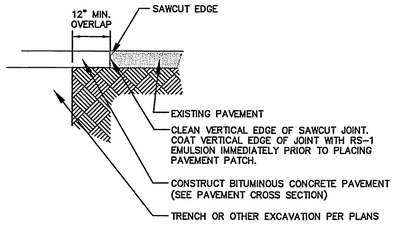
NOTES:

1. TANK SHALL BE MULI-COMPARTMENT 4,000 PSI (MIN.) STEEL REINFORCED CONCRETE.
2. KEYED TANK JOINTS SHALL BE SEALED WITH BUTYL RUBBER.
3. TANK SHALL BE MANUFACTURED BY E. F. SHEA OR APPROVED EQUAL TO THE CAPACITY SHOWN. TANK DIMENSIONS MAY VARY DEPENDING ON THE MANUFACTURER.
4. INLET AND OUTLET PIPE SIZES AND CONFIGURATION SHALL BE CONSTRUCTED PER THE PLANS.

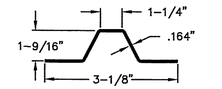
1,000 GALLON OIL/WATER SEPARATOR NOT TO SCALE



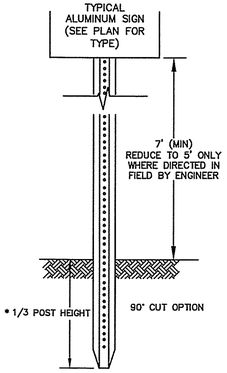
SIGN BOLLARD DETAIL NOT TO SCALE



TYPICAL PAVEMENT SAWCUT NOT TO SCALE



TYPICAL ALUMINUM SIGN (SEE PLAN FOR TYPE)



* IN LEDGE DRILL & GROUT TO A MIN OF 2'

LENGTH: AS REQUIRED

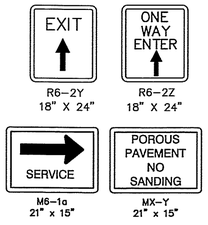
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)

HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH

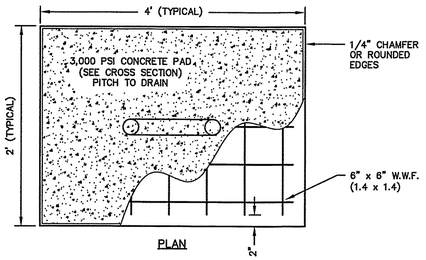
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)

NOTES

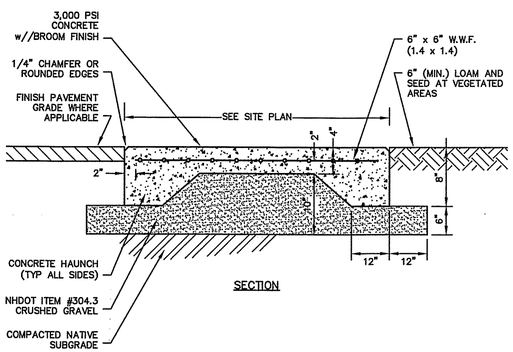
1. ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
2. SIGNS SHOWN HERE ARE NOT DRAWN TO SCALE.
3.
4. NON-STANDARD SIGNS SPECIFIC TO THIS SITE SHALL BE COORDINATED BETWEEN CONTRACTOR, OWNER & CITY PERMITTING AUTHORITIES.



SIGN DETAILS NOT TO SCALE

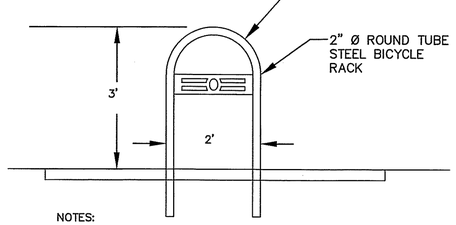


PLAN



SECTION

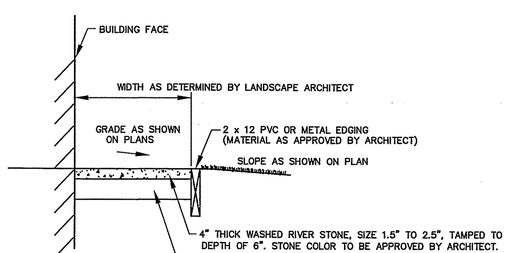
BICYCLE RACK PAD NOT TO SCALE



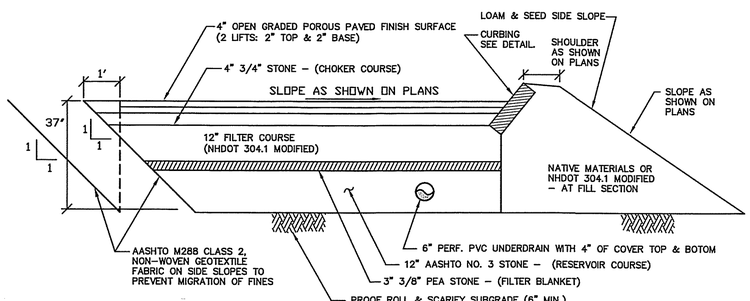
NOTES:

1. INSTALL BICYCLE RACK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. DETAIL DEPICTS IN-GROUND MOUNT. USE SURFACE MOUNT BICYCLE RACK FOR INSTALLATIONS ON CONCRETE PADS.
3. SEE SITE PLAN FOR FINAL CONCRETE PAD SIZE. PROVIDE ONE (1) BIKE RACKS FOR 2 BICYCLES.

BICYCLE RACK DETAIL NOT TO SCALE



DRIP EDGE DETAIL NOT TO SCALE



MATERIAL GRADATIONS

RESERVOIR COURSE		CHOKER COURSE STONE		GRAVEL FILTER COURSE (NHDOT 304.1 MODIFIED)		3/8" PEA STONE	
SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
2-1/2"	100	1-1/2"	100	6"	100	1/2"	100
2"	90 - 100	1"	95 - 100	# 4	70 - 100	3/8"	85 - 100
1-1/2"	35 - 70	1/2"	25 - 60	# 200	0 - 6	# 4	10 - 30
1"	0 - 15	# 4	0 - 10			# 8	0 - 10
1/2"	0 - 5	# 8	0 - 5			# 16	0 - 15

POROUS PAVEMENT CROSS SECTION NOT TO SCALE

NOTES:

1. DESIGN OF POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.
2. CONTRACTOR TO REMOVE ANY EXISTING BURIED LAYERS OF LOAM OR UNSUITABLE MATERIAL DURING THE EXCAVATION OF THE PARKING AREA AND/OR WHENEVER ENCOUNTERED IN TRENCHES.
3. A PROFESSIONAL ENGINEER SHALL INSPECT SITE PREPARATION AND INSTALLATION OF POROUS PAVEMENT.
4. THE TOP LAYER (WEARING COURSE) SHALL BE PRE-BLENDED PG 76-28 MODIFIED WITH SBS. THE BASE COURSE SHOULD BE, AT A MINIMUM, PG 64-28 WITH 5 POUNDS OF FIBER PER TON ASPHALT MIX. IF SUFFICIENT STAGING OR USE OF THE BASE COURSE SECTION WILL BE REQUIRED PRIOR TO THE APPLICATION OF THE WEARING COURSE, THE ENGINEER MAY DECIDE TO USE PRE-BLENDED PG 64V-28 MODIFIED WITH SBS ON BOTH COURSES.
5. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR POROUS PAVEMENT & SUBGRADE MATERIALS AS NOTED IN THE ABOVE SPECIFICATION A MINIMUM OF 14-DAYS PRIOR TO COMMENCING CONSTRUCTION.
6. THE CONSTRUCTION OF THE POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH THE UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER
10/15/18

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL TAC SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980-DETAILS.DWG

SCALE: NOT TO SCALE

OWNER/APPLICANT:

TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN
SITE EXPANSION
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

DETAIL SHEET

SHEET NUMBER:

C-6

P3980

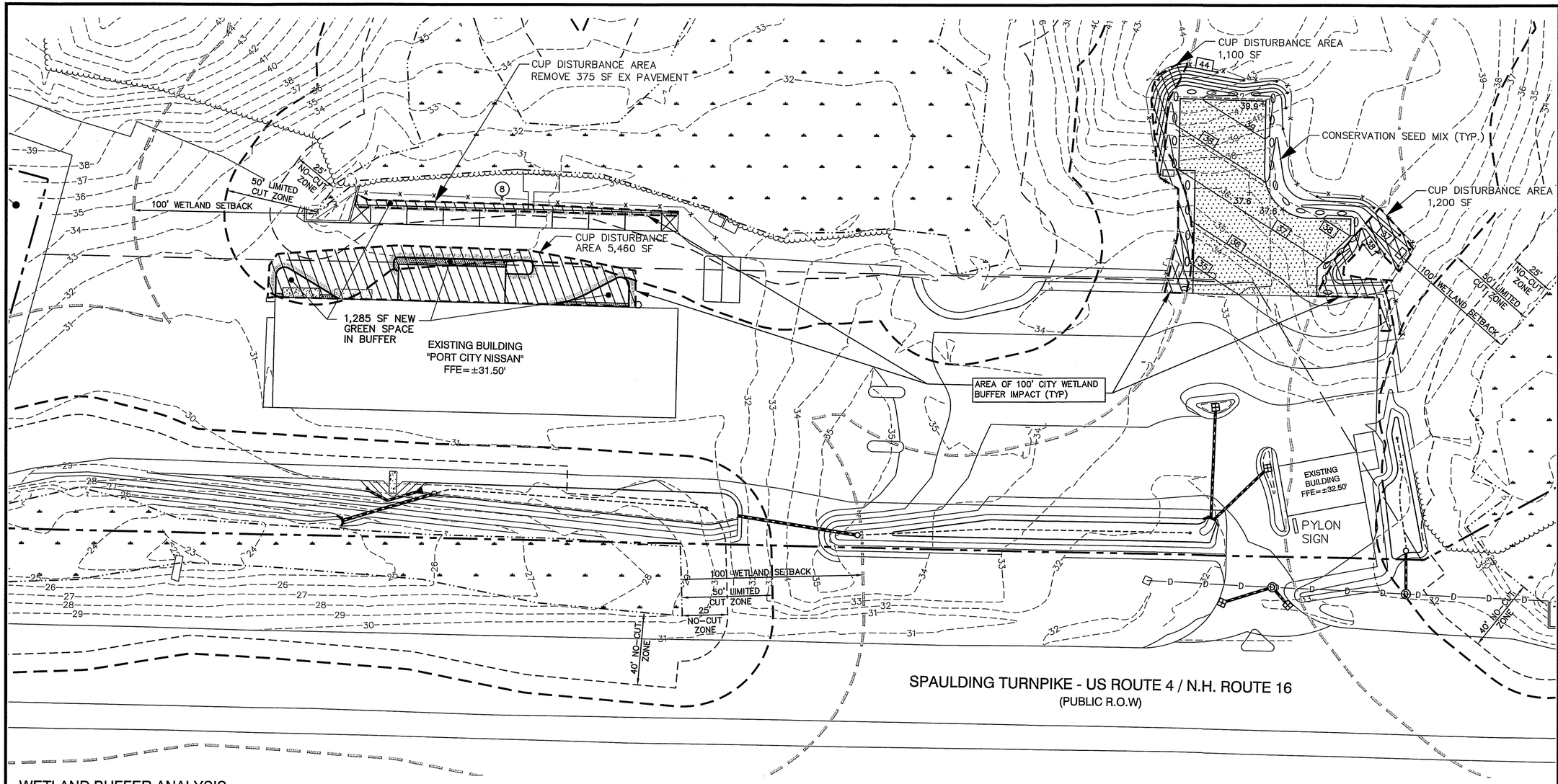
Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Drive-Thru Service Area	+	2.1 fc	4.7 fc	0.6 fc	7.8:1	3.5:1
New Parking Area	+	2.2 fc	7.0 fc	0.4 fc	17.5:1	5.5:1
Outside of Drive-Thru Area	+	0.2 fc	4.6 fc	0.0 fc	N/A	N/A
Outside of New Parking Area	+	0.3 fc	8.3 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	A	6	Lithonia Lighting	DSX0 LED P2 40K T4M MVOLT HS	DSX0 LED P2 40K T4M MVOLT with houseside shield; mounted at 12ft	LED	1	DSX0_LED_P2_40K_T4M_MVOLT_HS.ies	4563	0.9	49
	S1	1	XXXXXXX	XXXXXXXX	Existing Metal Halide Fixture; mounted at 20ft	ONE 400 WATT CLEAR ED28 PULSE START METAL HALIDE IN HORIZONTAL POSITION	1	KSF2_400M_R4W.ies	38000	0.75	456
	W1	3	Lithonia Lighting	DSXW1 LED 20C 700 40K T3M MVOLT	DSXW1 LED WITH (2) 10 LED LIGHT ENGINES, TYPE T3M OPTIC, 4000K, @ 700mA; mounted at 12ft	LED	1	DSXW1_LED_20C_700_40K_T3M_MVOLT.ies	5454	0.9	45.7
	W2	2	Lithonia Lighting	OLWX1 LED 20W 40K DDB	20W 4000K LED WALL PACK; mounted at 12ft	LED	1	OLWX1_LED_20W_40K_DDB.ies	1840	0.9	21.77

PORT CITY NISSAN
Site Lighting Layout

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842
Date
10/15/2018
Scale
1"=40'
Drawing No.
1 of 1



WETLAND BUFFER ANALYSIS

1. ZONING SECTION 10.1017 – CONDITIONAL USE PERMIT FROM PORTSMOUTH PLANNING BOARD REQUIRED FOR GRADING AND THE INSTALLATION OF DRAINAGE INFRASTRUCTURE WITHIN THE 100' CITY WETLAND SETBACK.
2. WETLANDS DELINEATION BY GZA GEOENVIRONMENTAL, INC., ON 09/01/11.
3. EXISTING LOT SIZE: 445,222 SF (10.22 AC.)
4. ON-SITE WETLAND AREA: 70,478 SF (1.62 AC.)(15.83% OF SITE)
5. NO WETLAND IMPACTS ARE PROPOSED FOR THIS PROJECT.
6. TOTAL AREA OF PROJECT DISTURBANCE LESS THAN 100,000 SF, NHDES ALTERATION OF TERRAIN PERMIT NOT REQUIRED.
7. TOTAL AREA OF PROJECT DISTURBANCE LESS THAN 43,560 SF (1 ACRE). PROJECT IS NOT SUBJECT TO EPA NPDES PHASE II. NOI, SWPPP AND MINIMUM WEEKLY INSPECTIONS ARE NOT REQUIRED.
8. CITY WETLAND SETBACKS (FOR WETLANDS 10,000 SF OR GREATER OR TIDAL):

WETLAND SETBACK:	100'
WET LIMITED CUT ZONE:	50'
WET BUFFER/NO-CUT ZONE:	25' (40' WHERE SLOPES > 10% FOR > 10') (40' REQUIRED IN SOME LOCATIONS)

9. 100' CITY WETLAND SETBACK DATA:

TOTAL ONSITE SETBACK AREA:	245,003 SF (55.03% OF SITE)
0 – 25/40' NO-CUT ZONE:	67,007 SF
25/40 – 50' LIMITED CUT ZONE:	57,509 SF
50 – 100' REMAINDER:	120,487 SF

10. PREVIOUSLY APPROVED CONSTRUCTION ACTIVITIES IN THE 100' CITY WETLAND SETBACK:

BUFFER DISTURBANCE: 42,815 SF

0 – 25/40' NO-CUT ZONE:	13,297 SF
25/40 – 50' LIMITED CUT ZONE:	8,726 SF
50 – 100' REMAINDER:	20,792 SF

TREE/SHRUB CLEARING: 7,685 SF

0 – 25/40' NO-CUT ZONE:	903 SF
25/40 – 50' LIMITED CUT ZONE:	1,334 SF
50 – 100' REMAINDER:	5,448 SF

PORTION OF TOTAL CLEARING IN PSNH EASEMENT: 4,916 SF

SURFACE TREATMENT:
IMPERVIOUS AREAS –

19,250 S.F. (+2,842 S.F.)

GREEN SPACE –

22,675 S.F. (–2,842 S.F.)

11. 2018 PROPOSED ACTIVITIES IN WETLANDS BUFFER:

0 – 25/40' NO-CUT ZONE:	375 SF OF PAVEMENT REMOVAL
0 – 100' REMAINDER:	8,135 SF TOTAL

12. ALL WETLAND BUFFER ACTIVITIES ARE WITHIN PREVIOUSLY DISTURBED AREAS.

PLAN REF. #1

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)

CITY OF PORTSMOUTH, PLANNING BOARD

CHAIRMAN DATE

P3980

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – 10/15/18

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: CONDITIONAL USE PERMIT

ISSUE DATE: OCTOBER 15, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	10/15/18

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 3980 PARK-EXP SITE.DWG

SCALE: 22"x34" 1" = 30'
11"x17" 1" = 60'

OWNERS/APPLICANTS:

TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN
DRIVE UP SERVICE BAY AND VEHICLE STORAGE PARKING
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

CONDITIONAL USE PERMITTING PLAN

SHEET NUMBER:

CU-1

EVERSOURCE
ENERGY

Mr. Eric Weintraub
Altus Engineering
133 Court Street
Portsmouth, NH 03801

April 20, 2018

Subject: Conditional Acceptance Letter for Port City Nissan Automobile Inventory within Eversource Transmission Right of Way, City of Portsmouth Map 236, Lot 33, 120 Spaulding Turnpike, Portsmouth, NH

Dear Mr. Weintraub:

This letter is meant to serve as proof of conditional acceptance of the Port City Nissan inventory storage proposal and recognition that Eversource will continue to participate in a dialog with Altus Engineering with the goal of developing a compatible use of the Eversource right of way area. Some weeks ago, Eversource had been contacted by your firm, Altus Engineering, concerning the Port City Nissan Dealership proposal for automobile inventory storage. Since that time there has been a dialog between Eversource and Altus concerning the nature of both the proposed storage area and the potential effect on Eversource transmission rights on the property. Modifications have been made to the proposed storage by Altus per Eversource requests to mitigate resulting obstructions to Eversource operations in the right of way.

Eversource owns a 300-foot-wide easement which partially encumbers the subject property by deed of the United States Government as recorded in the Rockingham County Registry of Deeds on April 8, 1955 as Book 1350, Page 186. This easement reserves for Eversource "a perpetual easement and right of way for the location, construction, operation, maintenance, and patrol of electric power transmission lines with all the fittings and appliances thereto in, on, under, over and across certain strips of land situated in the Town of Newington, City of Portsmouth and Town of Greenland, County of Rockingham, State of New Hampshire..."

Owing to the lack of negative feedback within Eversource operating groups concerning the Port City Nissan request, the discussion of automobile storage will continue with the goal of a right of way compatible configuration of the storage space (and any peripheral features) and the submittal by Altus of a site plan reflecting this compatible configuration. Eversource "official" approval for the request would come in the form of a fully executed and recorded "Joint Use Agreement" (JUA) with the property owner, the JUA containing language designed to obtain and maintain Eversource acceptance of the improvements within the transmission right of way.

I hope this letter serves the intended purpose. Please let me know if you have any questions or comments.

Sincerely,

Russell Maille
Eversource Right of Way Specialist
russell.maille@eversource.com
voice 603 634 2477

CC: Theresa Feuersanger, Eversource

ALTUS
ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

"Green Statement"
Port City Nissan
Assessor's Map 236 Lot 33
120 Spaulding Turnpike
Altus Project P3980
October 2018

Pursuant to Section 2.4.3.1(a) of the Site Plan Review Regulations, Altus Engineering, Inc. (Altus) respectfully submits the following list of the project's "green" components for the expansion of the Port City Nissan automotive dealership at 120 Spaulding Turnpike:

- Runoff from the paved surfaces that currently discharges untreated to the inland wetland system near the building expansion area will be reduced with the construction of 3 small landscape islands. Stone drip edge will be provided in locations where possible to reduce the runoff prior to discharge across the pavement.
- The modest reduction of pavement in the wetland buffer will have a modest positive impact to the heat island effect.
- The building addition is entirely within the wetland buffer. It is also entirely within existing paved surfaces. As such, the reduction of pavement in the buffer and the conversion of pavement to building will provide a positive impact to the wetlands and its buffer.
- Within the newly created green space with shrubs and lawn will improve the aesthetic appeal of the site.
- The peak rate of runoff discharged from the site will be decreased as a result of the development, allowing storm water to be retained, and treated prior to discharging to the wetland buffer.
- The proposed development will have an exterior bicycle rack.
- The proposed vehicle storage parking lot in the Eversource easement and adjacent to the wetland buffer will be constructed utilizing porous pavement which is a LID practice.
- The 2012 site plan application brought the majority of the site up to current design standards by installing LID stormwater management practices for both the existing parking lot and the expanded pavement areas.

  The site has limited development areas due to the constraints of the wetlands, zoning and utility easements. The site is designed to be efficient as possible. The pavement and building areas as consolidated to small portion of the site which allows for a vast open space area which acts as a wildlife corridor and buffers the residential development from the commercial development.

Tel: (603) 433-2335 E-mail: Altus@altus-eng.com

CITY OF PORTSMOUTH
NEW HAMPSHIRE

SITE REVIEW APPLICATION

Building Permit Application Number _____

Case Number _____

Fee _____

Map 236 Lot 33 Zone GB+SRB Wetlands: Inland ✓ Coastal _____ Lot Area 10.22 AC

Date of Approvals (Indicate if Pending)

Conservation Commission PENDING Conditional Use PENDING Board of Adjustment 7-24-18

Historic District Commission NA Subdivision NA Other _____

Street Address 120 Spaulding Turnpike

Description of Project including all use(s) Construction of a vehicle storage parking lot + a drive up service bay for the automotive dealership

Building(s) Footprint _____ Gross Floor Area _____ #of Stories 1

# of Dwelling Units Ø Number of Parking Spaces: Existing _____ Proposed _____

Print Information Below

Property Owner's Name Two - Way Realty, LLC

Street Address 120 Spaulding Turnpike City/Town Ports State NH Zip 03801

603-431-6500 | 603 817-1162 | — | JMFecteau@AOL.com

Telephone # | Cell Phone # | Fax # | Email Address

Print Information Below

Applicant's / Developer's Name SAME

Street Address _____ City/Town _____ State _____ Zip _____

Telephone # | Cell Phone # | Fax # | Email Address

Print Information Below (Include Additional Contact Information on Next Page)

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☒ Surveyor ☐ Other ☐ If other, state relationship _____

Representative's Name Eric Weinrieb - Altus Engineering, Inc.

Street Address 133 Court Street City/Town Ports State NH Zip 03801

603-433-2335 | 603-682-6394 | — | Eric@Altus-Eng.com

Telephone # | Cell Phone # | Fax # | Email Address

I hereby apply for Site Review and acknowledge that I will comply with all the ordinances and any stipulations of the Site Review Committee of the City of Portsmouth in the development and construction of this project.

For two way Realty | Eric Weinrieb | 10/15/18

Owner's Signature | Print Owner's Name | Date

For two Way Realty | Eric Weinrieb | 10/15/18

Applicant's/Developer's Signature | Print Applicant's/Developer's Name | Date

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other ☐ If other, state relationship ________________

Representative's Name______________________________

Street Address______________________ City/Town ____________ State __________ Zip ________

____

Telephone # Cell Phone # Fax # Email Address

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other ☐ If other, state relationship ________________

Representative's Name______________________________

Street Address______________________ City/Town ____________ State __________ Zip ________

____

Telephone # Cell Phone # Fax # Email Address

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other ☐ If other, state relationship ________________

Representative's Name______________________________

Street Address______________________ City/Town ____________ State __________ Zip ________

____

Telephone # Cell Phone # Fax # Email Address

Attachments

The following materials must be submitted to the Planning Department along with the completed Application Form:

- ☐ Site Plan Application Checklist
- ☐ Ten (10) stamped and folded copies of the site plan – four (4) full-size (22" x 34") and six (6) reduced (11" x 17")
- ☐ Digital copy of any plans and/or exhibits (in PDF format)
- ☐ Application Fee
- ☐ Any required State or Federal Permits

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/Applicant: Two-Way Realty, LLC Date Submitted: 10-15-18

Phone Number: 603-431-6500 E-mail: JMfecteau@aol.com

Site Address: 120 Spaulding Turnpike Map: 236 Lot: 33

Zoning District: SRB & GB Lot area: 10.22 AC sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Fully executed and signed Application form. **(2.5.2.3)**	with Cover letter & submittal documents	N/A
☑	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(2.5.2.8)**	in submission package	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	separate document in application package	☐
☑	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	Sheets C-1 & A-1	N/A
☑	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	Cover Sheet & all site plans in title block	N/A
☑	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	Above, cover sheet, Site Plan title block, Application	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	Sheet C-1	N/A
✓	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	Cover sheet	N/A
✓	List of reference plans. **(2.5.3.1G)**	Existing features plan (1 of 1) Site plan, C-1, notes 2 & 3	N/A
✓	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	Demolition notes 11-14, Sheet C-2	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
✓	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
✓	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Required on all plan sheets See Site note 15, C-2	N/A
✓	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
✓	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
✓	Wetlands shall be delineated by a NH certified wetlands scientist. **(2.5.4.1E)**	Michael Cuomo - See letter	N/A
✓	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Required on all plan sheets	N/A
✓	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Required on all plan sheets	N/A
✓	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Source and date of data displayed on the plan. **(2.5.4.2D)**	Required on all plan sheets	N/A
✓	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Required on all plan sheets	N/A
✓	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Sheet C-2 Site notes 14 & 13	N/A
✓	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	Not applicable. landscaping in the Eversource Easement is subject to cutting & removal.	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)		
✓	a. Surveyed plan of site showing existing natural and built features;	Exist. Features Plan	☐
✓	b. Zoning boundaries;	Overall plan	☐
✓	c. Dimensional Regulations;	C-1 - overall plan	☐
✓	d. Wetland delineation, wetland function and value assessment;	in CUP application	☐
✓	e. SFHA, 100-year flood elevation line and BFE data.	Note 3 - EX feat. plan	☐
	2. Buildings and Structures: (2.5.4.3B)		
✓	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	A1 & C-3	☐
✓	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	A2	☐
✓	c. Total Floor Area;	C-1	☐
✓	d. Number of Usable Floors;	Note 20, Sheet C-2	☐
✓	e. Gross floor area by floor and use.	Note 20, Sheet C-2	☐
	3. Access and Circulation: (2.5.4.3C)		
✓	a. Location/width of access ways within site;	C-2	☐
✓	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C-2	☐
✓	c. Location, type, size and design of traffic signing (pavement markings);	C-2	☐
✓	d. Names/layout of existing abutting streets;	C-1	☐
✓	e. Driveway curb cuts for abutting prop. and public roads;	C-1	☐
✓	f. If subdivision; Names of all roads, right of way lines and easements noted;	NA	☐
✓	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	no changes	☐
	4. Parking and Loading: (2.5.4.3D)		
✓	a. Location of off street parking/loading areas, landscaped areas/buffers;	no changes	☐
✓	b. Parking Calculations (# required and the # provided).	Sheet C-1	☐
	5. Water Infrastructure: (2.5.4.3E)		
✓	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	NA	☐
✓	b. Location of wells and monitoring wells (include protective radii).	NA	☐
	6. Sewer Infrastructure: (2.5.4.3F)		
✓	a. Size, type and location of sanitary sewage facilities & Engineering data.	NA	☐
	7. Utilities: (2.5.4.3G)		
✓	a. The size, type and location of all above & below ground utilities;	NA	☐
✓	b. Size type and location of generator pads, transformers and other fixtures.	C-2	☐

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
☑	a. The size, type and location of solid waste facilities.	C-2	☐
	9. Storm water Management: (2.5.4.3I)		
☑	a. The location, elevation and layout of all storm-water drainage.	C-3	☐
	10. Outdoor Lighting: (2.5.4.3J)		
☑	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	Site Lighting Plan, 1 of 1	☐
☑	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Site Note 18, C-2	☐
	12. Landscaping: (2.5.4.3K)		
☑	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	Sheet C-3	☐
☑	**b.** Location of any irrigation system and water source.	NA	☐
	13. Contours and Elevation: (2.5.4.3L)		
☑	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Sheet C-3	☐
	14. Open Space: (2.5.4.3M)		
☑	a. Type, extent and location of all existing/proposed open space.	Zoning Summary, C-1	☐
☑	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	EX. feat. plan	☐
☑	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	C-2	☐
☑	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	NA	☐
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	NA	☐
✓	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Green statement applicationpackage	☐
✓	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	NA	☐
✓	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	Green statement	☐
✓	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	Drainage computations	☐
✓	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**	Application package	☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**	C-1, variances stated on site plans	☐
✓	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	Application package for drainage, NA remaining items	☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	no new utility services required	☐
☑	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	Cover sheet - none required	☐

Applicant's Signature: _____ **Date:** _____

ALTUS
ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

October 15, 2018

Ms. Juliet Walker, Planning Director
City of Portsmouth Municipal Complex
Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Application for Site Plan Review and Conditional Use Permit**
Port City Nissan
Assessor's Map 236, Lot 33
120 Spaulding Turnpike
Altus Project #P3980

Dear Ms. Walker:

On behalf of Two-Way Realty, LLC and Port City Nissan (PCN), Altus Engineering, Inc. (Altus) is pleased to submit an application for Site Plan Review Approval and a Conditional Use Permit for the modest expansion to their facility at 120 Spaulding Turnpike.

In 2012, PCN obtained permits to consolidate the abutting two lots and expand their facility south towards Rockingham Avenue. The work was completed in the spring of 2015. Since then they have continued to operate their business. PCN business operations require additional space to provide improved customer service and provide additional storage of vehicles. In July 2018, the Portsmouth Zoning Board of Adjustment granted PCN zoning relief to expand their facility into the Single Residence B District and the extension of the district.

The parcel is highly constricted by zoning constraints, wetland and wetland buffers and utility easements. As such, we believe that we have designed the site to balance all the constraints while minimizing the impacts to the abutters and the environment.

In September we attended the TAC Workshop and discussed the project. The plans have been advanced to address your comments and meet the Site Plan Review design criteria. We request that we are placed on the October 30th TAC meeting and the November 14th Conservation Commission meeting agendas.

A building permit was previously filed with the Board of Adjustment Application. Enclosed please find the following:

SITE PLAN REVIEW DOCUMENTS

- Site Plan Review Application (10 copies)
- Site Plan Review checklist (10 copies)
- Site Plans (4 full sized, 6 reduced sets)

- Letter of Authorization
- Drainage Study (2 full copies, 8 executive summaries)
- "Green" Statement (10 copies)
- Eversource letter dated April 20, 2018 (10 copies)
- Application fee sitework estimate
- Application fee check in the sum of $2,168.75 ($1,168.75 SPR + $1,000 CUP)

CONDITIONAL USE PERMIT APPLICATION DOCUMENTS (10 copies)

Note: Upon a favorable recommendation from the Conservation Commission 12 additional copies will be provided for the Planning Board

- Application for Conditional Use Permit for Use, Activity or Alteration in a Wetland or Wetland Buffer
- Project plans
  - Overall Plan
  - Conditional Use Permit Plan
- Conditional Use Permit Application Memorandum of Support
- 2012 Wetland Functions and Values Assessment by GZA
- October 2018 Wetlands Report by Michael Cuomo
- Drainage Study Executive Summary

CD with pdf copies of the full application package

We look forward to presenting the application to both the Conservation Commission and the Technical Advisory Committee. Please call or email me should you have any questions or need any additional information.

Sincerely,

ALTUS ENGINEERING, INC.

Eric D. Weinrieb, PE
President

wde/3980 City SPR -CUP cvr ltr 10-15-18

Enclosure

Ecopy: Two Way Realty, LLC

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

PORT CITY NISSAN
PARKING LOT EXPANSION

120 Spaulding Turnpike
Portsmouth, NH

Application Fee Estimate - Site Work

DATE: 15-Oct-18
PROJECT: 3980

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
CLEARING AND GRUBBING				
TREE AND VEGETATION REMOVAL	0.5	AC	$4,000.00	$2,000.00
DEMOLITION				
PAVEMENT REMOVAL, TEMPORARY ACCESS PROTECTION, MISC	1	LS	$6,000.00	$6,000
SEDIMENT AND EROSION CONTROL				
TEMPORARY EROSION CONTROL/SWPPP	1	LS	$2,000.00	$2,000
AGGREGATE BASE COURSES				
CUTS/FILLS AND IMPORTING MATERIALS	1	LS	$10,000.00	$10,000
HOT BITUMINOUS PAVEMENT				
POROUS PAVEMENT	160	TON	$120.00	$19,200
PAVEMENT PATCH	1	LS	$10,000.00	$10,000
STRIPING AND SIGNAGE				
STRIPING	1	LS	$800.00	$800
TRAFFIC SIGNAGE	1	LS	$1,000.00	$1,000
LANDSCAPING				
LANDSCAPING	1	LS	$2,000.00	$2,000
LOAM AND SEED - TURF ESTABLISHMENT	0.20	AC	$10,000.00	$2,000
LIGHTING				
POLES, POLE BASES AND FIXTURES INCLUDING CONDUIT	8	EA	$3,500.00	$28,000
FENCING				
BOULDER PROTECTION	1	LS	$2,000.00	$2,000
GUARD RAIL	150	LF	$25.00	$3,750
AS BUILT PLANS	1	LS	$5,000.00	$5,000
SUBTOTAL				**$93,750**

TOTAL: $93,750

Tel: (603) 433-2335 E-mail: Altus@altus-eng.com

DRAINAGE ANALYSIS

FOR

Port City Nissan
Site Expansion

120 Spaulding Turnpike
Portsmouth, NH

Tax Map 236 Lot 33

October 15, 2018

Prepared For:

Two-Way Realty, LLC
120 Spaulding Turnpike
Portsmouth, NH 03801

Prepared By:

ALTUS ENGINEERING, INC.
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335

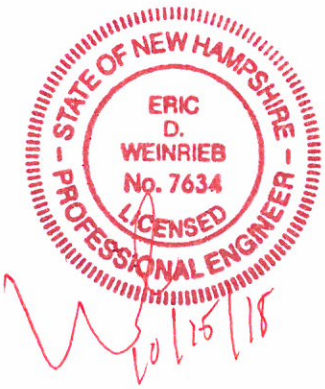
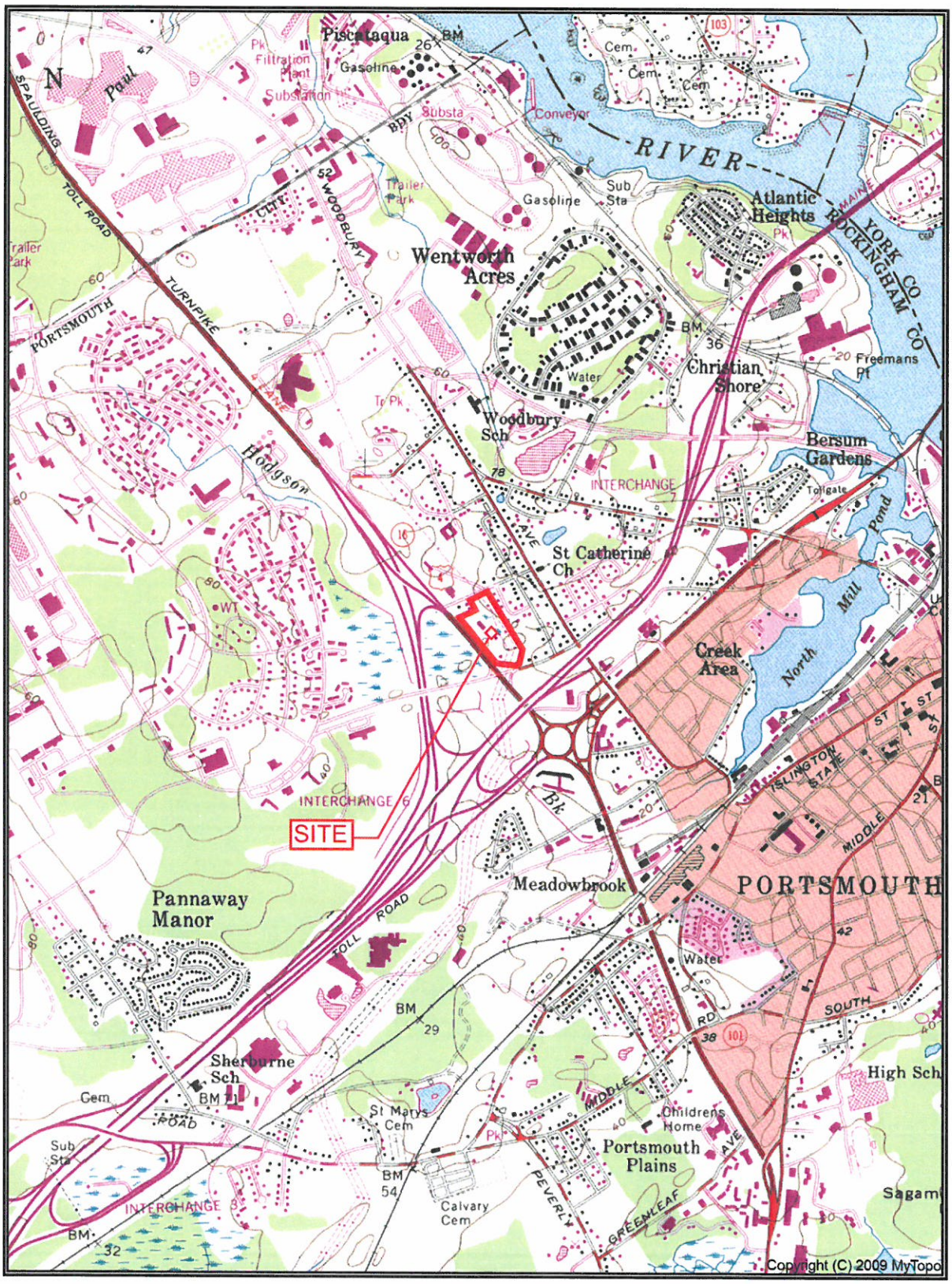


TABLE OF CONTENTS



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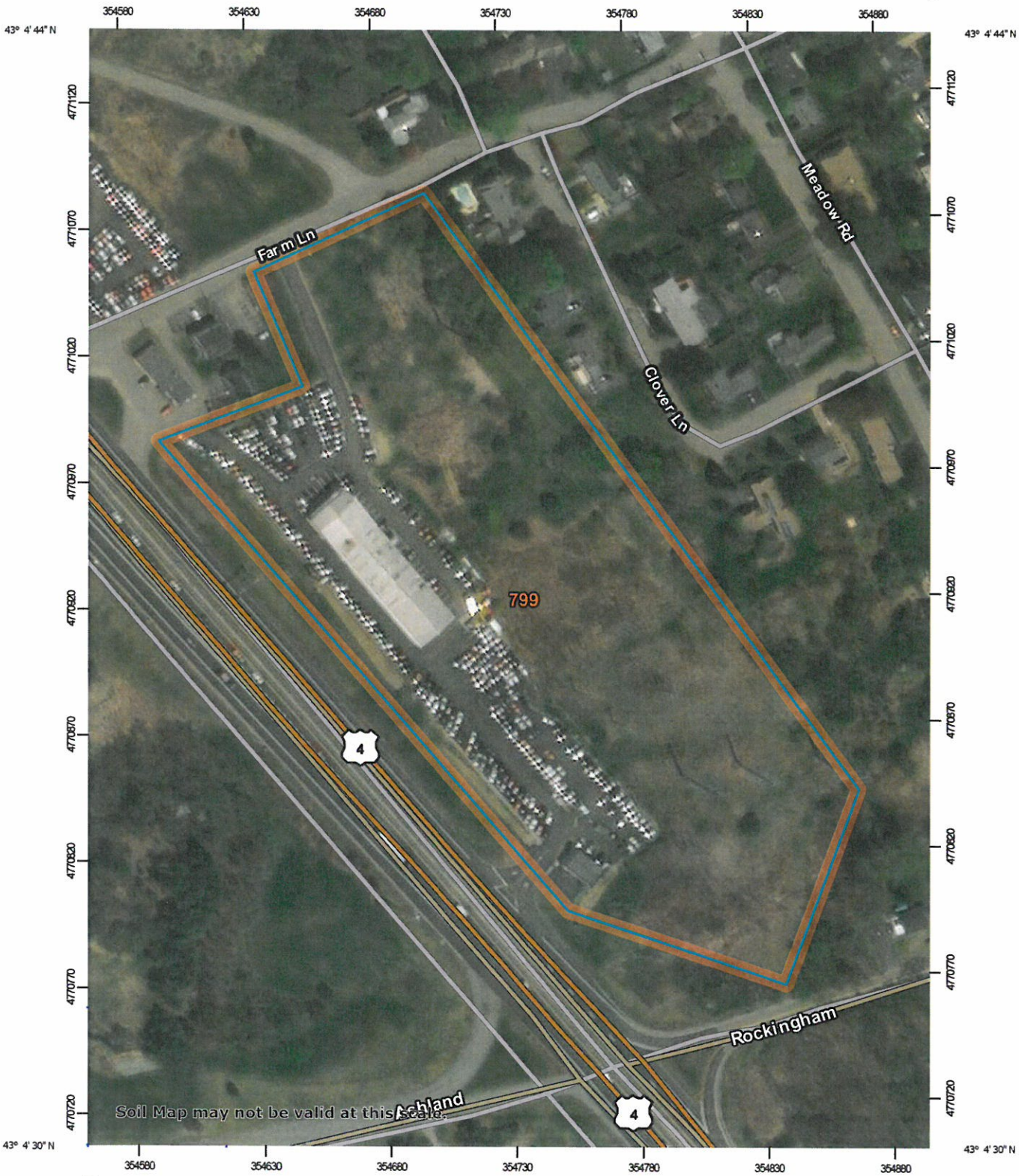
FEET

Soil Map—Rockingham County, New Hampshire
(PORT CITY NISSAN)



PROJECT DESCRIPTION

Site Overview

120 Spaulding Turnpike is proposing to expand their existing operation through construction of a new service bay and additional on site parking. The new service bay will be constructed in an area where there is currently paved parking stalls, thus no there will not be an increase increasing in impervious area. There will actually be a slight decrease of 1,285 SF of impervious surface area due to the construction of three landscaped islands and the removal of 375 SF of pavement. The proposed parking lot expansion area will be 6,200 sf in size and will be constructed of porous pavement to minimize impacts to the adjacent wetlands.

The existing site was permitted in 2012 and includes three raingardens in combination with both closed and open drainage systems. The primary components of the 2012 improvements were the demolition of the abandoned residential/retail building, the construction of a new paved parking and display area, the conversion of the abandoned bookstore to an auto reconditioning facility, the reconstruction of the shared access drive to the Spaulding Turnpike, associated utilities and extensive stormwater infrastructure designed to treat all new paved areas as well as a significant portion of the existing untreated dealership site.

The three raingardens provide treatment prior to discharging surface flows off-site. The existing site drains to two large NHDOT cross culverts under the Spaulding Turnpike to the west. These culverts in turn drain to ditches tributary to the Hodgson Brook. In combination, the existing system provides treatment for the majority of site's impervious areas and allows for decreased peak rates of runoff as a result of the raingardens on site.

The existing effective impervious area is 24.0% and will be decreased to 23.7% as a result of the proposed site improvements.

Site Soils

The NRCS indicates that the subject property consists of several primary soil classifications:

799 – Urban Land-Canton Complex, 3 to 15% slopes, Hydrologic Soil Group (HSG) B

Given the presence of poorly-drained soils within the site and its contributing watershed areas, uplands were treated as HSG B while wetlands were designated HSG C for the purposes of this analysis.

Proposed Site Design

The existing site was permitted in 2012 and includes both open and closed drainage systems to collect the majority of the stormwater from the parking and display areas and convey it to three raingardens for treatment prior to discharging off-site.

Raingarden #1, located to the south of the service building handles runoff from a portion of the parking area behind the building as well as the small parking and accessway in front of it. This raingarden directs its runoff to an existing pipe draining from a catch basin at the existing entrance to the abutting parcels. Two deep sump catch basins at the reconstructed driveway also direct runoff to this pipe.

Raingarden #2, this pond collects some of its incoming runoff in a tributary swale that acts as a sediment forebay.

Raingarden #3, located above and draining to Raingarden #2, serves the majority of the paved parking and display areas. Some runoff is directed to this facility by way of two depressed landscape islands equipped with deep sump catch basins with raised rims that provide additional pre-treatment to some areas of the parking lot.

In combination, the system provides excellent treatment for the site's new impervious areas, provides treatment of existing paved areas that currently have none, and allows for decreased peak rates of runoff for all analyzed storms.

The proposed site improvements include 6,200 SF of new porous pavement for the parking lot expansion. The improvements at the new service bay will reduce the effective impervious by 1,285 SF Therefore, the net impact of the proposed improvements is a reduction in the stormwater runoff.

The Following Changes were made to the existing drainage model permitted in 2012:

1. Rainfall Intensities were updated to current NE Climate Center Extreme Precipitation data and a 15% increase was added as a Seacoast Community, per AOT guidelines.
2. 6,200 SF Porous Pavement Area was added as Drainage Area (DA) 31S.
3. 4,350 SF of brush was moved from DA 2S to DA 4S based on grading revisions.
4. 290 SF of brush was moved from DA 2S to DA 21S based on grading revisions.
5. 1,285 SF of impervious from DA 2S was converted to grass for new landscaping areas and the removal of 375 SF of pavement.

Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the "*New Hampshire Stormwater Manual Volumes 1 through 3*" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

SUMMARY

Drainage Analysis

The modeled subcatchments and points of analysis are delineated on the accompanying "Existing Conditions Watershed Plan" which illustrates the existing site conditions. Two point of analysis (POA) were identified for comparison of pre-development and post-development conditions. Reach #100 is the existing NHDOT cross culvert in the northwest corner of the site, and Reach #200 is a similar cross culvert at the south west corner of the site.

The "Proposed Conditions Watershed Plan" illustrates the proposed stormwater management system. The original subcatchments have been divided into additional areas to emulate the proposed grading and site improvements for this project. The post-development conditions were analyzed at the same primary discharge points examined in the pre-development modeling.

Drainage Analysis

A complete summary of the drainage model is included later in this report. The following table compares pre- and post-development peak rates of runoff for all analyzed storm events (all rates are rounded to the nearest tenth to reflect the accuracy of the modeling techniques used):

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

	2-Year Storm (3.68 inch)	10-Year Storm (5.59 inch)	25-Year Storm (7.08 inch)	50-Year Storm (8.49 inch)
Reach #100 NW NHDOT Culvert				
Pre	10.16	26.46	37.29	48.41
Post	9.98	26.00	37.11	47.56
Net Change	**-0.18**	**-0.46**	**-0.51**	**-0.85**
Reach #200 SW NHDOT Culvert				
Pre	11.75	29.38	42.87	52.59
Post	11.83	29.56	43.09	52.79
Net Change	**0.08**	**0.18**	**0.22**	**0.20**
TOTAL CHANGE	**-0.10**	**-0.28**	**-0.29**	**-0.65**

NOTE: Rainfall Intensities obtained from Northeast Regional Climate Center's Extreme Precipitation Tables and includes a 15% increase for NH Seacoast communities, per NHDES requirements.

As the above table demonstrates, the proposed peak rates of runoff will match or be decreased from the existing conditions of the site at the analysis points for all analyzed storm events.

CONCLUSION

This proposed expansion of the project site located east of the Spaulding Turnpike in Portsmouth, NH will have minimal adverse effect on abutting properties and infrastructure as a result of stormwater runoff or siltation. Post-construction peak rates of runoff from the site will be lower than the existing conditions for all analyzed storm events. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the construction of a drainage system consisting deep-sump catch basins, depressed landscape islands, a sediment forebay, three raingardens with stormwater detention capability and the use of temporary and permanent Best Management Practices for sediment and erosion control. Large areas of the site that currently receive no stormwater treatment will be conveyed to one of the three raingardens prior to discharging to adjacent wetland systems. Overall, the project will be highly beneficial to these wetlands and the downstream Hodgson Brook.

CALCULATION METHODS

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25 and 50 Year - 24-hour storm events using rainfall data provided by NH Department of Environmental Services.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

APPENDIX A:

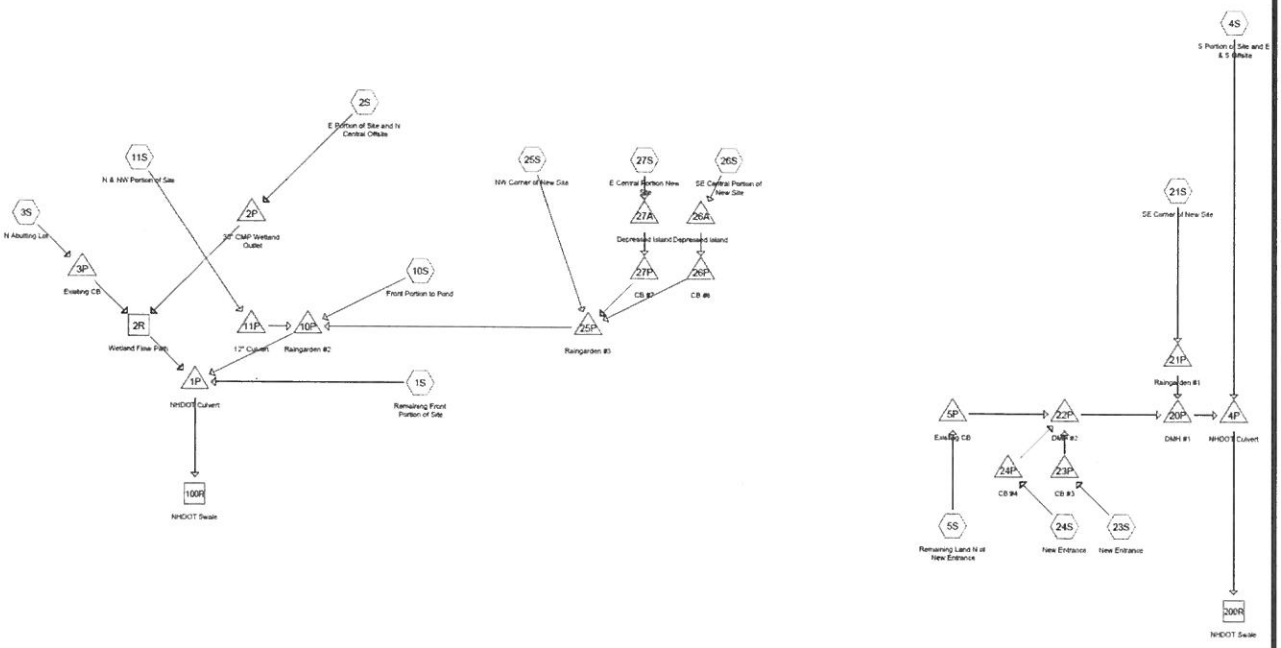
DRAINAGE ANALYSIS

PRE-DEVELOPMENT
&
POST-DEVELOPMENT

PRE-DEVELOPMENT

COMPUTATIONS

Routing Diagram
Area and Soil Listing
2-Year 24-Hour Summary
10-Year, 24-Hour Summary
25-Year, 24-Hour Complete
50-Year, 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for 3980-Portsmouth-Spaulding-Nissan-PRE-2018-15 percen

Prepared by Altus Engineering, Inc., Printed 10/11/2018

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
536,260	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S)
18,403	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S)
160,129	48	Brush, Good, HSG B (2S, 4S, 11S)
83,941	65	Brush, Good, HSG C (2S, 4S)
326,807	98	Impervious (1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S)
134,268	55	Woods, Good, HSG B (2S, 4S)
3,135	70	Woods, Good, HSG C (2S, 4S)
1,262,943	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
830,657	HSG B	1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S
105,479	HSG C	1S, 2S, 4S
0	HSG D	
326,807	Other	1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S
1,262,943		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Nun
0	536,260	18,403	0	0	554,663	>75% Grass cover, Good	
0	160,129	83,941	0	0	244,070	Brush, Good	
0	0	0	0	326,807	326,807	Impervious	
0	134,268	3,135	0	0	137,403	Woods, Good	
0	**830,657**	**105,479**	**0**	**326,807**	**1,262,943**	**TOTAL AREA**	

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=0.05"
Flow Length=515' Tc=5.2 min CN=77 Runoff=0.02 cfs 266 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=392,250 sf 20.91% Impervious Runoff Depth=0.00"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=0.00 cfs 0 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=0.00"
Flow Length=230' Tc=5.0 min CN=70 Runoff=0.00 cfs 8 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=657,104 sf 19.97% Impervious Runoff Depth=0.00"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=0.00 cfs 2 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=0.01"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.00 cfs 4 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=0.20"
Flow Length=127' Tc=5.0 min CN=86 Runoff=0.10 cfs 355 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=0.10"
Flow Length=563' Tc=9.9 min CN=81 Runoff=0.05 cfs 396 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=9,944 sf 54.58% Impervious Runoff Depth=0.10"
Flow Length=97' Tc=5.0 min CN=81 Runoff=0.01 cfs 81 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=0.56"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.05 cfs 163 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=0.71"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.05 cfs 163 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=0.32"
Flow Length=149' Tc=5.0 min CN=90 Runoff=0.23 cfs 741 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=0.45"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.05 cfs 148 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=0.56"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.07 cfs 198 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.00' Max Vel=0.65 fps Inflow=0.00 cfs 8 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=0.00 cfs 8 cf

Reach 100R: NHDOT Swale Inflow=0.08 cfs 1,428 cf
Outflow=0.08 cfs 1,428 cf

Reach 200R: NHDOT Swale Inflow=0.10 cfs 413 cf
Outflow=0.10 cfs 413 cf

Pond 1P: NHDOT Culvert Peak Elev=21.06' Storage=2 cf Inflow=0.08 cfs 1,428 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=0.08 cfs 1,428 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=26.60' Storage=0 cf Inflow=0.00 cfs 0 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=0.00 cfs 0 cf

Pond 3P: Existing CB Peak Elev=28.52' Storage=0 cf Inflow=0.00 cfs 8 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=0.00 cfs 8 cf

Pond 4P: NHDOT Culvert Peak Elev=25.45' Storage=9 cf Inflow=0.11 cfs 413 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=0.10 cfs 413 cf

Pond 5P: Existing CB Peak Elev=27.91' Storage=0 cf Inflow=0.00 cfs 4 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.00 cfs 4 cf

Pond 10P: Raingarden #2 Peak Elev=24.89' Storage=694 cf Inflow=0.27 cfs 1,754 cf
Outflow=0.07 cfs 1,154 cf

Pond 11P: 12" Culvert Peak Elev=27.11' Storage=27 cf Inflow=0.05 cfs 396 cf
Outflow=0.05 cfs 396 cf

Pond 20P: DMH #1 Peak Elev=27.02' Storage=2 cf Inflow=0.11 cfs 410 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=0.11 cfs 410 cf

Pond 21P: Raingarden #1 Peak Elev=27.29' Storage=13 cf Inflow=0.01 cfs 81 cf
Outflow=0.00 cfs 80 cf

Pond 22P: DMH #2 Peak Elev=27.56' Storage=3 cf Inflow=0.11 cfs 330 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=0.11 cfs 330 cf

Pond 23P: CB #3 Peak Elev=27.70' Storage=2 cf Inflow=0.05 cfs 163 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.05 cfs 163 cf

Pond 24P: CB #4 Peak Elev=27.85' Storage=1 cf Inflow=0.05 cfs 163 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.05 cfs 163 cf

Pond 25P: Raingarden #3 Peak Elev=27.52' Storage=168 cf Inflow=0.34 cfs 1,008 cf
Outflow=0.19 cfs 1,003 cf

Pond 26A: Depressed Island Peak Elev=31.76' Storage=38 cf Inflow=0.05 cfs 148 cf
Outflow=0.05 cfs 111 cf

Pond 26P: CB #6 Peak Elev=28.87' Storage=2 cf Inflow=0.05 cfs 111 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.05 cfs 111 cf

Pond 27A: Depressed Island Peak Elev=32.02' Storage=43 cf Inflow=0.07 cfs 198 cf
Outflow=0.07 cfs 157 cf

Pond 27P: CB #7 Peak Elev=28.90' Storage=2 cf Inflow=0.07 cfs 157 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.07 cfs 157 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 2,526 cf Average Runoff Depth = 0.02"
74.12% Pervious = 936,136 sf 25.88% Impervious = 326,807 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 0.02 cfs @ 12.42 hrs, Volume= 266 cf, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	82,017	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	93,935	48	Brush, Good, HSG B
	392,250	66	Weighted Average
	310,233		79.09% Pervious Area
	82,017		20.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 0.00 cfs @ 21.35 hrs, Volume= 8 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 0.00 cfs @ 24.05 hrs, Volume= 2 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	58,069	48	Brush, Good, HSG B
	657,104	67	Weighted Average
	525,859		80.03% Pervious Area
	131,245		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.00 cfs @ 15.49 hrs, Volume= 4 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 355 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 0.05 cfs @ 12.33 hrs, Volume= 396 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 0.01 cfs @ 12.14 hrs, Volume= 81 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,517	61	>75% Grass cover, Good, HSG B
	9,944	81	Weighted Average
	4,517		45.42% Pervious Area
	5,427		54.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 163 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 163 cf, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 741 cf, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 148 cf, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 198 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 412,465 sf, 21.08% Impervious, Inflow Depth > 0.00" for 1" storm event
Inflow = 0.00 cfs @ 21.37 hrs, Volume= 8 cf
Outflow = 0.00 cfs @ 21.40 hrs, Volume= 8 cf, Atten= 0%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 0.65 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 2.4 min

Peak Storage= 0 cf @ 21.40 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth > 0.03" for 1" storm event
Inflow = 0.08 cfs @ 13.45 hrs, Volume= 1,428 cf
Outflow = 0.08 cfs @ 13.45 hrs, Volume= 1,428 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 677,599 sf, 21.23% Impervious, Inflow Depth > 0.01" for 1" storm event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 413 cf
Outflow = 0.10 cfs @ 12.11 hrs, Volume= 413 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth > 0.03" for 1" storm event
Inflow = 0.08 cfs @ 13.45 hrs, Volume= 1,428 cf
Outflow = 0.08 cfs @ 13.45 hrs, Volume= 1,428 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.08 cfs @ 13.45 hrs, Volume= 1,428 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 21.06' @ 13.45 hrs Surf.Area= 21 sf Storage= 2 cf

Plug-Flow detention time= 0.5 min calculated for 1,427 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,029.7 - 1,029.3)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.08 cfs @ 13.45 hrs HW=21.06' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.08 cfs @ 1.59 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 392,250 sf, 20.91% Impervious, Inflow Depth = 0.00" for 1" storm event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 26.60' @ 1.00 hrs Surf.Area= 10 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	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=26.60' TW=25.10' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 3P: Existing CB

Inflow Area =	20,215 sf,	24.32% Impervious,	Inflow Depth =	0.00"	for 1" storm event
Inflow =	0.00 cfs @	21.35 hrs, Volume=	8 cf		
Outflow =	0.00 cfs @	21.37 hrs, Volume=	8 cf,	Atten= 0%,	Lag= 1.3 min
Primary =	0.00 cfs @	21.37 hrs, Volume=	8 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.52' @ 21.37 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 7.3 min calculated for 8 cf (100% of inflow)
Center-of-Mass det. time= 7.3 min (1,209.9 - 1,202.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 21.37 hrs HW=28.52' TW=25.10' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.00 cfs @ 0.32 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area =	677,599 sf,	21.23% Impervious,	Inflow Depth >	0.01"	for 1" storm event
Inflow =	0.11 cfs @	12.09 hrs, Volume=	413 cf		
Outflow =	0.10 cfs @	12.11 hrs, Volume=	413 cf,	Atten= 4%,	Lag= 1.3 min
Primary =	0.10 cfs @	12.11 hrs, Volume=	413 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 25.45' @ 12.11 hrs Surf.Area= 141 sf Storage= 9 cf

Plug-Flow detention time= 2.3 min calculated for 412 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (862.3 - 860.1)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.10 cfs @ 12.11 hrs HW=25.45' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.10 cfs @ 1.63 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 0.01" for 1" storm event
Inflow = 0.00 cfs @ 15.49 hrs, Volume= 4 cf
Outflow = 0.00 cfs @ 15.58 hrs, Volume= 4 cf, Atten= 0%, Lag= 5.6 min
Primary = 0.00 cfs @ 15.58 hrs, Volume= 4 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.91' @ 15.57 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 13.2 min calculated for 4 cf (100% of inflow)
Center-of-Mass det. time= 12.8 min (1,132.1 - 1,119.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 15.58 hrs HW=27.91' TW=27.43' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.00 cfs @ 0.26 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 106,001 sf, 68.28% Impervious, Inflow Depth > 0.20" for 1" storm event
Inflow = 0.27 cfs @ 12.27 hrs, Volume= 1,754 cf
Outflow = 0.07 cfs @ 13.45 hrs, Volume= 1,154 cf, Atten= 75%, Lag= 70.8 min
Primary = 0.07 cfs @ 13.45 hrs, Volume= 1,154 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 24.89' @ 13.45 hrs Surf.Area= 1,959 sf Storage= 694 cf

Plug-Flow detention time= 250.2 min calculated for 1,153 cf (66% of inflow)
Center-of-Mass det. time= 124.3 min (1,036.1 - 911.8)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 13.45 hrs HW=24.89' TW=21.06' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.07 cfs @ 1.39 fps)
  ├─**2=Orifice/Grate** (Passes 0.07 cfs of 0.35 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 0.10" for 1" storm event
Inflow = 0.05 cfs @ 12.33 hrs, Volume= 396 cf
Outflow = 0.05 cfs @ 12.46 hrs, Volume= 396 cf, Atten= 10%, Lag= 7.8 min
Primary = 0.05 cfs @ 12.46 hrs, Volume= 396 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.11' @ 12.46 hrs Surf.Area= 269 sf Storage= 27 cf

Plug-Flow detention time= 21.6 min calculated for 396 cf (100% of inflow)
Center-of-Mass det. time= 20.5 min (963.0 - 942.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=0.05 cfs @ 12.46 hrs HW=27.11' TW=24.53' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.05 cfs @ 1.50 fps)
└—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 20P: DMH #1

Inflow Area = 20,495 sf, 61.50% Impervious, Inflow Depth > 0.24" for 1" storm event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 410 cf
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 410 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.11 cfs @ 12.09 hrs, Volume= 410 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.02' @ 12.09 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 1.3 min calculated for 410 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (856.7 - 855.5)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=27.02' TW=25.45' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.11 cfs @ 1.88 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 9,944 sf, 54.58% Impervious, Inflow Depth = 0.10" for 1" storm event
Inflow = 0.01 cfs @ 12.14 hrs, Volume= 81 cf
Outflow = 0.00 cfs @ 12.59 hrs, Volume= 80 cf, Atten= 55%, Lag= 27.5 min
Primary = 0.00 cfs @ 12.59 hrs, Volume= 80 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.29' @ 12.59 hrs Surf.Area= 805 sf Storage= 13 cf

Plug-Flow detention time= 69.8 min calculated for 80 cf (99% of inflow)
Center-of-Mass det. time= 62.6 min (1,000.5 - 937.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 12.59 hrs HW=27.29' TW=26.93' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.00 cfs of 0.01 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.68 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 0.38" for 1" storm event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 330 cf
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 330 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.11 cfs @ 12.08 hrs, Volume= 330 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.56' @ 12.08 hrs Surf.Area= 20 sf Storage= 3 cf

Plug-Flow detention time= 2.1 min calculated for 330 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (820.4 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.08 hrs HW=27.56' TW=27.02' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.11 cfs @ 1.86 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 0.56" for 1" storm event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 163 cf
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 163 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 163 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.70' @ 12.08 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 1.8 min calculated for 163 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (824.9 - 823.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=27.70' TW=27.56' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.05 cfs @ 1.55 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 0.71" for 1" storm event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 163 cf
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 163 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 163 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.85' @ 12.08 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 1.9 min calculated for 163 cf (100% of inflow)
Center-of-Mass det. time= 1.9 min (803.4 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=27.85' TW=27.56' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.05 cfs @ 1.65 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 35,900 sf, 80.94% Impervious, Inflow Depth = 0.34" for 1" storm event
Inflow = 0.34 cfs @ 12.10 hrs, Volume= 1,008 cf
Outflow = 0.19 cfs @ 12.22 hrs, Volume= 1,003 cf, Atten= 43%, Lag= 6.9 min
Primary = 0.19 cfs @ 12.22 hrs, Volume= 1,003 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.52' @ 12.22 hrs Surf.Area= 1,557 sf Storage= 168 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 36.3 min calculated for 1,003 cf (99% of inflow)
Center-of-Mass det. time= 33.7 min (898.9 - 865.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 12.22 hrs HW=27.52' TW=24.24' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.19 cfs of 0.32 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.77 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 0.45" for 1" storm event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 148 cf
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 111 cf, Atten= 3%, Lag= 1.5 min
Primary = 0.05 cfs @ 12.10 hrs, Volume= 111 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.76' @ 12.10 hrs Surf.Area= 89 sf Storage= 38 cf

Plug-Flow detention time= 136.3 min calculated for 111 cf (75% of inflow)
Center-of-Mass det. time= 46.3 min (886.3 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 12.10 hrs HW=31.76' TW=28.86' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.05 cfs @ 0.40 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 0.34" for 1" storm event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 111 cf
Outflow = 0.05 cfs @ 12.11 hrs, Volume= 111 cf, Atten= 1%, Lag= 0.6 min
Primary = 0.05 cfs @ 12.11 hrs, Volume= 111 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.87' @ 12.11 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 2.2 min calculated for 111 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (888.4 - 886.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.11 hrs HW=28.87' TW=27.48' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.05 cfs @ 1.39 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 0.56" for 1" storm event
Inflow = 0.07 cfs @ 12.07 hrs, Volume= 198 cf
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 157 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 157 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.02' @ 12.08 hrs Surf.Area= 104 sf Storage= 43 cf

Plug-Flow detention time= 118.8 min calculated for 157 cf (79% of inflow)
Center-of-Mass det. time= 39.3 min (862.4 - 823.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=32.02' TW=28.90' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.07 cfs @ 0.45 fps)

Summary for Pond 27P: CB #7

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 0.45" for 1" storm event
Inflow = 0.07 cfs @ 12.08 hrs, Volume= 157 cf
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 157 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 157 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.90' @ 12.08 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 2.0 min calculated for 157 cf (100% of inflow)
Center-of-Mass det. time= 1.9 min (864.3 - 862.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=28.90' TW=27.44' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.07 cfs @ 1.36 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=1.57"
Flow Length=515' Tc=5.2 min CN=77 Runoff=2.86 cfs 8,725 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=392,250 sf 20.91% Impervious Runoff Depth=0.90"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=6.58 cfs 29,418 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=1.12"
Flow Length=230' Tc=5.0 min CN=70 Runoff=0.59 cfs 1,888 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=657,104 sf 19.97% Impervious Runoff Depth=0.95"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=11.26 cfs 52,188 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=1.24"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.14 cfs 445 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=2.26"
Flow Length=127' Tc=5.0 min CN=86 Runoff=1.35 cfs 4,056 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=1.86"
Flow Length=563' Tc=9.9 min CN=81 Runoff=2.12 cfs 7,507 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=9,944 sf 54.58% Impervious Runoff Depth=1.86"
Flow Length=97' Tc=5.0 min CN=81 Runoff=0.51 cfs 1,538 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=3.12"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.28 cfs 903 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=3.33"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.23 cfs 768 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=2.62"
Flow Length=149' Tc=5.0 min CN=90 Runoff=1.99 cfs 6,052 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=2.91"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.31 cfs 953 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=3.12"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.34 cfs 1,096 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.21' Max Vel=2.97 fps Inflow=6.93 cfs 31,306 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=6.92 cfs 31,306 cf

Reach 100R: NHDOT Swale Inflow=10.16 cfs 59,009 cf
Outflow=10.16 cfs 59,009 cf

Reach 200R: NHDOT Swale Inflow=11.75 cfs 55,841 cf
Outflow=11.75 cfs 55,841 cf

Pond 1P: NHDOT Culvert Peak Elev=22.18' Storage=93 cf Inflow=10.16 cfs 59,009 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=10.16 cfs 59,009 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=27.96' Storage=32 cf Inflow=6.58 cfs 29,418 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=6.58 cfs 29,418 cf

Pond 3P: Existing CB Peak Elev=28.97' Storage=6 cf Inflow=0.59 cfs 1,888 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=0.59 cfs 1,888 cf

Pond 4P: NHDOT Culvert Peak Elev=26.65' Storage=947 cf Inflow=11.90 cfs 55,841 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=11.75 cfs 55,841 cf

Pond 5P: Existing CB Peak Elev=28.13' Storage=3 cf Inflow=0.14 cfs 445 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.14 cfs 445 cf

Pond 10P: Raingarden #2 Peak Elev=28.06' Storage=4,176 cf Inflow=4.43 cfs 19,578 cf
Outflow=2.09 cfs 18,977 cf

Pond 11P: 12" Culvert Peak Elev=28.10' Storage=471 cf Inflow=2.12 cfs 7,507 cf
Outflow=1.89 cfs 7,506 cf

Pond 20P: DMH #1 Peak Elev=27.40' Storage=7 cf Inflow=1.04 cfs 3,653 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=1.04 cfs 3,653 cf

Pond 21P: Raingarden #1 Peak Elev=27.70' Storage=145 cf Inflow=0.51 cfs 1,538 cf
Outflow=0.43 cfs 1,536 cf

Pond 22P: DMH #2 Peak Elev=27.85' Storage=9 cf Inflow=0.65 cfs 2,117 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=0.65 cfs 2,117 cf

Pond 23P: CB #3 Peak Elev=27.94' Storage=5 cf Inflow=0.28 cfs 903 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.28 cfs 903 cf

Pond 24P: CB #4 Peak Elev=28.02' Storage=4 cf Inflow=0.23 cfs 768 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.23 cfs 768 cf

Pond 25P: Raingarden #3 Peak Elev=30.11' Storage=1,081 cf Inflow=2.62 cfs 8,022 cf
Outflow=1.53 cfs 8,017 cf

Pond 26A: Depressed Island Peak Elev=31.80' Storage=41 cf Inflow=0.31 cfs 953 cf
Outflow=0.31 cfs 916 cf

Pond 26P: CB #6 Peak Elev=30.12' Storage=18 cf Inflow=0.31 cfs 916 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.30 cfs 916 cf

Pond 27A: Depressed Island Peak Elev=32.06' Storage=47 cf Inflow=0.34 cfs 1,096 cf
Outflow=0.34 cfs 1,054 cf

Pond 27P: CB #7 Peak Elev=30.12' Storage=18 cf Inflow=0.34 cfs 1,054 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.34 cfs 1,054 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 115,537 cf Average Runoff Depth = 1.10"
74.12% Pervious = 936,136 sf 25.88% Impervious = 326,807 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 2.86 cfs @ 12.08 hrs, Volume= 8,725 cf, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 6.58 cfs @ 12.20 hrs, Volume= 29,418 cf, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	82,017	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	93,935	48	Brush, Good, HSG B
	392,250	66	Weighted Average
	310,233		79.09% Pervious Area
	82,017		20.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,888 cf, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 11.26 cfs @ 12.23 hrs, Volume= 52,188 cf, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	58,069	48	Brush, Good, HSG B
	657,104	67	Weighted Average
	525,859		80.03% Pervious Area
	131,245		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 445 cf, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 1.35 cfs @ 12.07 hrs, Volume= 4,056 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 2.12 cfs @ 12.14 hrs, Volume= 7,507 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 0.51 cfs @ 12.08 hrs, Volume= 1,538 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,517	61	>75% Grass cover, Good, HSG B
	9,944	81	Weighted Average
	4,517		45.42% Pervious Area
	5,427		54.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 903 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 768 cf, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 1.99 cfs @ 12.07 hrs, Volume= 6,052 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 953 cf, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 1,096 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

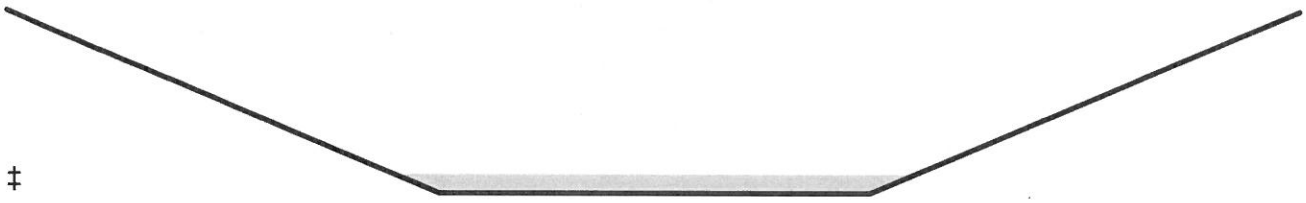
Summary for Reach 2R: Wetland Flow Path

Inflow Area = 412,465 sf, 21.08% Impervious, Inflow Depth = 0.91" for 2-yr storm event
Inflow = 6.93 cfs @ 12.20 hrs, Volume= 31,306 cf
Outflow = 6.92 cfs @ 12.21 hrs, Volume= 31,306 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 2.97 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.5 min

Peak Storage= 219 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'



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Summary for Reach 100R: NHDOT Swale

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 1.21" for 2-yr storm event
Inflow = 10.16 cfs @ 12.19 hrs, Volume= 59,009 cf
Outflow = 10.16 cfs @ 12.19 hrs, Volume= 59,009 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 677,599 sf, 21.23% Impervious, Inflow Depth = 0.99" for 2-yr storm event
Inflow = 11.75 cfs @ 12.25 hrs, Volume= 55,841 cf
Outflow = 11.75 cfs @ 12.25 hrs, Volume= 55,841 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 1.21" for 2-yr storm event
Inflow = 10.16 cfs @ 12.19 hrs, Volume= 59,009 cf
Outflow = 10.16 cfs @ 12.19 hrs, Volume= 59,009 cf, Atten= 0%, Lag= 0.2 min
Primary = 10.16 cfs @ 12.19 hrs, Volume= 59,009 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 22.18' @ 12.19 hrs Surf.Area= 142 sf Storage= 93 cf

Plug-Flow detention time= 0.2 min calculated for 58,988 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (869.4 - 869.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=10.16 cfs @ 12.19 hrs HW=22.18' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 10.16 cfs @ 3.76 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area =	392,250 sf,	20.91% Impervious,	Inflow Depth =	0.90" for 2-yr storm event
Inflow =	6.58 cfs @	12.20 hrs, Volume=	29,418 cf	
Outflow =	6.58 cfs @	12.20 hrs, Volume=	29,418 cf,	Atten= 0%, Lag= 0.1 min
Primary =	6.58 cfs @	12.20 hrs, Volume=	29,418 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.96' @ 12.20 hrs Surf.Area= 37 sf Storage= 32 cf

Plug-Flow detention time= 0.1 min calculated for 29,408 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (885.8 - 885.6)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.58 cfs @ 12.20 hrs HW=27.96' TW=25.31' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 6.58 cfs @ 3.49 fps)

Summary for Pond 3P: Existing CB

Inflow Area =	20,215 sf,	24.32% Impervious,	Inflow Depth =	1.12"	for 2-yr storm event
Inflow =	0.59 cfs @	12.08 hrs, Volume=	1,888 cf		
Outflow =	0.59 cfs @	12.08 hrs, Volume=	1,888 cf,	Atten= 0%,	Lag= 0.1 min
Primary =	0.59 cfs @	12.08 hrs, Volume=	1,888 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.97' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf

Plug-Flow detention time= 0.6 min calculated for 1,888 cf (100% of inflow)
Center-of-Mass det. time= 0.5 min (865.5 - 865.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.59 cfs @ 12.08 hrs HW=28.97' TW=25.26' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.59 cfs @ 2.31 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area =	677,599 sf,	21.23% Impervious,	Inflow Depth =	0.99"	for 2-yr storm event
Inflow =	11.90 cfs @	12.23 hrs, Volume=	55,841 cf		
Outflow =	11.75 cfs @	12.25 hrs, Volume=	55,841 cf,	Atten= 1%,	Lag= 1.5 min
Primary =	11.75 cfs @	12.25 hrs, Volume=	55,841 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 26.65' @ 12.25 hrs Surf.Area= 1,423 sf Storage= 947 cf

Plug-Flow detention time= 1.3 min calculated for 55,822 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (880.8 - 879.6)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=11.74 cfs @ 12.25 hrs HW=26.65' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 11.74 cfs @ 3.91 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 1.24" for 2-yr storm event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 445 cf
Outflow = 0.14 cfs @ 12.10 hrs, Volume= 445 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.14 cfs @ 12.10 hrs, Volume= 445 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.13' @ 12.09 hrs Surf.Area= 13 sf Storage= 3 cf

Plug-Flow detention time= 1.1 min calculated for 445 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (860.7 - 859.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.10 hrs HW=28.12' TW=27.85' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.14 cfs @ 1.58 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 106,001 sf, 68.28% Impervious, Inflow Depth = 2.22" for 2-yr storm event
Inflow = 4.43 cfs @ 12.13 hrs, Volume= 19,578 cf
Outflow = 2.09 cfs @ 12.48 hrs, Volume= 18,977 cf, Atten= 53%, Lag= 20.9 min
Primary = 2.09 cfs @ 12.48 hrs, Volume= 18,977 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.06' @ 12.48 hrs Surf.Area= 2,709 sf Storage= 4,176 cf

Plug-Flow detention time= 44.8 min calculated for 18,971 cf (97% of inflow)
Center-of-Mass det. time= 26.7 min (853.6 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.09 cfs @ 12.48 hrs HW=28.06' TW=21.97' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 2.09 cfs of 9.47 cfs potential flow)
↑ ├─**2=Orifice/Grate** (Orifice Controls 1.72 cfs @ 8.76 fps)
└─**3=Orifice/Grate** (Weir Controls 0.37 cfs @ 0.79 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 1.86" for 2-yr storm event
Inflow = 2.12 cfs @ 12.14 hrs, Volume= 7,507 cf
Outflow = 1.89 cfs @ 12.14 hrs, Volume= 7,506 cf, Atten= 11%, Lag= 0.3 min
Primary = 1.89 cfs @ 12.14 hrs, Volume= 7,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.10' @ 12.47 hrs Surf.Area= 655 sf Storage= 471 cf

Plug-Flow detention time= 7.2 min calculated for 7,503 cf (100% of inflow)
Center-of-Mass det. time= 7.2 min (843.5 - 836.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=1.89 cfs @ 12.14 hrs HW=27.84' TW=27.39' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.89 cfs @ 3.65 fps)
└—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 20P: DMH #1

Inflow Area =	20,495 sf,	61.50% Impervious,	Inflow Depth =	2.14"	for 2-yr storm event
Inflow =	1.04 cfs @	12.09 hrs, Volume=	3,653 cf		
Outflow =	1.04 cfs @	12.10 hrs, Volume=	3,653 cf,	Atten= 0%,	Lag= 0.1 min
Primary =	1.04 cfs @	12.10 hrs, Volume=	3,653 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.40' @ 12.10 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 3,653 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (814.4 - 814.0)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.10 hrs HW=27.40' TW=26.29' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.04 cfs @ 3.39 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 9,944 sf, 54.58% Impervious, Inflow Depth = 1.86" for 2-yr storm event
Inflow = 0.51 cfs @ 12.08 hrs, Volume= 1,538 cf
Outflow = 0.43 cfs @ 12.13 hrs, Volume= 1,536 cf, Atten= 17%, Lag= 3.1 min
Primary = 0.43 cfs @ 12.13 hrs, Volume= 1,536 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.70' @ 12.13 hrs Surf.Area= 805 sf Storage= 145 cf

Plug-Flow detention time= 15.7 min calculated for 1,536 cf (100% of inflow)
Center-of-Mass det. time= 15.2 min (847.0 - 831.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.43 cfs @ 12.13 hrs HW=27.70' TW=27.38' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.43 cfs of 0.68 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.43 cfs @ 2.29 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 2.41" for 2-yr storm event
Inflow = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf
Outflow = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.85' @ 12.08 hrs Surf.Area= 20 sf Storage= 9 cf

Plug-Flow detention time= 0.9 min calculated for 2,117 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (790.1 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.65 cfs @ 12.08 hrs HW=27.85' TW=27.40' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.65 cfs @ 2.67 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 3.12" for 2-yr storm event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 903 cf
Outflow = 0.28 cfs @ 12.07 hrs, Volume= 903 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.28 cfs @ 12.07 hrs, Volume= 903 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.94' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.9 min calculated for 903 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (776.7 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.07 hrs HW=27.94' TW=27.85' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.28 cfs @ 1.67 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 3.33" for 2-yr storm event
Inflow = 0.23 cfs @ 12.07 hrs, Volume= 768 cf
Outflow = 0.23 cfs @ 12.07 hrs, Volume= 768 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.23 cfs @ 12.07 hrs, Volume= 768 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.02' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.9 min calculated for 768 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (762.6 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.07 hrs HW=28.02' TW=27.85' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.23 cfs @ 1.89 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 35,900 sf, 80.94% Impervious, Inflow Depth = 2.68" for 2-yr storm event
Inflow = 2.62 cfs @ 12.07 hrs, Volume= 8,022 cf
Outflow = 1.53 cfs @ 12.17 hrs, Volume= 8,017 cf, Atten= 42%, Lag= 5.7 min
Primary = 1.53 cfs @ 12.17 hrs, Volume= 8,017 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.11' @ 12.17 hrs Surf.Area= 1,699 sf Storage= 1,081 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 17.5 min calculated for 8,017 cf (100% of inflow)
Center-of-Mass det. time= 17.1 min (816.9 - 799.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.53 cfs @ 12.17 hrs HW=30.11' TW=27.47' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.53 cfs of 8.54 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.53 cfs @ 7.78 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 2.91" for 2-yr storm event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 953 cf
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 916 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.31 cfs @ 12.07 hrs, Volume= 916 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.80' @ 12.07 hrs Surf.Area= 91 sf Storage= 41 cf

Plug-Flow detention time= 36.5 min calculated for 916 cf (96% of inflow)
Center-of-Mass det. time= 14.2 min (801.2 - 787.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=31.80' TW=29.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.31 cfs @ 0.74 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 2.80" for 2-yr storm event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 916 cf
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 916 cf, Atten= 1%, Lag= 0.9 min
Primary = 0.30 cfs @ 12.09 hrs, Volume= 916 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.12' @ 12.17 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 1.2 min calculated for 916 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (802.3 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=30.02' TW=30.02' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.30 cfs @ 0.38 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 3.12" for 2-yr storm event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 1,096 cf
Outflow = 0.34 cfs @ 12.07 hrs, Volume= 1,054 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.34 cfs @ 12.07 hrs, Volume= 1,054 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.06' @ 12.07 hrs Surf.Area= 110 sf Storage= 47 cf

Plug-Flow detention time= 38.0 min calculated for 1,054 cf (96% of inflow)
Center-of-Mass det. time= 15.7 min (791.6 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.07 hrs HW=32.06' TW=29.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.34 cfs @ 0.77 fps)

Summary for Pond 27P: CB #7

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 3.00" for 2-yr storm event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 1,054 cf
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 1,054 cf, Atten= 0%, Lag= 0.9 min
Primary = 0.34 cfs @ 12.09 hrs, Volume= 1,054 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.12' @ 12.17 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 1.1 min calculated for 1,054 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (792.7 - 791.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=30.02' TW=30.01' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.34 cfs @ 0.44 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=3.12"
Flow Length=515' Tc=5.2 min CN=77 Runoff=5.79 cfs 17,409 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=392,250 sf 20.91% Impervious Runoff Depth=2.14"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=17.49 cfs 69,981 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=2.48"
Flow Length=230' Tc=5.0 min CN=70 Runoff=1.39 cfs 4,184 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=657,104 sf 19.97% Impervious Runoff Depth=2.23"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=28.91 cfs 121,840 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=2.66"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.31 cfs 955 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=4.02"
Flow Length=127' Tc=5.0 min CN=86 Runoff=2.37 cfs 7,221 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=3.51"
Flow Length=563' Tc=9.9 min CN=81 Runoff=4.01 cfs 14,209 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=9,944 sf 54.58% Impervious Runoff Depth=3.51"
Flow Length=97' Tc=5.0 min CN=81 Runoff=0.97 cfs 2,910 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=5.00"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.44 cfs 1,450 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=5.24"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.36 cfs 1,207 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=4.45"
Flow Length=149' Tc=5.0 min CN=90 Runoff=3.30 cfs 10,284 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=4.78"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.49 cfs 1,565 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=5.00"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.54 cfs 1,760 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.37' Max Vel=4.16 fps Inflow=18.30 cfs 74,165 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=18.29 cfs 74,165 cf

Reach 100R: NHDOT Swale Inflow=26.46 cfs 125,928 cf
Outflow=26.46 cfs 125,928 cf

Reach 200R: NHDOT Swale Inflow=29.38 cfs 128,362 cf
Outflow=29.38 cfs 128,362 cf

Pond 1P: NHDOT Culvert Peak Elev=23.08' Storage=270 cf Inflow=26.48 cfs 125,928 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=26.46 cfs 125,928 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=29.08' Storage=86 cf Inflow=17.49 cfs 69,981 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=17.49 cfs 69,981 cf

Pond 3P: Existing CB Peak Elev=29.52' Storage=13 cf Inflow=1.39 cfs 4,184 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=1.39 cfs 4,184 cf

Pond 4P: NHDOT Culvert Peak Elev=27.60' Storage=2,770 cf Inflow=30.03 cfs 128,362 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=29.38 cfs 128,362 cf

Pond 5P: Existing CB Peak Elev=28.27' Storage=5 cf Inflow=0.31 cfs 955 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.31 cfs 955 cf

Pond 10P: Raingarden #2 Peak Elev=28.27' Storage=4,772 cf Inflow=6.01 cfs 34,955 cf
Outflow=5.50 cfs 34,354 cf

Pond 11P: 12" Culvert Peak Elev=28.78' Storage=1,073 cf Inflow=4.01 cfs 14,209 cf
Outflow=3.10 cfs 14,208 cf

Pond 20P: DMH #1 Peak Elev=27.76' Storage=12 cf Inflow=1.69 cfs 6,521 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=1.68 cfs 6,521 cf

Pond 21P: Raingarden #1 Peak Elev=28.16' Storage=293 cf Inflow=0.97 cfs 2,910 cf
Outflow=0.65 cfs 2,909 cf

Pond 22P: DMH #2 Peak Elev=28.04' Storage=13 cf Inflow=1.10 cfs 3,612 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.09 cfs 3,612 cf

Pond 23P: CB #3 Peak Elev=28.11' Storage=7 cf Inflow=0.44 cfs 1,450 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.44 cfs 1,450 cf

Pond 24P: CB #4 Peak Elev=28.16' Storage=5 cf Inflow=0.36 cfs 1,207 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.36 cfs 1,207 cf

Pond 25P: Raingarden #3 Peak Elev=30.75' Storage=2,425 cf Inflow=4.29 cfs 13,531 cf
Outflow=1.52 cfs 13,525 cf

Pond 26A: Depressed Island Peak Elev=31.82' Storage=43 cf Inflow=0.49 cfs 1,565 cf
Outflow=0.49 cfs 1,528 cf

Pond 26P: CB #6 Peak Elev=30.76' Storage=25 cf Inflow=0.49 cfs 1,528 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.48 cfs 1,528 cf

Pond 27A: Depressed Island Peak Elev=32.07' Storage=50 cf Inflow=0.54 cfs 1,760 cf
Outflow=0.54 cfs 1,718 cf

Pond 27P: CB #7 Peak Elev=30.76' Storage=26 cf Inflow=0.54 cfs 1,718 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.52 cfs 1,718 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 254,977 cf Average Runoff Depth = 2.42"
74.12% Pervious = 936,136 sf 25.88% Impervious = 326,807 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 5.79 cfs @ 12.08 hrs, Volume= 17,409 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 17.49 cfs @ 12.19 hrs, Volume= 69,981 cf, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	82,017	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	93,935	48	Brush, Good, HSG B
	392,250	66	Weighted Average
	310,233		79.09% Pervious Area
	82,017		20.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,184 cf, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 28.91 cfs @ 12.22 hrs, Volume= 121,840 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	58,069	48	Brush, Good, HSG B
	657,104	67	Weighted Average
	525,859		80.03% Pervious Area
	131,245		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 955 cf, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 2.37 cfs @ 12.07 hrs, Volume= 7,221 cf, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 4.01 cfs @ 12.14 hrs, Volume= 14,209 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 0.97 cfs @ 12.07 hrs, Volume= 2,910 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,517	61	>75% Grass cover, Good, HSG B
	9,944	81	Weighted Average
	4,517		45.42% Pervious Area
	5,427		54.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 3.30 cfs @ 12.07 hrs, Volume= 10,284 cf, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 1,565 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 1,760 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 412,465 sf, 21.08% Impervious, Inflow Depth = 2.16" for 10-yr storm event
Inflow = 18.30 cfs @ 12.18 hrs, Volume= 74,165 cf
Outflow = 18.29 cfs @ 12.19 hrs, Volume= 74,165 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 4.16 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.2 min

Peak Storage= 413 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 2.58" for 10-yr storm event
Inflow = 26.46 cfs @ 12.20 hrs, Volume= 125,928 cf
Outflow = 26.46 cfs @ 12.20 hrs, Volume= 125,928 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 677,599 sf, 21.23% Impervious, Inflow Depth = 2.27" for 10-yr storm event
Inflow = 29.38 cfs @ 12.25 hrs, Volume= 128,362 cf
Outflow = 29.38 cfs @ 12.25 hrs, Volume= 128,362 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 2.58" for 10-yr storm event
Inflow = 26.48 cfs @ 12.19 hrs, Volume= 125,928 cf
Outflow = 26.46 cfs @ 12.20 hrs, Volume= 125,928 cf, Atten= 0%, Lag= 0.4 min
Primary = 26.46 cfs @ 12.20 hrs, Volume= 125,928 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 23.08' @ 12.20 hrs Surf.Area= 405 sf Storage= 270 cf

Plug-Flow detention time= 0.2 min calculated for 125,928 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (846.8 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=26.46 cfs @ 12.20 hrs HW=23.08' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 26.46 cfs @ 4.96 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 392,250 sf, 20.91% Impervious, Inflow Depth = 2.14" for 10-yr storm event
Inflow = 17.49 cfs @ 12.19 hrs, Volume= 69,981 cf
Outflow = 17.49 cfs @ 12.19 hrs, Volume= 69,981 cf, Atten= 0%, Lag= 0.2 min
Primary = 17.49 cfs @ 12.19 hrs, Volume= 69,981 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.08' @ 12.19 hrs Surf.Area= 79 sf Storage= 86 cf

Plug-Flow detention time= 0.1 min calculated for 69,957 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (858.3 - 858.1)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=17.48 cfs @ 12.19 hrs HW=29.08' TW=25.47' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 17.48 cfs @ 4.47 fps)

Summary for Pond 3P: Existing CB

Inflow Area =	20,215 sf,	24.32% Impervious,	Inflow Depth =	2.48"	for 10-yr storm event
Inflow =	1.39 cfs @	12.08 hrs,	Volume=	4,184 cf	
Outflow =	1.39 cfs @	12.08 hrs,	Volume=	4,184 cf,	Atten= 0%, Lag= 0.2 min
Primary =	1.39 cfs @	12.08 hrs,	Volume=	4,184 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.52' @ 12.08 hrs Surf.Area= 12 sf Storage= 13 cf

Plug-Flow detention time= 0.4 min calculated for 4,183 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (841.2 - 840.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert**
			L= 44.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.39 cfs @ 12.08 hrs HW=29.52' TW=25.40' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.39 cfs @ 3.97 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area =	677,599 sf,	21.23% Impervious,	Inflow Depth =	2.27"	for 10-yr storm event
Inflow =	30.03 cfs @	12.21 hrs,	Volume=	128,362 cf	
Outflow =	29.38 cfs @	12.25 hrs,	Volume=	128,362 cf,	Atten= 2%, Lag= 2.1 min
Primary =	29.38 cfs @	12.25 hrs,	Volume=	128,362 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.60' @ 12.25 hrs Surf.Area= 2,434 sf Storage= 2,770 cf

Plug-Flow detention time= 1.3 min calculated for 128,317 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (856.1 - 854.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=29.37 cfs @ 12.25 hrs HW=27.60' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 29.37 cfs @ 5.13 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 2.66" for 10-yr storm event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 955 cf
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 955 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.31 cfs @ 12.09 hrs, Volume= 955 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.27' @ 12.09 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.8 min calculated for 955 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (837.6 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=28.27' TW=28.04' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.31 cfs @ 1.75 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 106,001 sf, 68.28% Impervious, Inflow Depth = 3.96" for 10-yr storm event
Inflow = 6.01 cfs @ 12.07 hrs, Volume= 34,955 cf
Outflow = 5.50 cfs @ 12.26 hrs, Volume= 34,354 cf, Atten= 8%, Lag= 11.0 min
Primary = 5.50 cfs @ 12.26 hrs, Volume= 34,354 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.27' @ 12.26 hrs Surf.Area= 2,840 sf Storage= 4,772 cf

Plug-Flow detention time= 32.8 min calculated for 34,354 cf (98% of inflow)
Center-of-Mass det. time= 22.1 min (833.3 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.50 cfs @ 12.26 hrs HW=28.27' TW=23.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.50 cfs of 9.91 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.77 cfs @ 9.04 fps)
  └─**3=Orifice/Grate** (Weir Controls 3.73 cfs @ 1.71 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 3.51" for 10-yr storm event
Inflow = 4.01 cfs @ 12.14 hrs, Volume= 14,209 cf
Outflow = 3.10 cfs @ 12.22 hrs, Volume= 14,208 cf, Atten= 23%, Lag= 5.1 min
Primary = 3.10 cfs @ 12.22 hrs, Volume= 14,208 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.78' @ 12.23 hrs Surf.Area= 1,124 sf Storage= 1,073 cf

Plug-Flow detention time= 6.8 min calculated for 14,208 cf (100% of inflow)
Center-of-Mass det. time= 6.7 min (824.7 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=3.10 cfs @ 12.22 hrs HW=28.78' TW=28.27' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.71 cfs @ 3.45 fps)
└—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.39 cfs @ 1.50 fps)

Summary for Pond 20P: DMH #1

Inflow Area = 20,495 sf, 61.50% Impervious, Inflow Depth = 3.82" for 10-yr storm event
Inflow = 1.69 cfs @ 12.09 hrs, Volume= 6,521 cf
Outflow = 1.68 cfs @ 12.09 hrs, Volume= 6,521 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.68 cfs @ 12.09 hrs, Volume= 6,521 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.76' @ 12.24 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.3 min calculated for 6,519 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (801.4 - 801.0)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.68 cfs @ 12.09 hrs HW=27.62' TW=26.97' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.68 cfs @ 3.56 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 9,944 sf, 54.58% Impervious, Inflow Depth = 3.51" for 10-yr storm event
Inflow = 0.97 cfs @ 12.07 hrs, Volume= 2,910 cf
Outflow = 0.65 cfs @ 12.14 hrs, Volume= 2,909 cf, Atten= 33%, Lag= 3.8 min
Primary = 0.65 cfs @ 12.14 hrs, Volume= 2,909 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.16' @ 12.16 hrs Surf.Area= 805 sf Storage= 293 cf

Plug-Flow detention time= 12.6 min calculated for 2,908 cf (100% of inflow)
Center-of-Mass det. time= 12.4 min (825.9 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 12.14 hrs HW=28.15' TW=27.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.65 cfs of 2.19 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.65 cfs @ 3.29 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 4.11" for 10-yr storm event
Inflow = 1.10 cfs @ 12.08 hrs, Volume= 3,612 cf
Outflow = 1.09 cfs @ 12.08 hrs, Volume= 3,612 cf, Atten= 0%, Lag= 0.1 min
Primary = 1.09 cfs @ 12.08 hrs, Volume= 3,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 28.04' @ 12.09 hrs Surf.Area= 20 sf Storage= 13 cf

Plug-Flow detention time= 0.7 min calculated for 3,612 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (781.1 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.09 cfs @ 12.08 hrs HW=28.04' TW=27.60' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.09 cfs @ 2.88 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 5.00" for 10-yr storm event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf, Atten= 1%, Lag= 0.1 min
Primary = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.11' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.7 min calculated for 1,450 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (765.1 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=28.10' TW=28.03' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.44 cfs @ 1.55 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 5.24" for 10-yr storm event
Inflow = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf
Outflow = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf, Atten= 1%, Lag= 0.1 min
Primary = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.16' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.8 min calculated for 1,207 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (753.3 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.07 hrs HW=28.15' TW=28.03' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.36 cfs @ 1.72 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 35,900 sf, 80.94% Impervious, Inflow Depth = 4.52" for 10-yr storm event
Inflow = 4.29 cfs @ 12.07 hrs, Volume= 13,531 cf
Outflow = 1.52 cfs @ 12.03 hrs, Volume= 13,525 cf, Atten= 65%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.03 hrs, Volume= 13,525 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.75' @ 12.33 hrs Surf.Area= 2,500 sf Storage= 2,425 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 18.6 min calculated for 13,525 cf (100% of inflow)
Center-of-Mass det. time= 18.4 min (803.4 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 12.03 hrs HW=30.11' TW=27.52' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.52 cfs of 8.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.52 cfs @ 7.74 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 4.78" for 10-yr storm event
Inflow = 0.49 cfs @ 12.07 hrs, Volume= 1,565 cf
Outflow = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.82' @ 12.07 hrs Surf.Area= 92 sf Storage= 43 cf

Plug-Flow detention time= 25.3 min calculated for 1,528 cf (98% of inflow)
Center-of-Mass det. time= 10.9 min (784.9 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.07 hrs HW=31.82' TW=30.35' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 4.67" for 10-yr storm event
Inflow = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf
Outflow = 0.48 cfs @ 12.07 hrs, Volume= 1,528 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.07 hrs, Volume= 1,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.76' @ 12.33 hrs Surf.Area= 10 sf Storage= 25 cf

Plug-Flow detention time= 1.5 min calculated for 1,528 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (786.4 - 784.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.07 hrs HW=30.35' TW=30.33' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.47 cfs @ 0.60 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 5.00" for 10-yr storm event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 1,760 cf
Outflow = 0.54 cfs @ 12.07 hrs, Volume= 1,718 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.54 cfs @ 12.07 hrs, Volume= 1,718 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.07' @ 12.07 hrs Surf.Area= 113 sf Storage= 50 cf

Plug-Flow detention time= 26.7 min calculated for 1,718 cf (98% of inflow)
Center-of-Mass det. time= 12.0 min (776.4 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 12.07 hrs HW=32.07' TW=30.36' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.54 cfs @ 0.89 fps)

Summary for Pond 27P: CB #7

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 4.89" for 10-yr storm event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 1,718 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 1,718 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 1,718 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.76' @ 12.33 hrs Surf.Area= 11 sf Storage= 26 cf

Plug-Flow detention time= 1.4 min calculated for 1,718 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (777.8 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=30.35' TW=30.33' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.52 cfs @ 0.66 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=4.44"
Flow Length=515' Tc=5.2 min CN=77 Runoff=8.19 cfs 24,733 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=392,250 sf 20.91% Impervious Runoff Depth=3.27"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=27.31 cfs 106,803 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=3.68"
Flow Length=230' Tc=5.0 min CN=70 Runoff=2.08 cfs 6,208 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=657,104 sf 19.97% Impervious Runoff Depth=3.37"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=44.65 cfs 184,585 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=3.90"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.45 cfs 1,399 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=5.44"
Flow Length=127' Tc=5.0 min CN=86 Runoff=3.16 cfs 9,775 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=4.88"
Flow Length=563' Tc=9.9 min CN=81 Runoff=5.53 cfs 19,742 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=9,944 sf 54.58% Impervious Runoff Depth=4.88"
Flow Length=97' Tc=5.0 min CN=81 Runoff=1.34 cfs 4,043 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=6.49"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.57 cfs 1,880 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth>6.72"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.46 cfs 1,549 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=5.90"
Flow Length=149' Tc=5.0 min CN=90 Runoff=4.30 cfs 13,647 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=6.25"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.63 cfs 2,047 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=6.49"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.69 cfs 2,281 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.44' Max Vel=4.60 fps Inflow=24.70 cfs 113,011 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=24.70 cfs 113,011 cf

Reach 100R: NHDOT Swale Inflow=37.29 cfs 184,549 cf
Outflow=37.29 cfs 184,549 cf

Reach 200R: NHDOT Swale Inflow=42.87 cfs 193,455 cf
Outflow=42.87 cfs 193,455 cf

Pond 1P: NHDOT Culvert Peak Elev=23.65' Storage=857 cf Inflow=37.44 cfs 184,549 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=37.29 cfs 184,549 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=30.62' Storage=1,782 cf Inflow=27.31 cfs 106,803 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=23.75 cfs 106,803 cf

Pond 3P: Existing CB Peak Elev=30.38' Storage=17 cf Inflow=2.08 cfs 6,208 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=2.08 cfs 6,208 cf

Pond 4P: NHDOT Culvert Peak Elev=28.42' Storage=5,490 cf Inflow=46.10 cfs 193,455 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=42.87 cfs 193,455 cf

Pond 5P: Existing CB Peak Elev=28.59' Storage=9 cf Inflow=0.45 cfs 1,399 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.45 cfs 1,399 cf

Pond 10P: Raingarden #2 Peak Elev=28.41' Storage=5,159 cf Inflow=10.17 cfs 47,407 cf
Outflow=8.61 cfs 46,806 cf

Pond 11P: 12" Culvert Peak Elev=29.50' Storage=1,336 cf Inflow=5.53 cfs 19,742 cf
Outflow=6.48 cfs 19,741 cf

Pond 20P: DMH #1 Peak Elev=28.54' Storage=22 cf Inflow=2.47 cfs 8,870 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=2.46 cfs 8,870 cf

Pond 21P: Raingarden #1 Peak Elev=29.59' Storage=376 cf Inflow=1.34 cfs 4,043 cf
Outflow=1.13 cfs 4,042 cf

Pond 22P: DMH #2 Peak Elev=28.58' Storage=24 cf Inflow=1.44 cfs 4,828 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.41 cfs 4,828 cf

Pond 23P: CB #3 Peak Elev=28.58' Storage=13 cf Inflow=0.57 cfs 1,880 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.55 cfs 1,880 cf

Pond 24P: CB #4 Peak Elev=28.58' Storage=11 cf Inflow=0.46 cfs 1,549 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.45 cfs 1,549 cf

Pond 25P: Raingarden #3 Peak Elev=31.10' Storage=3,371 cf Inflow=5.60 cfs 17,897 cf
Outflow=2.38 cfs 17,892 cf

Pond 26A: Depressed Island Peak Elev=31.83' Storage=44 cf Inflow=0.63 cfs 2,047 cf
Outflow=0.63 cfs 2,010 cf

Pond 26P: CB #6 Peak Elev=31.10' Storage=28 cf Inflow=0.63 cfs 2,010 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.62 cfs 2,010 cf

Pond 27A: Depressed Island Peak Elev=32.09' Storage=51 cf Inflow=0.69 cfs 2,281 cf
Outflow=0.69 cfs 2,239 cf

Pond 27P: CB #7 Peak Elev=31.11' Storage=30 cf Inflow=0.69 cfs 2,239 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.67 cfs 2,239 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 378,691 cf Average Runoff Depth = 3.60"
74.12% Pervious = 936,136 sf 25.88% Impervious = 326,807 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 8.19 cfs @ 12.08 hrs, Volume= 24,733 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 27.31 cfs @ 12.18 hrs, Volume= 106,803 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	82,017	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	93,935	48	Brush, Good, HSG B
	392,250	66	Weighted Average
	310,233		79.09% Pervious Area
	82,017		20.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 2.08 cfs @ 12.08 hrs, Volume= 6,208 cf, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 44.65 cfs @ 12.21 hrs, Volume= 184,585 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	58,069	48	Brush, Good, HSG B
	657,104	67	Weighted Average
	525,859		80.03% Pervious Area
	131,245		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 3.16 cfs @ 12.07 hrs, Volume= 9,775 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 5.53 cfs @ 12.13 hrs, Volume= 19,742 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 1.34 cfs @ 12.07 hrs, Volume= 4,043 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,517	61	>75% Grass cover, Good, HSG B
	9,944	81	Weighted Average
	4,517		45.42% Pervious Area
	5,427		54.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 1,880 cf, Depth= 6.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.46 cfs @ 12.07 hrs, Volume= 1,549 cf, Depth> 6.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 4.30 cfs @ 12.07 hrs, Volume= 13,647 cf, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.63 cfs @ 12.07 hrs, Volume= 2,047 cf, Depth= 6.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 2,281 cf, Depth= 6.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

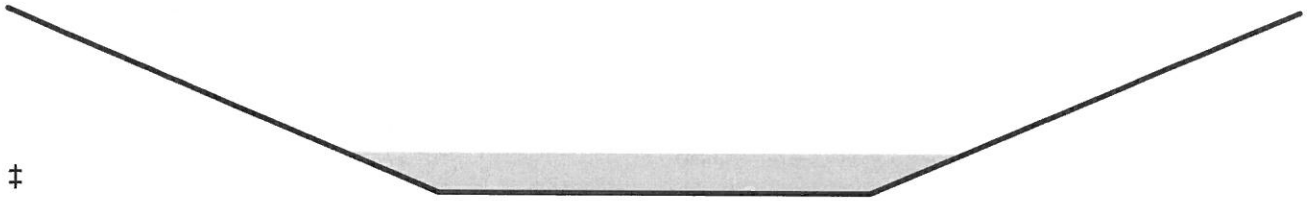
Summary for Reach 2R: Wetland Flow Path

Inflow Area = 412,465 sf, 21.08% Impervious, Inflow Depth = 3.29" for 25-yr storm event
Inflow = 24.70 cfs @ 12.25 hrs, Volume= 113,011 cf
Outflow = 24.70 cfs @ 12.25 hrs, Volume= 113,011 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 4.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 1.0 min

Peak Storage= 505 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'



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Summary for Reach 100R: NHDOT Swale

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 3.78" for 25-yr storm event
Inflow = 37.29 cfs @ 12.20 hrs, Volume= 184,549 cf
Outflow = 37.29 cfs @ 12.20 hrs, Volume= 184,549 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 677,599 sf, 21.23% Impervious, Inflow Depth = 3.43" for 25-yr storm event
Inflow = 42.87 cfs @ 12.27 hrs, Volume= 193,455 cf
Outflow = 42.87 cfs @ 12.27 hrs, Volume= 193,455 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 3.78" for 25-yr storm event
Inflow = 37.44 cfs @ 12.18 hrs, Volume= 184,549 cf
Outflow = 37.29 cfs @ 12.20 hrs, Volume= 184,549 cf, Atten= 0%, Lag= 1.7 min
Primary = 37.29 cfs @ 12.20 hrs, Volume= 184,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 23.65' @ 12.20 hrs Surf.Area= 1,658 sf Storage= 857 cf

Plug-Flow detention time= 0.2 min calculated for 184,549 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (835.9 - 835.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=37.28 cfs @ 12.20 hrs HW=23.65' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 37.28 cfs @ 5.58 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area =	392,250 sf,	20.91% Impervious,	Inflow Depth =	3.27" for 25-yr storm event
Inflow =	27.31 cfs @	12.18 hrs, Volume=	106,803 cf	
Outflow =	23.75 cfs @	12.26 hrs, Volume=	106,803 cf,	Atten= 13%, Lag= 4.8 min
Primary =	23.75 cfs @	12.26 hrs, Volume=	106,803 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.62' @ 12.26 hrs Surf.Area= 4,488 sf Storage= 1,782 cf

Plug-Flow detention time= 0.3 min calculated for 106,766 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (845.9 - 845.6)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=23.75 cfs @ 12.26 hrs HW=30.62' TW=25.54' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 23.75 cfs @ 4.84 fps)

Summary for Pond 3P: Existing CB

Inflow Area =	20,215 sf,	24.32% Impervious,	Inflow Depth =	3.68"	for 25-yr storm event
Inflow =	2.08 cfs @	12.08 hrs,	Volume=	6,208 cf	
Outflow =	2.08 cfs @	12.07 hrs,	Volume=	6,208 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.08 cfs @	12.07 hrs,	Volume=	6,208 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.38' @ 12.07 hrs Surf.Area= 4 sf Storage= 17 cf

Plug-Flow detention time= 0.4 min calculated for 6,208 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (829.7 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=2.07 cfs @ 12.07 hrs HW=30.37' TW=25.48' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.07 cfs @ 5.94 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area =	677,599 sf,	21.23% Impervious,	Inflow Depth =	3.43"	for 25-yr storm event
Inflow =	46.10 cfs @	12.20 hrs,	Volume=	193,455 cf	
Outflow =	42.87 cfs @	12.27 hrs,	Volume=	193,455 cf,	Atten= 7%, Lag= 4.0 min
Primary =	42.87 cfs @	12.27 hrs,	Volume=	193,455 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.42' @ 12.27 hrs Surf.Area= 5,062 sf Storage= 5,490 cf

Plug-Flow detention time= 1.5 min calculated for 193,455 cf (100% of inflow)
Center-of-Mass det. time= 1.5 min (844.5 - 843.0)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=42.87 cfs @ 12.27 hrs HW=28.42' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 42.87 cfs @ 6.06 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 3.90" for 25-yr storm event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf, Atten= 1%, Lag= 0.2 min
Primary = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.59' @ 12.26 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.7 min calculated for 1,399 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (826.5 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.09 hrs HW=28.43' TW=28.30' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.45 cfs @ 1.53 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 106,001 sf, 68.28% Impervious, Inflow Depth = 5.37" for 25-yr storm event
Inflow = 10.17 cfs @ 12.15 hrs, Volume= 47,407 cf
Outflow = 8.61 cfs @ 12.20 hrs, Volume= 46,806 cf, Atten= 15%, Lag= 2.9 min
Primary = 8.61 cfs @ 12.20 hrs, Volume= 46,806 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.41' @ 12.20 hrs Surf.Area= 2,922 sf Storage= 5,159 cf

Plug-Flow detention time= 27.8 min calculated for 46,806 cf (99% of inflow)
Center-of-Mass det. time= 19.7 min (822.9 - 803.2)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.60 cfs @ 12.20 hrs HW=28.41' TW=23.65' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.60 cfs of 10.17 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.81 cfs @ 9.21 fps)
  └─**3=Orifice/Grate** (Weir Controls 6.79 cfs @ 2.09 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 4.88" for 25-yr storm event
Inflow = 5.53 cfs @ 12.13 hrs, Volume= 19,742 cf
Outflow = 6.48 cfs @ 12.15 hrs, Volume= 19,741 cf, Atten= 0%, Lag= 0.9 min
Primary = 6.48 cfs @ 12.15 hrs, Volume= 19,741 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.50' @ 12.15 hrs Surf.Area= 1,275 sf Storage= 1,336 cf

Plug-Flow detention time= 6.4 min calculated for 19,741 cf (100% of inflow)
Center-of-Mass det. time= 6.3 min (815.0 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=6.46 cfs @ 12.15 hrs HW=29.49' TW=28.37' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.00 cfs @ 5.10 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 2.45 cfs @ 3.87 fps)

Summary for Pond 20P: DMH #1

Inflow Area = 20,495 sf, 61.50% Impervious, Inflow Depth = 5.19" for 25-yr storm event
Inflow = 2.47 cfs @ 12.10 hrs, Volume= 8,870 cf
Outflow = 2.46 cfs @ 12.10 hrs, Volume= 8,870 cf, Atten= 1%, Lag= 0.1 min
Primary = 2.46 cfs @ 12.10 hrs, Volume= 8,870 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.54' @ 12.27 hrs Surf.Area= 13 sf Storage= 22 cf

Plug-Flow detention time= 0.3 min calculated for 8,867 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (794.5 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.46 cfs @ 12.10 hrs HW=28.07' TW=27.55' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.46 cfs @ 3.27 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 9,944 sf, 54.58% Impervious, Inflow Depth = 4.88" for 25-yr storm event
Inflow = 1.34 cfs @ 12.07 hrs, Volume= 4,043 cf
Outflow = 1.13 cfs @ 12.11 hrs, Volume= 4,042 cf, Atten= 16%, Lag= 2.3 min
Primary = 1.13 cfs @ 12.11 hrs, Volume= 4,042 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.59' @ 12.12 hrs Surf.Area= 805 sf Storage= 376 cf

Plug-Flow detention time= 11.6 min calculated for 4,041 cf (100% of inflow)
Center-of-Mass det. time= 11.5 min (815.6 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.12 cfs @ 12.11 hrs HW=29.55' TW=28.14' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.12 cfs of 4.49 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.12 cfs @ 5.72 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 5.49" for 25-yr storm event
Inflow = 1.44 cfs @ 12.07 hrs, Volume= 4,828 cf
Outflow = 1.41 cfs @ 12.08 hrs, Volume= 4,828 cf, Atten= 2%, Lag= 0.1 min
Primary = 1.41 cfs @ 12.08 hrs, Volume= 4,828 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 28.58' @ 12.26 hrs Surf.Area= 20 sf Storage= 24 cf

Plug-Flow detention time= 0.7 min calculated for 4,828 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (776.2 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.41 cfs @ 12.08 hrs HW=28.25' TW=27.93' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.41 cfs @ 2.63 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 6.49" for 25-yr storm event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 1,880 cf
Outflow = 0.55 cfs @ 12.07 hrs, Volume= 1,880 cf, Atten= 2%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.07 hrs, Volume= 1,880 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.58' @ 12.26 hrs Surf.Area= 13 sf Storage= 13 cf

Plug-Flow detention time= 0.8 min calculated for 1,880 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (759.5 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.07 hrs HW=28.27' TW=28.22' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.55 cfs @ 1.35 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth > 6.72" for 25-yr storm event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 1,549 cf
Outflow = 0.45 cfs @ 12.07 hrs, Volume= 1,549 cf, Atten= 2%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.07 hrs, Volume= 1,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.58' @ 12.26 hrs Surf.Area= 13 sf Storage= 11 cf

Plug-Flow detention time= 0.7 min calculated for 1,549 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (749.0 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=28.29' TW=28.22' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.44 cfs @ 1.44 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 35,900 sf, 80.94% Impervious, Inflow Depth = 5.98" for 25-yr storm event
Inflow = 5.60 cfs @ 12.07 hrs, Volume= 17,897 cf
Outflow = 2.38 cfs @ 12.25 hrs, Volume= 17,892 cf, Atten= 57%, Lag= 10.6 min
Primary = 2.38 cfs @ 12.25 hrs, Volume= 17,892 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.10' @ 12.25 hrs Surf.Area= 3,062 sf Storage= 3,371 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 19.4 min calculated for 17,892 cf (100% of inflow)
Center-of-Mass det. time= 19.2 min (796.7 - 777.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.38 cfs @ 12.25 hrs HW=31.10' TW=28.39' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.38 cfs of 9.67 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.56 cfs @ 7.93 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.82 cfs @ 1.03 fps)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 6.25" for 25-yr storm event
Inflow = 0.63 cfs @ 12.07 hrs, Volume= 2,047 cf
Outflow = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.83' @ 12.07 hrs Surf.Area= 92 sf Storage= 44 cf

Plug-Flow detention time= 20.6 min calculated for 2,010 cf (98% of inflow)
Center-of-Mass det. time= 9.2 min (776.8 - 767.6)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.63 cfs @ 12.07 hrs HW=31.83' TW=30.68' (Dynamic Tailwater)
↳**1=Orifice/Grate** (Weir Controls 0.63 cfs @ 0.94 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 6.14" for 25-yr storm event
Inflow = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf
Outflow = 0.62 cfs @ 12.07 hrs, Volume= 2,010 cf, Atten= 1%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.07 hrs, Volume= 2,010 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.10' @ 12.25 hrs Surf.Area= 8 sf Storage= 28 cf

Plug-Flow detention time= 1.4 min calculated for 2,010 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (778.2 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.62 cfs @ 12.07 hrs HW=30.67' TW=30.64' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 0.62 cfs @ 0.79 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 6.49" for 25-yr storm event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 2,281 cf
Outflow = 0.69 cfs @ 12.07 hrs, Volume= 2,239 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.69 cfs @ 12.07 hrs, Volume= 2,239 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.09' @ 12.07 hrs Surf.Area= 115 sf Storage= 51 cf

Plug-Flow detention time= 21.8 min calculated for 2,239 cf (98% of inflow)
Center-of-Mass det. time= 10.1 min (768.9 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.07 hrs HW=32.09' TW=30.69' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.97 fps)

Summary for Pond 27P: CB #7

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 6.37" for 25-yr storm event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 2,239 cf
Outflow = 0.67 cfs @ 12.07 hrs, Volume= 2,239 cf, Atten= 2%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.07 hrs, Volume= 2,239 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.11' @ 12.24 hrs Surf.Area= 9 sf Storage= 30 cf

Plug-Flow detention time= 1.4 min calculated for 2,238 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (770.3 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.07 hrs HW=30.68' TW=30.64' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.67 cfs @ 0.85 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=5.73"
Flow Length=515' Tc=5.2 min CN=77 Runoff=10.50 cfs 31,910 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=392,250 sf 20.91% Impervious Runoff Depth=4.41"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=37.16 cfs 144,234 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=4.89"
Flow Length=230' Tc=5.0 min CN=70 Runoff=2.76 cfs 8,235 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=657,104 sf 19.97% Impervious Runoff Depth=4.53"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=60.45 cfs 248,121 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=5.13"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.60 cfs 1,840 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=6.81"
Flow Length=127' Tc=5.0 min CN=86 Runoff=3.91 cfs 12,225 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=6.21"
Flow Length=563' Tc=9.9 min CN=81 Runoff=6.97 cfs 25,108 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=9,944 sf 54.58% Impervious Runoff Depth=6.21"
Flow Length=97' Tc=5.0 min CN=81 Runoff=1.68 cfs 5,143 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=7.89"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.68 cfs 2,287 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth>8.13"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.55 cfs 1,874 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=7.29"
Flow Length=149' Tc=5.0 min CN=90 Runoff=5.25 cfs 16,854 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=7.65"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.76 cfs 2,505 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=7.89"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.83 cfs 2,774 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.57' Max Vel=5.32 fps Inflow=43.54 cfs 152,468 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=38.81 cfs 152,468 cf

Reach 100R: NHDOT Swale Inflow=48.41 cfs 243,160 cf
Outflow=48.41 cfs 243,160 cf

Reach 200R: NHDOT Swale Inflow=52.59 cfs 259,263 cf
Outflow=52.59 cfs 259,263 cf

Pond 1P: NHDOT Culvert Peak Elev=24.48' Storage=3,326 cf Inflow=55.09 cfs 243,160 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=48.41 cfs 243,160 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=37.01' Storage=3,956 cf Inflow=37.16 cfs 144,234 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=41.79 cfs 144,234 cf

Pond 3P: Existing CB Peak Elev=31.55' Storage=17 cf Inflow=2.76 cfs 8,235 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=2.76 cfs 8,235 cf

Pond 4P: NHDOT Culvert Peak Elev=29.22' Storage=11,298 cf Inflow=62.20 cfs 259,263 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=52.59 cfs 259,263 cf

Pond 5P: Existing CB Peak Elev=29.45' Storage=20 cf Inflow=0.60 cfs 1,840 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.57 cfs 1,840 cf

Pond 10P: Raingarden #2 Peak Elev=28.77' Storage=6,260 cf Inflow=14.19 cfs 59,382 cf
Outflow=10.84 cfs 58,781 cf

Pond 11P: 12" Culvert Peak Elev=29.87' Storage=1,336 cf Inflow=6.97 cfs 25,108 cf
Outflow=7.31 cfs 25,107 cf

Pond 20P: DMH #1 Peak Elev=29.40' Storage=33 cf Inflow=2.79 cfs 11,142 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=2.75 cfs 11,142 cf

Pond 21P: Raingarden #1 Peak Elev=30.09' Storage=536 cf Inflow=1.68 cfs 5,143 cf
Outflow=1.14 cfs 5,141 cf

Pond 22P: DMH #2 Peak Elev=29.45' Storage=41 cf Inflow=1.73 cfs 6,001 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.67 cfs 6,000 cf

Pond 23P: CB #3 Peak Elev=29.45' Storage=24 cf Inflow=0.68 cfs 2,287 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.65 cfs 2,287 cf

Pond 24P: CB #4 Peak Elev=29.45' Storage=22 cf Inflow=0.55 cfs 1,874 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.52 cfs 1,874 cf

Pond 25P: Raingarden #3 Peak Elev=31.22' Storage=3,756 cf Inflow=6.80 cfs 22,056 cf
Outflow=4.20 cfs 22,050 cf

Pond 26A: Depressed Island Peak Elev=31.84' Storage=45 cf Inflow=0.76 cfs 2,505 cf
Outflow=0.76 cfs 2,468 cf

Pond 26P: CB #6 Peak Elev=31.24' Storage=29 cf Inflow=0.76 cfs 2,468 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.75 cfs 2,468 cf

Pond 27A: Depressed Island Peak Elev=32.10' Storage=52 cf Inflow=0.83 cfs 2,774 cf
Outflow=0.83 cfs 2,733 cf

Pond 27P: CB #7 Peak Elev=31.24' Storage=31 cf Inflow=0.83 cfs 2,733 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.81 cfs 2,733 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 503,110 cf Average Runoff Depth = 4.78"
74.12% Pervious = 936,136 sf 25.88% Impervious = 326,807 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 10.50 cfs @ 12.08 hrs, Volume= 31,910 cf, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 37.16 cfs @ 12.18 hrs, Volume= 144,234 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	82,017	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	93,935	48	Brush, Good, HSG B
	392,250	66	Weighted Average
	310,233		79.09% Pervious Area
	82,017		20.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 2.76 cfs @ 12.07 hrs, Volume= 8,235 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 60.45 cfs @ 12.20 hrs, Volume= 248,121 cf, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	58,069	48	Brush, Good, HSG B
	657,104	67	Weighted Average
	525,859		80.03% Pervious Area
	131,245		19.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.60 cfs @ 12.09 hrs, Volume= 1,840 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 3.91 cfs @ 12.07 hrs, Volume= 12,225 cf, Depth= 6.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 6.97 cfs @ 12.13 hrs, Volume= 25,108 cf, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 1.68 cfs @ 12.07 hrs, Volume= 5,143 cf, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,517	61	>75% Grass cover, Good, HSG B
	9,944	81	Weighted Average
	4,517		45.42% Pervious Area
	5,427		54.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 2,287 cf, Depth= 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 1,874 cf, Depth> 8.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 5.25 cfs @ 12.07 hrs, Volume= 16,854 cf, Depth= 7.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 2,505 cf, Depth= 7.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.83 cfs @ 12.07 hrs, Volume= 2,774 cf, Depth= 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 412,465 sf, 21.08% Impervious, Inflow Depth = 4.44" for 50-yr storm event
Inflow = 43.54 cfs @ 12.19 hrs, Volume= 152,468 cf
Outflow = 38.81 cfs @ 12.20 hrs, Volume= 152,468 cf, Atten= 11%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 5.32 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.65 fps, Avg. Travel Time= 1.0 min

Peak Storage= 685 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 4.98" for 50-yr storm event
Inflow = 48.41 cfs @ 12.27 hrs, Volume= 243,160 cf
Outflow = 48.41 cfs @ 12.27 hrs, Volume= 243,160 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 677,599 sf, 21.23% Impervious, Inflow Depth = 4.59" for 50-yr storm event
Inflow = 52.59 cfs @ 12.31 hrs, Volume= 259,263 cf
Outflow = 52.59 cfs @ 12.31 hrs, Volume= 259,263 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 585,344 sf, 31.26% Impervious, Inflow Depth = 4.98" for 50-yr storm event
Inflow = 55.09 cfs @ 12.20 hrs, Volume= 243,160 cf
Outflow = 48.41 cfs @ 12.27 hrs, Volume= 243,160 cf, Atten= 12%, Lag= 3.9 min
Primary = 48.41 cfs @ 12.27 hrs, Volume= 243,160 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 24.48' @ 12.27 hrs Surf.Area= 4,807 sf Storage= 3,326 cf

Plug-Flow detention time= 0.3 min calculated for 243,076 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (828.2 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=48.40 cfs @ 12.27 hrs HW=24.48' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 48.40 cfs @ 6.85 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 392,250 sf, 20.91% Impervious, Inflow Depth = 4.41" for 50-yr storm event
Inflow = 37.16 cfs @ 12.18 hrs, Volume= 144,234 cf
Outflow = 41.79 cfs @ 12.19 hrs, Volume= 144,234 cf, Atten= 0%, Lag= 0.6 min
Primary = 41.79 cfs @ 12.19 hrs, Volume= 144,234 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 37.01' @ 12.19 hrs Surf.Area= 7,008 sf Storage= 3,956 cf

Plug-Flow detention time= 0.7 min calculated for 144,234 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (837.6 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=41.79 cfs @ 12.19 hrs HW=36.96' TW=25.65' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 41.79 cfs @ 8.51 fps)

Summary for Pond 3P: Existing CB

Inflow Area =	20,215 sf,	24.32% Impervious,	Inflow Depth =	4.89"	for 50-yr storm event
Inflow =	2.76 cfs @	12.07 hrs, Volume=	8,235 cf		
Outflow =	2.76 cfs @	12.07 hrs, Volume=	8,235 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.76 cfs @	12.07 hrs, Volume=	8,235 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.55' @ 12.07 hrs Surf.Area= 4 sf Storage= 17 cf

Plug-Flow detention time= 0.3 min calculated for 8,232 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (821.5 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=2.76 cfs @ 12.07 hrs HW=31.53' TW=25.53' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.76 cfs @ 7.90 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area =	677,599 sf,	21.23% Impervious,	Inflow Depth =	4.59"	for 50-yr storm event
Inflow =	62.20 cfs @	12.20 hrs, Volume=	259,263 cf		
Outflow =	52.59 cfs @	12.31 hrs, Volume=	259,263 cf,	Atten= 15%,	Lag= 6.3 min
Primary =	52.59 cfs @	12.31 hrs, Volume=	259,263 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.22' @ 12.31 hrs Surf.Area= 9,861 sf Storage= 11,298 cf

Plug-Flow detention time= 1.8 min calculated for 259,174 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (836.6 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=52.59 cfs @ 12.31 hrs HW=29.22' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 52.59 cfs @ 7.44 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 5.13" for 50-yr storm event
Inflow = 0.60 cfs @ 12.09 hrs, Volume= 1,840 cf
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 1,840 cf, Atten= 4%, Lag= 0.3 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 1,840 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.45' @ 12.30 hrs Surf.Area= 13 sf Storage= 20 cf

Plug-Flow detention time= 0.7 min calculated for 1,840 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (818.7 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.09 hrs HW=28.89' TW=28.86' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.48 cfs @ 0.78 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 106,001 sf, 68.28% Impervious, Inflow Depth = 6.72" for 50-yr storm event
Inflow = 14.19 cfs @ 12.14 hrs, Volume= 59,382 cf
Outflow = 10.84 cfs @ 12.22 hrs, Volume= 58,781 cf, Atten= 24%, Lag= 5.0 min
Primary = 10.84 cfs @ 12.22 hrs, Volume= 58,781 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.77' @ 12.22 hrs Surf.Area= 3,142 sf Storage= 6,260 cf

Plug-Flow detention time= 24.6 min calculated for 58,781 cf (99% of inflow)
Center-of-Mass det. time= 18.1 min (814.7 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.84 cfs @ 12.22 hrs HW=28.77' TW=24.39' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 10.84 cfs @ 8.83 fps)
  └─**2=Orifice/Grate** (Passes < 1.90 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 16.90 cfs potential flow)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 6.21" for 50-yr storm event
Inflow = 6.97 cfs @ 12.13 hrs, Volume= 25,108 cf
Outflow = 7.31 cfs @ 12.14 hrs, Volume= 25,107 cf, Atten= 0%, Lag= 0.3 min
Primary = 7.31 cfs @ 12.14 hrs, Volume= 25,107 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.87' @ 12.14 hrs Surf.Area= 1,275 sf Storage= 1,336 cf

Plug-Flow detention time= 5.8 min calculated for 25,099 cf (100% of inflow)
Center-of-Mass det. time= 5.8 min (807.8 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=7.29 cfs @ 12.14 hrs HW=29.86' TW=28.60' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.25 cfs @ 5.41 fps)
└—**2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 3.04 cfs @ 4.79 fps)

Summary for Pond 20P: DMH #1

Inflow Area = 20,495 sf, 61.50% Impervious, Inflow Depth = 6.52" for 50-yr storm event
Inflow = 2.79 cfs @ 12.07 hrs, Volume= 11,142 cf
Outflow = 2.75 cfs @ 12.07 hrs, Volume= 11,142 cf, Atten= 1%, Lag= 0.2 min
Primary = 2.75 cfs @ 12.07 hrs, Volume= 11,142 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.40' @ 12.30 hrs Surf.Area= 13 sf Storage= 33 cf

Plug-Flow detention time= 0.3 min calculated for 11,138 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (789.5 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.74 cfs @ 12.07 hrs HW=28.48' TW=27.81' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.74 cfs @ 3.49 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 9,944 sf, 54.58% Impervious, Inflow Depth = 6.21" for 50-yr storm event
Inflow = 1.68 cfs @ 12.07 hrs, Volume= 5,143 cf
Outflow = 1.14 cfs @ 12.06 hrs, Volume= 5,141 cf, Atten= 32%, Lag= 0.0 min
Primary = 1.14 cfs @ 12.06 hrs, Volume= 5,141 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.09' @ 12.18 hrs Surf.Area= 873 sf Storage= 536 cf

Plug-Flow detention time= 11.3 min calculated for 5,139 cf (100% of inflow)
Center-of-Mass det. time= 11.1 min (808.6 - 797.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.14 cfs @ 12.06 hrs HW=29.79' TW=28.34' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.14 cfs of 4.55 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.14 cfs @ 5.79 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 6.82" for 50-yr storm event
Inflow = 1.73 cfs @ 12.07 hrs, Volume= 6,001 cf
Outflow = 1.67 cfs @ 12.07 hrs, Volume= 6,000 cf, Atten= 3%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.07 hrs, Volume= 6,000 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 29.45' @ 12.30 hrs Surf.Area= 20 sf Storage= 41 cf

Plug-Flow detention time= 0.7 min calculated for 5,998 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (772.7 - 772.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.70 cfs @ 12.07 hrs HW=28.67' TW=28.44' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.70 cfs @ 2.19 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 7.89" for 50-yr storm event
Inflow = 0.68 cfs @ 12.07 hrs, Volume= 2,287 cf
Outflow = 0.65 cfs @ 12.07 hrs, Volume= 2,287 cf, Atten= 5%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.07 hrs, Volume= 2,287 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.45' @ 12.30 hrs Surf.Area= 13 sf Storage= 24 cf

Plug-Flow detention time= 0.8 min calculated for 2,286 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (755.6 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=28.69' TW=28.67' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.52 cfs @ 0.66 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth > 8.13" for 50-yr storm event
Inflow = 0.55 cfs @ 12.07 hrs, Volume= 1,874 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 1,874 cf, Atten= 5%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 1,874 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.45' @ 12.30 hrs Surf.Area= 13 sf Storage= 22 cf

Plug-Flow detention time= 0.9 min calculated for 1,874 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (746.2 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.38 cfs @ 12.07 hrs HW=28.68' TW=28.67' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.38 cfs @ 0.64 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 35,900 sf, 80.94% Impervious, Inflow Depth = 7.37" for 50-yr storm event
Inflow = 6.80 cfs @ 12.07 hrs, Volume= 22,056 cf
Outflow = 4.20 cfs @ 12.16 hrs, Volume= 22,050 cf, Atten= 38%, Lag= 5.4 min
Primary = 4.20 cfs @ 12.16 hrs, Volume= 22,050 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.22' @ 12.16 hrs Surf.Area= 3,367 sf Storage= 3,756 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 18.1 min calculated for 22,042 cf (100% of inflow)
Center-of-Mass det. time= 18.0 min (790.2 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.20 cfs @ 12.16 hrs HW=31.22' TW=28.67' (Dynamic Tailwater)
↑**1=Culvert** (Passes 4.20 cfs of 9.37 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 1.51 cfs @ 7.68 fps)
3=Orifice/Grate (Weir Controls 2.69 cfs @ 1.53 fps)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 7.65" for 50-yr storm event
Inflow = 0.76 cfs @ 12.07 hrs, Volume= 2,505 cf
Outflow = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.84' @ 12.07 hrs Surf.Area= 93 sf Storage= 45 cf

Plug-Flow detention time= 17.5 min calculated for 2,468 cf (99% of inflow)
Center-of-Mass det. time= 8.1 min (771.0 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.07 hrs HW=31.84' TW=30.98' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 7.54" for 50-yr storm event
Inflow = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf
Outflow = 0.75 cfs @ 12.07 hrs, Volume= 2,468 cf, Atten= 2%, Lag= 0.1 min
Primary = 0.75 cfs @ 12.07 hrs, Volume= 2,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.24' @ 12.15 hrs Surf.Area= 7 sf Storage= 29 cf

Plug-Flow detention time= 1.3 min calculated for 2,468 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (772.4 - 771.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.07 hrs HW=30.99' TW=30.95' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.74 cfs @ 0.95 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 7.89" for 50-yr storm event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 2,774 cf
Outflow = 0.83 cfs @ 12.07 hrs, Volume= 2,733 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.83 cfs @ 12.07 hrs, Volume= 2,733 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.10' @ 12.07 hrs Surf.Area= 117 sf Storage= 52 cf

Plug-Flow detention time= 18.5 min calculated for 2,732 cf (98% of inflow)
Center-of-Mass det. time= 8.8 min (763.7 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.83 cfs @ 12.07 hrs HW=32.10' TW=30.99' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.83 cfs @ 1.03 fps)

Summary for Pond 27P: CB #7

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 7.77" for 50-yr storm event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 2,733 cf
Outflow = 0.81 cfs @ 12.07 hrs, Volume= 2,733 cf, Atten= 2%, Lag= 0.1 min
Primary = 0.81 cfs @ 12.07 hrs, Volume= 2,733 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.24' @ 12.15 hrs Surf.Area= 9 sf Storage= 31 cf

Plug-Flow detention time= 1.3 min calculated for 2,732 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (764.9 - 763.7)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

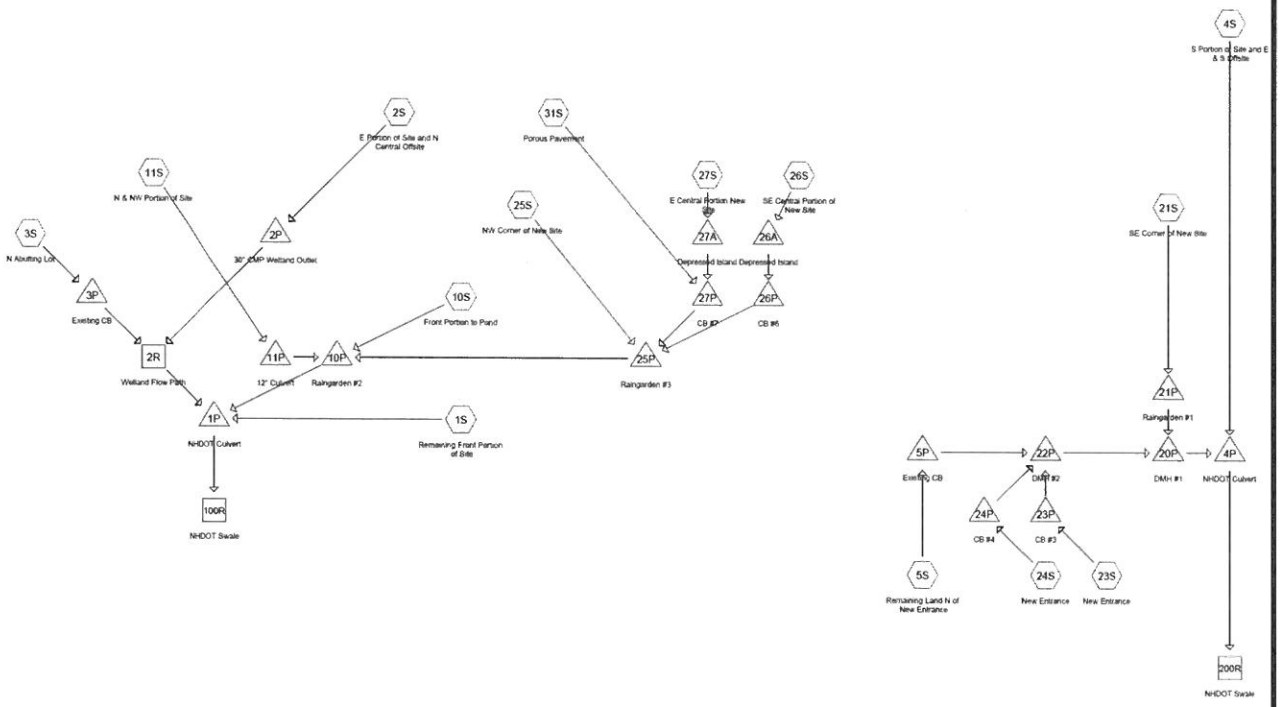
Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.07 hrs HW=31.00' TW=30.95' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.81 cfs @ 1.03 fps)

POST-DEVELOPMENT

COMPUTATIONS

Routing Diagram
Area and Soil Listing
2-Year 24-Hour Summary
10-Year, 24-Hour Summary
25-Year, 24-Hour Complete
50-Year, 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for 3980-Portsmouth-Spaulding-Nissan-POST-2018
Prepared by Altus Engineering, Inc., Printed 10/11/2018
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
537,460	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S)
18,403	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S)
153,639	48	Brush, Good, HSG B (2S, 4S, 11S)
83,941	65	Brush, Good, HSG C (2S, 4S)
325,897	98	Impervious (1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S)
6,200	98	Porous Pavement, HSG B (31S)
134,268	55	Woods, Good, HSG B (2S, 4S)
3,135	70	Woods, Good, HSG C (2S, 4S)
1,262,943	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
831,567	HSG B	1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S, 31S
105,479	HSG C	1S, 2S, 4S
0	HSG D	
325,897	Other	1S, 2S, 3S, 4S, 5S, 10S, 11S, 21S, 23S, 24S, 25S, 26S, 27S
1,262,943		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Nun
0	537,460	18,403	0	0	555,863	>75% Grass cover, Good	
0	153,639	83,941	0	0	237,580	Brush, Good	
0	0	0	0	325,897	325,897	Impervious	
0	6,200	0	0	0	6,200	Porous Pavement	
0	134,268	3,135	0	0	137,403	Woods, Good	
0	**831,567**	**105,479**	**0**	**325,897**	**1,262,943**	**TOTAL AREA**	

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=0.05"
Flow Length=515' Tc=5.2 min CN=77 Runoff=0.02 cfs 266 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=381,680 sf 21.25% Impervious Runoff Depth=0.00"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=0.00 cfs 0 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=0.00"
Flow Length=230' Tc=5.0 min CN=70 Runoff=0.00 cfs 8 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=661,184 sf 19.85% Impervious Runoff Depth=0.00"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=0.00 cfs 2 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=0.01"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.00 cfs 4 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=0.20"
Flow Length=127' Tc=5.0 min CN=86 Runoff=0.10 cfs 355 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=0.10"
Flow Length=563' Tc=9.9 min CN=81 Runoff=0.05 cfs 396 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=10,234 sf 53.03% Impervious Runoff Depth=0.10"
Flow Length=97' Tc=5.0 min CN=81 Runoff=0.01 cfs 84 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=0.56"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.05 cfs 163 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=0.71"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.05 cfs 163 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=0.32"
Flow Length=149' Tc=5.0 min CN=90 Runoff=0.23 cfs 741 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=0.45"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.05 cfs 148 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=0.56"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.07 cfs 198 cf

Subcatchment 31S: Porous Pavement Runoff Area=6,200 sf 100.00% Impervious Runoff Depth>0.63"
Tc=790.0 min CN=98 Runoff=0.01 cfs 327 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.00' Max Vel=0.65 fps Inflow=0.00 cfs 8 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=0.00 cfs 8 cf

Reach 100R: NHDOT Swale Inflow=0.08 cfs 1,718 cf
Outflow=0.08 cfs 1,718 cf

Reach 200R: NHDOT Swale Inflow=0.10 cfs 415 cf
Outflow=0.10 cfs 415 cf

Pond 1P: NHDOT Culvert Peak Elev=21.06' Storage=2 cf Inflow=0.08 cfs 1,718 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=0.08 cfs 1,718 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=26.60' Storage=0 cf Inflow=0.00 cfs 0 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=0.00 cfs 0 cf

Pond 3P: Existing CB Peak Elev=28.52' Storage=0 cf Inflow=0.00 cfs 8 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=0.00 cfs 8 cf

Pond 4P: NHDOT Culvert Peak Elev=25.45' Storage=9 cf Inflow=0.11 cfs 415 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=0.10 cfs 415 cf

Pond 5P: Existing CB Peak Elev=27.91' Storage=0 cf Inflow=0.00 cfs 4 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.00 cfs 4 cf

Pond 10P: Raingarden #2 Peak Elev=24.89' Storage=695 cf Inflow=0.27 cfs 2,062 cf
Outflow=0.07 cfs 1,444 cf

Pond 11P: 12" Culvert Peak Elev=27.11' Storage=27 cf Inflow=0.05 cfs 396 cf
Outflow=0.05 cfs 396 cf

Pond 20P: DMH #1 Peak Elev=27.02' Storage=2 cf Inflow=0.11 cfs 413 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=0.11 cfs 413 cf

Pond 21P: Raingarden #1 Peak Elev=27.29' Storage=13 cf Inflow=0.01 cfs 84 cf
Outflow=0.01 cfs 82 cf

Pond 22P: DMH #2 Peak Elev=27.56' Storage=3 cf Inflow=0.11 cfs 330 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=0.11 cfs 330 cf

Pond 23P: CB #3 Peak Elev=27.70' Storage=2 cf Inflow=0.05 cfs 163 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.05 cfs 163 cf

Pond 24P: CB #4 Peak Elev=27.85' Storage=1 cf Inflow=0.05 cfs 163 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.05 cfs 163 cf

Pond 25P: Raingarden #3 Peak Elev=27.52' Storage=168 cf Inflow=0.34 cfs 1,335 cf
Outflow=0.19 cfs 1,312 cf

Pond 26A: Depressed Island Peak Elev=31.76' Storage=38 cf Inflow=0.05 cfs 148 cf
Outflow=0.05 cfs 111 cf

Pond 26P: CB #6 Peak Elev=28.87' Storage=2 cf Inflow=0.05 cfs 111 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.05 cfs 111 cf

Pond 27A: Depressed Island Peak Elev=32.02' Storage=43 cf Inflow=0.07 cfs 198 cf
Outflow=0.07 cfs 157 cf

Pond 27P: CB #7 Peak Elev=28.90' Storage=2 cf Inflow=0.07 cfs 484 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.07 cfs 483 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 2,855 cf Average Runoff Depth = 0.03"
73.70% Pervious = 930,846 sf 26.30% Impervious = 332,097 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 0.02 cfs @ 12.42 hrs, Volume= 266 cf, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	81,107	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	83,365	48	Brush, Good, HSG B
	910	61	>75% Grass cover, Good, HSG B
	381,680	66	Weighted Average
	300,573		78.75% Pervious Area
	81,107		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 0.00 cfs @ 21.35 hrs, Volume= 8 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 0.00 cfs @ 24.05 hrs, Volume= 2 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	62,149	48	Brush, Good, HSG B
	661,184	67	Weighted Average
	529,939		80.15% Pervious Area
	131,245		19.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.00 cfs @ 15.49 hrs, Volume= 4 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 355 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 0.05 cfs @ 12.33 hrs, Volume= 396 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 0.01 cfs @ 12.14 hrs, Volume= 84 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,807	61	>75% Grass cover, Good, HSG B
	10,234	81	Weighted Average
	4,807		46.97% Pervious Area
	5,427		53.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 163 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 163 cf, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 741 cf, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 148 cf, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 198 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 31S: Porous Pavement

Runoff = 0.01 cfs @ 21.95 hrs, Volume= 327 cf, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" storm Rainfall=1.00"

	Area (sf)	CN	Description
*	6,200	98	Porous Pavement, HSG B
	6,200		100.00% Impervious Area

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

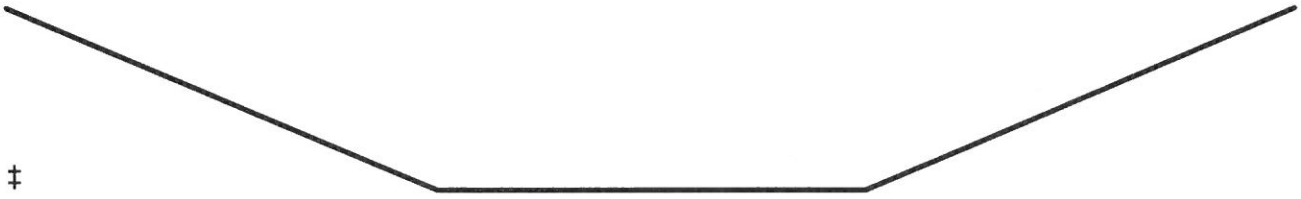
Summary for Reach 2R: Wetland Flow Path

Inflow Area = 401,895 sf, 21.40% Impervious, Inflow Depth > 0.00" for 1" storm event
Inflow = 0.00 cfs @ 21.37 hrs, Volume= 8 cf
Outflow = 0.00 cfs @ 21.40 hrs, Volume= 8 cf, Atten= 0%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 0.65 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 2.4 min

Peak Storage= 0 cf @ 21.40 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'



‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 0.04" for 1" storm event
Inflow = 0.08 cfs @ 13.45 hrs, Volume= 1,718 cf
Outflow = 0.08 cfs @ 13.45 hrs, Volume= 1,718 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth > 0.01" for 1" storm event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 415 cf
Outflow = 0.10 cfs @ 12.11 hrs, Volume= 415 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 0.04" for 1" storm event
Inflow = 0.08 cfs @ 13.44 hrs, Volume= 1,718 cf
Outflow = 0.08 cfs @ 13.45 hrs, Volume= 1,718 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.08 cfs @ 13.45 hrs, Volume= 1,718 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 21.06' @ 13.45 hrs Surf.Area= 21 sf Storage= 2 cf

Plug-Flow detention time= 0.5 min calculated for 1,717 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,087.5 - 1,087.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.08 cfs @ 13.45 hrs HW=21.06' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.08 cfs @ 1.59 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 381,680 sf, 21.25% Impervious, Inflow Depth = 0.00" for 1" storm event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 26.60' @ 1.00 hrs Surf.Area= 10 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	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=26.60' TW=25.10' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 3P: Existing CB

Inflow Area = 20,215 sf, 24.32% Impervious, Inflow Depth = 0.00" for 1" storm event
Inflow = 0.00 cfs @ 21.35 hrs, Volume= 8 cf
Outflow = 0.00 cfs @ 21.37 hrs, Volume= 8 cf, Atten= 0%, Lag= 1.3 min
Primary = 0.00 cfs @ 21.37 hrs, Volume= 8 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.52' @ 21.37 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 7.3 min calculated for 8 cf (100% of inflow)
Center-of-Mass det. time= 7.3 min (1,209.9 - 1,202.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 21.37 hrs HW=28.52' TW=25.10' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.00 cfs @ 0.32 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth > 0.01" for 1" storm event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 415 cf
Outflow = 0.10 cfs @ 12.11 hrs, Volume= 415 cf, Atten= 4%, Lag= 1.3 min
Primary = 0.10 cfs @ 12.11 hrs, Volume= 415 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 25.45' @ 12.11 hrs Surf.Area= 141 sf Storage= 9 cf

Plug-Flow detention time= 2.3 min calculated for 415 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (862.9 - 860.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.10 cfs @ 12.11 hrs HW=25.45' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.10 cfs @ 1.63 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 0.01" for 1" storm event
Inflow = 0.00 cfs @ 15.49 hrs, Volume= 4 cf
Outflow = 0.00 cfs @ 15.58 hrs, Volume= 4 cf, Atten= 0%, Lag= 5.6 min
Primary = 0.00 cfs @ 15.58 hrs, Volume= 4 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.91' @ 15.57 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 13.2 min calculated for 4 cf (100% of inflow)
Center-of-Mass det. time= 12.8 min (1,132.1 - 1,119.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 15.58 hrs HW=27.91' TW=27.43' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.00 cfs @ 0.26 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 112,201 sf, 70.03% Impervious, Inflow Depth > 0.22" for 1" storm event
Inflow = 0.27 cfs @ 12.27 hrs, Volume= 2,062 cf
Outflow = 0.07 cfs @ 13.45 hrs, Volume= 1,444 cf, Atten= 75%, Lag= 70.6 min
Primary = 0.07 cfs @ 13.45 hrs, Volume= 1,444 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 24.89' @ 13.45 hrs Surf.Area= 1,959 sf Storage= 695 cf

Plug-Flow detention time= 276.0 min calculated for 1,443 cf (70% of inflow)
Center-of-Mass det. time= 123.9 min (1,103.6 - 979.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 13.45 hrs HW=24.89' TW=21.06' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 0.07 cfs @ 1.39 fps)
└2=**Orifice/Grate** (Passes 0.07 cfs of 0.35 cfs potential flow)
└3=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 11P: 12" Culvert

Inflow Area =	48,550 sf, 59.43% Impervious,	Inflow Depth =	0.10"	for 1" storm event
Inflow =	0.05 cfs @ 12.33 hrs, Volume=	396 cf		
Outflow =	0.05 cfs @ 12.46 hrs, Volume=	396 cf,	Atten= 10%,	Lag= 7.8 min
Primary =	0.05 cfs @ 12.46 hrs, Volume=	396 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.11' @ 12.46 hrs Surf.Area= 269 sf Storage= 27 cf

Plug-Flow detention time= 21.6 min calculated for 396 cf (100% of inflow)
Center-of-Mass det. time= 20.5 min (963.0 - 942.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=0.05 cfs @ 12.46 hrs HW=27.11' TW=24.53' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 0.05 cfs @ 1.50 fps)
└2=**Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 20P: DMH #1

Inflow Area =	20,785 sf, 60.64% Impervious,	Inflow Depth >	0.24"	for 1" storm event
Inflow =	0.11 cfs @ 12.08 hrs, Volume=	413 cf		
Outflow =	0.11 cfs @ 12.09 hrs, Volume=	413 cf,	Atten= 0%,	Lag= 0.2 min
Primary =	0.11 cfs @ 12.09 hrs, Volume=	413 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.02' @ 12.09 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 1.3 min calculated for 412 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (857.4 - 856.2)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=27.02' TW=25.45' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.11 cfs @ 1.88 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area =	10,234 sf, 53.03% Impervious,	Inflow Depth =	0.10"	for 1" storm event
Inflow =	0.01 cfs @ 12.14 hrs, Volume=	84 cf		
Outflow =	0.01 cfs @ 12.59 hrs, Volume=	82 cf,	Atten= 54%,	Lag= 27.1 min
Primary =	0.01 cfs @ 12.59 hrs, Volume=	82 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.29' @ 12.59 hrs Surf.Area= 805 sf Storage= 13 cf

Plug-Flow detention time= 68.7 min calculated for 82 cf (99% of inflow)
Center-of-Mass det. time= 61.8 min (999.7 - 937.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 12.59 hrs HW=27.29' TW=26.93' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.01 cfs of 0.01 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.69 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 0.38" for 1" storm event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 330 cf
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 330 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.11 cfs @ 12.08 hrs, Volume= 330 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.56' @ 12.08 hrs Surf.Area= 20 sf Storage= 3 cf

Plug-Flow detention time= 2.1 min calculated for 330 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (820.4 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert**
			L= 69.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.08 hrs HW=27.56' TW=27.02' (Dynamic Tailwater)
- **1=Culvert** (Outlet Controls 0.11 cfs @ 1.86 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 0.56" for 1" storm event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 163 cf
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 163 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 163 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.70' @ 12.08 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 1.8 min calculated for 163 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (824.9 - 823.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=27.70' TW=27.56' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.05 cfs @ 1.55 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 0.71" for 1" storm event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 163 cf
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 163 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 163 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.85' @ 12.08 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 1.9 min calculated for 163 cf (100% of inflow)
Center-of-Mass det. time= 1.9 min (803.4 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=27.85' TW=27.56' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.05 cfs @ 1.65 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 42,100 sf, 83.74% Impervious, Inflow Depth > 0.38" for 1" storm event
Inflow = 0.34 cfs @ 12.10 hrs, Volume= 1,335 cf
Outflow = 0.19 cfs @ 12.22 hrs, Volume= 1,312 cf, Atten= 43%, Lag= 6.9 min
Primary = 0.19 cfs @ 12.22 hrs, Volume= 1,312 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.52' @ 12.22 hrs Surf.Area= 1,557 sf Storage= 168 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 37.5 min calculated for 1,312 cf (98% of inflow)
Center-of-Mass det. time= 24.1 min (1,008.6 - 984.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 12.22 hrs HW=27.52' TW=24.24' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.19 cfs of 0.32 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.77 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 0.45" for 1" storm event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 148 cf
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 111 cf, Atten= 3%, Lag= 1.5 min
Primary = 0.05 cfs @ 12.10 hrs, Volume= 111 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.76' @ 12.10 hrs Surf.Area= 89 sf Storage= 38 cf

Plug-Flow detention time= 136.3 min calculated for 111 cf (75% of inflow)
Center-of-Mass det. time= 46.3 min (886.3 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 12.10 hrs HW=31.76' TW=28.86' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.05 cfs @ 0.40 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 0.34" for 1" storm event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 111 cf
Outflow = 0.05 cfs @ 12.11 hrs, Volume= 111 cf, Atten= 1%, Lag= 0.6 min
Primary = 0.05 cfs @ 12.11 hrs, Volume= 111 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.87' @ 12.11 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 2.2 min calculated for 111 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (888.4 - 886.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.11 hrs HW=28.87' TW=27.48' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.05 cfs @ 1.39 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 0.56" for 1" storm event
Inflow = 0.07 cfs @ 12.07 hrs, Volume= 198 cf
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 157 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 157 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.02' @ 12.08 hrs Surf.Area= 104 sf Storage= 43 cf

Plug-Flow detention time= 118.8 min calculated for 157 cf (79% of inflow)
Center-of-Mass det. time= 39.3 min (862.4 - 823.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=32.02' TW=28.90' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.07 cfs @ 0.45 fps)

Summary for Pond 27P: CB #7

Inflow Area = 10,420 sf, 96.87% Impervious, Inflow Depth > 0.56" for 1" storm event
Inflow = 0.07 cfs @ 12.08 hrs, Volume= 484 cf
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 483 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 483 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.90' @ 12.08 hrs Surf.Area= 13 sf Storage= 2 cf

Plug-Flow detention time= 1.5 min calculated for 483 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (1,194.3 - 1,193.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=28.90' TW=27.44' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.07 cfs @ 1.36 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=1.57"
Flow Length=515' Tc=5.2 min CN=77 Runoff=2.86 cfs 8,725 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=381,680 sf 21.25% Impervious Runoff Depth=0.90"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=6.40 cfs 28,625 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=1.12"
Flow Length=230' Tc=5.0 min CN=70 Runoff=0.59 cfs 1,888 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=661,184 sf 19.85% Impervious Runoff Depth=0.95"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=11.33 cfs 52,512 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=1.24"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.14 cfs 445 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=2.26"
Flow Length=127' Tc=5.0 min CN=86 Runoff=1.35 cfs 4,056 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=1.86"
Flow Length=563' Tc=9.9 min CN=81 Runoff=2.12 cfs 7,507 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=10,234 sf 53.03% Impervious Runoff Depth=1.86"
Flow Length=97' Tc=5.0 min CN=81 Runoff=0.53 cfs 1,582 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=3.12"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.28 cfs 903 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=3.33"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.23 cfs 768 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=2.62"
Flow Length=149' Tc=5.0 min CN=90 Runoff=1.99 cfs 6,052 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=2.91"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.31 cfs 953 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=3.12"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.34 cfs 1,096 cf

Subcatchment 31S: Porous Pavement Runoff Area=6,200 sf 100.00% Impervious Runoff Depth>2.81"
Tc=790.0 min CN=98 Runoff=0.03 cfs 1,452 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.21' Max Vel=2.94 fps Inflow=6.75 cfs 30,514 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=6.75 cfs 30,514 cf

Reach 100R: NHDOT Swale Inflow=9.98 cfs 59,584 cf
Outflow=9.98 cfs 59,584 cf

Reach 200R: NHDOT Swale Inflow=11.83 cfs 56,210 cf
Outflow=11.83 cfs 56,210 cf

Pond 1P: NHDOT Culvert Peak Elev=22.17' Storage=91 cf Inflow=9.98 cfs 59,584 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=9.98 cfs 59,584 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=27.94' Storage=31 cf Inflow=6.40 cfs 28,625 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=6.40 cfs 28,625 cf

Pond 3P: Existing CB Peak Elev=28.97' Storage=6 cf Inflow=0.59 cfs 1,888 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=0.59 cfs 1,888 cf

Pond 4P: NHDOT Culvert Peak Elev=26.66' Storage=954 cf Inflow=11.98 cfs 56,210 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=11.83 cfs 56,210 cf

Pond 5P: Existing CB Peak Elev=28.13' Storage=3 cf Inflow=0.14 cfs 445 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.14 cfs 445 cf

Pond 10P: Raingarden #2 Peak Elev=28.06' Storage=4,178 cf Inflow=4.43 cfs 20,990 cf
Outflow=2.09 cfs 20,345 cf

Pond 11P: 12" Culvert Peak Elev=28.11' Storage=472 cf Inflow=2.12 cfs 7,507 cf
Outflow=1.89 cfs 7,506 cf

Pond 20P: DMH #1 Peak Elev=27.41' Storage=7 cf Inflow=1.05 cfs 3,698 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=1.05 cfs 3,697 cf

Pond 21P: Raingarden #1 Peak Elev=27.71' Storage=148 cf Inflow=0.53 cfs 1,582 cf
Outflow=0.44 cfs 1,581 cf

Pond 22P: DMH #2 Peak Elev=27.85' Storage=9 cf Inflow=0.65 cfs 2,117 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=0.65 cfs 2,117 cf

Pond 23P: CB #3 Peak Elev=27.94' Storage=5 cf Inflow=0.28 cfs 903 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.28 cfs 903 cf

Pond 24P: CB #4 Peak Elev=28.03' Storage=4 cf Inflow=0.23 cfs 768 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.23 cfs 768 cf

Pond 25P: Raingarden #3 Peak Elev=30.12' Storage=1,083 cf Inflow=2.63 cfs 9,473 cf
Outflow=1.53 cfs 9,428 cf

Pond 26A: Depressed Island Peak Elev=31.80' Storage=41 cf Inflow=0.31 cfs 953 cf
Outflow=0.31 cfs 916 cf

Pond 26P: CB #6 Peak Elev=30.12' Storage=18 cf Inflow=0.31 cfs 916 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.31 cfs 916 cf

Pond 27A: Depressed Island Peak Elev=32.06' Storage=47 cf Inflow=0.34 cfs 1,096 cf
Outflow=0.34 cfs 1,054 cf

Pond 27P: CB #7 Peak Elev=30.12' Storage=18 cf Inflow=0.35 cfs 2,507 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.35 cfs 2,506 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 116,565 cf Average Runoff Depth = 1.11"
73.70% Pervious = 930,846 sf 26.30% Impervious = 332,097 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 2.86 cfs @ 12.08 hrs, Volume= 8,725 cf, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 6.40 cfs @ 12.20 hrs, Volume= 28,625 cf, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	81,107	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	83,365	48	Brush, Good, HSG B
	910	61	>75% Grass cover, Good, HSG B
	381,680	66	Weighted Average
	300,573		78.75% Pervious Area
	81,107		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,888 cf, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 11.33 cfs @ 12.23 hrs, Volume= 52,512 cf, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	62,149	48	Brush, Good, HSG B
	661,184	67	Weighted Average
	529,939		80.15% Pervious Area
	131,245		19.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 445 cf, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 1.35 cfs @ 12.07 hrs, Volume= 4,056 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 2.12 cfs @ 12.14 hrs, Volume= 7,507 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 1,582 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,807	61	>75% Grass cover, Good, HSG B
	10,234	81	Weighted Average
	4,807		46.97% Pervious Area
	5,427		53.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 903 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 768 cf, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 1.99 cfs @ 12.07 hrs, Volume= 6,052 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 953 cf, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 1,096 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 31S: Porous Pavement

Runoff = 0.03 cfs @ 21.94 hrs, Volume= 1,452 cf, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr storm Rainfall=3.68"

	Area (sf)	CN	Description
*	6,200	98	Porous Pavement, HSG B
	6,200		100.00% Impervious Area

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

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 401,895 sf, 21.40% Impervious, Inflow Depth = 0.91" for 2-yr storm event
Inflow = 6.75 cfs @ 12.20 hrs, Volume= 30,514 cf
Outflow = 6.75 cfs @ 12.21 hrs, Volume= 30,514 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 2.94 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 1.5 min

Peak Storage= 216 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 1.23" for 2-yr storm event
Inflow = 9.98 cfs @ 12.19 hrs, Volume= 59,584 cf
Outflow = 9.98 cfs @ 12.19 hrs, Volume= 59,584 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 0.99" for 2-yr storm event
Inflow = 11.83 cfs @ 12.25 hrs, Volume= 56,210 cf
Outflow = 11.83 cfs @ 12.25 hrs, Volume= 56,210 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 1.23" for 2-yr storm event
Inflow = 9.98 cfs @ 12.19 hrs, Volume= 59,584 cf
Outflow = 9.98 cfs @ 12.19 hrs, Volume= 59,584 cf, Atten= 0%, Lag= 0.2 min
Primary = 9.98 cfs @ 12.19 hrs, Volume= 59,584 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 22.17' @ 12.19 hrs Surf.Area= 140 sf Storage= 91 cf

Plug-Flow detention time= 0.2 min calculated for 59,584 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (879.8 - 879.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=9.98 cfs @ 12.19 hrs HW=22.17' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 9.98 cfs @ 3.74 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 381,680 sf, 21.25% Impervious, Inflow Depth = 0.90" for 2-yr storm event
Inflow = 6.40 cfs @ 12.20 hrs, Volume= 28,625 cf
Outflow = 6.40 cfs @ 12.20 hrs, Volume= 28,625 cf, Atten= 0%, Lag= 0.1 min
Primary = 6.40 cfs @ 12.20 hrs, Volume= 28,625 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.94' @ 12.20 hrs Surf.Area= 36 sf Storage= 31 cf

Plug-Flow detention time= 0.1 min calculated for 28,615 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (885.8 - 885.6)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.40 cfs @ 12.20 hrs HW=27.94' TW=25.31' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 6.40 cfs @ 3.47 fps)

Summary for Pond 3P: Existing CB

Inflow Area = 20,215 sf, 24.32% Impervious, Inflow Depth = 1.12" for 2-yr storm event
Inflow = 0.59 cfs @ 12.08 hrs, Volume= 1,888 cf
Outflow = 0.59 cfs @ 12.08 hrs, Volume= 1,888 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.59 cfs @ 12.08 hrs, Volume= 1,888 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.97' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf

Plug-Flow detention time= 0.6 min calculated for 1,888 cf (100% of inflow)
Center-of-Mass det. time= 0.5 min (865.5 - 865.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.59 cfs @ 12.08 hrs HW=28.97' TW=25.26' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.59 cfs @ 2.31 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 0.99" for 2-yr storm event
Inflow = 11.98 cfs @ 12.23 hrs, Volume= 56,210 cf
Outflow = 11.83 cfs @ 12.25 hrs, Volume= 56,210 cf, Atten= 1%, Lag= 1.5 min
Primary = 11.83 cfs @ 12.25 hrs, Volume= 56,210 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 26.66' @ 12.25 hrs Surf.Area= 1,429 sf Storage= 954 cf

Plug-Flow detention time= 1.3 min calculated for 56,191 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (880.8 - 879.6)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=11.82 cfs @ 12.25 hrs HW=26.66' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 11.82 cfs @ 3.92 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 1.24" for 2-yr storm event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 445 cf
Outflow = 0.14 cfs @ 12.10 hrs, Volume= 445 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.14 cfs @ 12.10 hrs, Volume= 445 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.13' @ 12.09 hrs Surf.Area= 13 sf Storage= 3 cf

Plug-Flow detention time= 1.1 min calculated for 445 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (860.7 - 859.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.10 hrs HW=28.12' TW=27.85' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.14 cfs @ 1.58 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 112,201 sf, 70.03% Impervious, Inflow Depth > 2.24" for 2-yr storm event
Inflow = 4.43 cfs @ 12.13 hrs, Volume= 20,990 cf
Outflow = 2.09 cfs @ 12.48 hrs, Volume= 20,345 cf, Atten= 53%, Lag= 20.9 min
Primary = 2.09 cfs @ 12.48 hrs, Volume= 20,345 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.06' @ 12.48 hrs Surf.Area= 2,710 sf Storage= 4,178 cf

Plug-Flow detention time= 47.5 min calculated for 20,338 cf (97% of inflow)
Center-of-Mass det. time= 25.1 min (885.9 - 860.8)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=2.09 cfs @ 12.48 hrs HW=28.06' TW=21.96' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.09 cfs of 9.48 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.72 cfs @ 8.76 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.37 cfs @ 0.79 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 1.86" for 2-yr storm event
Inflow = 2.12 cfs @ 12.14 hrs, Volume= 7,507 cf
Outflow = 1.89 cfs @ 12.14 hrs, Volume= 7,506 cf, Atten= 11%, Lag= 0.3 min
Primary = 1.89 cfs @ 12.14 hrs, Volume= 7,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.11' @ 12.47 hrs Surf.Area= 656 sf Storage= 472 cf

Plug-Flow detention time= 7.3 min calculated for 7,506 cf (100% of inflow)
Center-of-Mass det. time= 7.2 min (843.5 - 836.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=1.89 cfs @ 12.14 hrs HW=27.84' TW=27.39' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.89 cfs @ 3.64 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 20P: DMH #1

Inflow Area = 20,785 sf, 60.64% Impervious, Inflow Depth = 2.13" for 2-yr storm event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 3,698 cf
Outflow = 1.05 cfs @ 12.10 hrs, Volume= 3,697 cf, Atten= 0%, Lag= 0.1 min
Primary = 1.05 cfs @ 12.10 hrs, Volume= 3,697 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.41' @ 12.10 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 3,696 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (814.7 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.10 hrs HW=27.41' TW=26.29' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.05 cfs @ 3.40 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 10,234 sf, 53.03% Impervious, Inflow Depth = 1.86" for 2-yr storm event
Inflow = 0.53 cfs @ 12.08 hrs, Volume= 1,582 cf
Outflow = 0.44 cfs @ 12.13 hrs, Volume= 1,581 cf, Atten= 17%, Lag= 3.1 min
Primary = 0.44 cfs @ 12.13 hrs, Volume= 1,581 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.71' @ 12.13 hrs Surf.Area= 805 sf Storage= 148 cf

Plug-Flow detention time= 15.4 min calculated for 1,580 cf (100% of inflow)
Center-of-Mass det. time= 15.0 min (846.8 - 831.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.44 cfs @ 12.13 hrs HW=27.71' TW=27.39' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.44 cfs of 0.71 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 2.31 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 2.41" for 2-yr storm event
Inflow = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf
Outflow = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.65 cfs @ 12.08 hrs, Volume= 2,117 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.85' @ 12.08 hrs Surf.Area= 20 sf Storage= 9 cf

Plug-Flow detention time= 0.9 min calculated for 2,116 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (790.1 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.65 cfs @ 12.08 hrs HW=27.85' TW=27.40' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.65 cfs @ 2.66 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 3.12" for 2-yr storm event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 903 cf
Outflow = 0.28 cfs @ 12.07 hrs, Volume= 903 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.28 cfs @ 12.07 hrs, Volume= 903 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.94' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.9 min calculated for 903 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (776.7 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.07 hrs HW=27.94' TW=27.85' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.28 cfs @ 1.67 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 3.33" for 2-yr storm event
Inflow = 0.23 cfs @ 12.07 hrs, Volume= 768 cf
Outflow = 0.23 cfs @ 12.07 hrs, Volume= 768 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.23 cfs @ 12.07 hrs, Volume= 768 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.03' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.9 min calculated for 768 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (762.6 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.07 hrs HW=28.02' TW=27.85' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.23 cfs @ 1.89 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 42,100 sf, 83.74% Impervious, Inflow Depth > 2.70" for 2-yr storm event
Inflow = 2.63 cfs @ 12.07 hrs, Volume= 9,473 cf
Outflow = 1.53 cfs @ 12.17 hrs, Volume= 9,428 cf, Atten= 42%, Lag= 5.7 min
Primary = 1.53 cfs @ 12.17 hrs, Volume= 9,428 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.12' @ 12.17 hrs Surf.Area= 1,701 sf Storage= 1,083 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 17.9 min calculated for 9,425 cf (99% of inflow)
Center-of-Mass det. time= 13.6 min (893.9 - 880.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.53 cfs @ 12.17 hrs HW=30.11' TW=27.47' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.53 cfs of 8.54 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.53 cfs @ 7.78 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 2.91" for 2-yr storm event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 953 cf
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 916 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.31 cfs @ 12.07 hrs, Volume= 916 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.80' @ 12.07 hrs Surf.Area= 91 sf Storage= 41 cf

Plug-Flow detention time= 36.5 min calculated for 916 cf (96% of inflow)
Center-of-Mass det. time= 14.2 min (801.2 - 787.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=31.80' TW=29.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.31 cfs @ 0.74 fps)

Summary for Pond 26P: CB #6

Inflow Area =	3,930 sf, 85.85% Impervious,	Inflow Depth =	2.80"	for 2-yr storm event
Inflow =	0.31 cfs @ 12.07 hrs, Volume=	916 cf		
Outflow =	0.31 cfs @ 12.09 hrs, Volume=	916 cf,	Atten= 0%,	Lag= 0.9 min
Primary =	0.31 cfs @ 12.09 hrs, Volume=	916 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.12' @ 12.17 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 1.2 min calculated for 916 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (802.3 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=30.02' TW=30.02' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.31 cfs @ 0.39 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 3.12" for 2-yr storm event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 1,096 cf
Outflow = 0.34 cfs @ 12.07 hrs, Volume= 1,054 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.34 cfs @ 12.07 hrs, Volume= 1,054 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.06' @ 12.07 hrs Surf.Area= 110 sf Storage= 47 cf

Plug-Flow detention time= 38.0 min calculated for 1,054 cf (96% of inflow)
Center-of-Mass det. time= 15.7 min (791.6 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.07 hrs HW=32.06' TW=29.95' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Weir Controls 0.34 cfs @ 0.77 fps)

Summary for Pond 27P: CB #7

Inflow Area = 10,420 sf, 96.87% Impervious, Inflow Depth > 2.89" for 2-yr storm event
Inflow = 0.35 cfs @ 12.07 hrs, Volume= 2,507 cf
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 2,506 cf, Atten= 0%, Lag= 0.9 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 2,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.12' @ 12.17 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 0.8 min calculated for 2,506 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,101.2 - 1,100.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.09 hrs HW=30.03' TW=30.02' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.35 cfs @ 0.45 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=3.12"
Flow Length=515' Tc=5.2 min CN=77 Runoff=5.79 cfs 17,409 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=381,680 sf 21.25% Impervious Runoff Depth=2.14"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=17.01 cfs 68,095 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=2.48"
Flow Length=230' Tc=5.0 min CN=70 Runoff=1.39 cfs 4,184 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=661,184 sf 19.85% Impervious Runoff Depth=2.23"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=29.09 cfs 122,597 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=2.66"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.31 cfs 955 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=4.02"
Flow Length=127' Tc=5.0 min CN=86 Runoff=2.37 cfs 7,221 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=3.51"
Flow Length=563' Tc=9.9 min CN=81 Runoff=4.01 cfs 14,209 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=10,234 sf 53.03% Impervious Runoff Depth=3.51"
Flow Length=97' Tc=5.0 min CN=81 Runoff=1.00 cfs 2,995 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=5.00"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.44 cfs 1,450 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth=5.24"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.36 cfs 1,207 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=4.45"
Flow Length=149' Tc=5.0 min CN=90 Runoff=3.30 cfs 10,284 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=4.78"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.49 cfs 1,565 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=5.00"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.54 cfs 1,760 cf

Subcatchment 31S: Porous Pavement Runoff Area=6,200 sf 100.00% Impervious Runoff Depth>4.38"
Tc=790.0 min CN=98 Runoff=0.05 cfs 2,263 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.37' Max Vel=4.12 fps Inflow=17.84 cfs 72,279 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=17.82 cfs 72,279 cf

Reach 100R: NHDOT Swale Inflow=26.00 cfs 126,197 cf
Outflow=26.00 cfs 126,197 cf

Reach 200R: NHDOT Swale Inflow=29.56 cfs 129,203 cf
Outflow=29.56 cfs 129,203 cf

Pond 1P: NHDOT Culvert Peak Elev=23.06' Storage=261 cf Inflow=26.02 cfs 126,198 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=26.00 cfs 126,197 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=29.02' Storage=82 cf Inflow=17.01 cfs 68,095 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=17.02 cfs 68,095 cf

Pond 3P: Existing CB Peak Elev=29.52' Storage=13 cf Inflow=1.39 cfs 4,184 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=1.39 cfs 4,184 cf

Pond 4P: NHDOT Culvert Peak Elev=27.61' Storage=2,794 cf Inflow=30.22 cfs 129,203 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=29.56 cfs 129,203 cf

Pond 5P: Existing CB Peak Elev=28.27' Storage=5 cf Inflow=0.31 cfs 955 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.31 cfs 955 cf

Pond 10P: Raingarden #2 Peak Elev=28.27' Storage=4,772 cf Inflow=6.01 cfs 37,166 cf
Outflow=5.51 cfs 36,510 cf

Pond 11P: 12" Culvert Peak Elev=28.78' Storage=1,074 cf Inflow=4.01 cfs 14,209 cf
Outflow=3.11 cfs 14,208 cf

Pond 20P: DMH #1 Peak Elev=27.77' Storage=12 cf Inflow=1.70 cfs 6,606 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=1.70 cfs 6,606 cf

Pond 21P: Raingarden #1 Peak Elev=28.19' Storage=303 cf Inflow=1.00 cfs 2,995 cf
Outflow=0.66 cfs 2,994 cf

Pond 22P: DMH #2 Peak Elev=28.05' Storage=13 cf Inflow=1.10 cfs 3,612 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.09 cfs 3,612 cf

Pond 23P: CB #3 Peak Elev=28.11' Storage=7 cf Inflow=0.44 cfs 1,450 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.44 cfs 1,450 cf

Pond 24P: CB #4 Peak Elev=28.16' Storage=5 cf Inflow=0.36 cfs 1,207 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.36 cfs 1,207 cf

Pond 25P: Raingarden #3 Peak Elev=30.76' Storage=2,432 cf Inflow=4.29 cfs 15,792 cf
Outflow=1.52 cfs 15,736 cf

Pond 26A: Depressed Island Peak Elev=31.82' Storage=43 cf Inflow=0.49 cfs 1,565 cf
Outflow=0.49 cfs 1,528 cf

Pond 26P: CB #6 Peak Elev=30.76' Storage=25 cf Inflow=0.49 cfs 1,528 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.47 cfs 1,528 cf

Pond 27A: Depressed Island Peak Elev=32.07' Storage=50 cf Inflow=0.54 cfs 1,760 cf
Outflow=0.54 cfs 1,718 cf

Pond 27P: CB #7 Peak Elev=30.76' Storage=26 cf Inflow=0.54 cfs 3,981 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.52 cfs 3,980 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 256,195 cf Average Runoff Depth = 2.43"
73.70% Pervious = 930,846 sf 26.30% Impervious = 332,097 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 5.79 cfs @ 12.08 hrs, Volume= 17,409 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 17.01 cfs @ 12.19 hrs, Volume= 68,095 cf, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	81,107	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	83,365	48	Brush, Good, HSG B
	910	61	>75% Grass cover, Good, HSG B
	381,680	66	Weighted Average
	300,573		78.75% Pervious Area
	81,107		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,184 cf, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 29.09 cfs @ 12.22 hrs, Volume= 122,597 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	62,149	48	Brush, Good, HSG B
	661,184	67	Weighted Average
	529,939		80.15% Pervious Area
	131,245		19.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 955 cf, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 2.37 cfs @ 12.07 hrs, Volume= 7,221 cf, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 4.01 cfs @ 12.14 hrs, Volume= 14,209 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 1.00 cfs @ 12.07 hrs, Volume= 2,995 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,807	61	>75% Grass cover, Good, HSG B
	10,234	81	Weighted Average
	4,807		46.97% Pervious Area
	5,427		53.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 3.30 cfs @ 12.07 hrs, Volume= 10,284 cf, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 1,565 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 1,760 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 31S: Porous Pavement

Runoff = 0.05 cfs @ 21.94 hrs, Volume= 2,263 cf, Depth> 4.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr storm Rainfall=5.59"

	Area (sf)	CN	Description
*	6,200	98	Porous Pavement, HSG B
	6,200		100.00% Impervious Area

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

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 401,895 sf, 21.40% Impervious, Inflow Depth = 2.16" for 10-yr storm event
Inflow = 17.84 cfs @ 12.18 hrs, Volume= 72,279 cf
Outflow = 17.82 cfs @ 12.19 hrs, Volume= 72,279 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 4.12 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 1.2 min

Peak Storage= 406 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 2.61" for 10-yr storm event
Inflow = 26.00 cfs @ 12.20 hrs, Volume= 126,197 cf
Outflow = 26.00 cfs @ 12.20 hrs, Volume= 126,197 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 2.27" for 10-yr storm event
Inflow = 29.56 cfs @ 12.25 hrs, Volume= 129,203 cf
Outflow = 29.56 cfs @ 12.25 hrs, Volume= 129,203 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 2.61" for 10-yr storm event
Inflow = 26.02 cfs @ 12.19 hrs, Volume= 126,198 cf
Outflow = 26.00 cfs @ 12.20 hrs, Volume= 126,197 cf, Atten= 0%, Lag= 0.3 min
Primary = 26.00 cfs @ 12.20 hrs, Volume= 126,197 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 23.06' @ 12.20 hrs Surf.Area= 354 sf Storage= 261 cf

Plug-Flow detention time= 0.2 min calculated for 126,197 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (854.8 - 854.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=26.00 cfs @ 12.20 hrs HW=23.06' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 26.00 cfs @ 4.93 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 381,680 sf, 21.25% Impervious, Inflow Depth = 2.14" for 10-yr storm event
Inflow = 17.01 cfs @ 12.19 hrs, Volume= 68,095 cf
Outflow = 17.02 cfs @ 12.19 hrs, Volume= 68,095 cf, Atten= 0%, Lag= 0.2 min
Primary = 17.02 cfs @ 12.19 hrs, Volume= 68,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 29.02' @ 12.19 hrs Surf.Area= 64 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 68,072 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (858.3 - 858.1)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=17.01 cfs @ 12.19 hrs HW=29.02' TW=25.47' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 17.01 cfs @ 4.45 fps)

Summary for Pond 3P: Existing CB

Inflow Area = 20,215 sf, 24.32% Impervious, Inflow Depth = 2.48" for 10-yr storm event
Inflow = 1.39 cfs @ 12.08 hrs, Volume= 4,184 cf
Outflow = 1.39 cfs @ 12.08 hrs, Volume= 4,184 cf, Atten= 0%, Lag= 0.2 min
Primary = 1.39 cfs @ 12.08 hrs, Volume= 4,184 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.52' @ 12.08 hrs Surf.Area= 12 sf Storage= 13 cf

Plug-Flow detention time= 0.4 min calculated for 4,183 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (841.2 - 840.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.39 cfs @ 12.08 hrs HW=29.52' TW=25.39' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.39 cfs @ 3.97 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 2.27" for 10-yr storm event
Inflow = 30.22 cfs @ 12.21 hrs, Volume= 129,203 cf
Outflow = 29.56 cfs @ 12.25 hrs, Volume= 129,203 cf, Atten= 2%, Lag= 2.1 min
Primary = 29.56 cfs @ 12.25 hrs, Volume= 129,203 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 27.61' @ 12.25 hrs Surf.Area= 2,444 sf Storage= 2,794 cf

Plug-Flow detention time= 1.3 min calculated for 129,203 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (856.1 - 854.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=29.55 cfs @ 12.25 hrs HW=27.61' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 29.55 cfs @ 5.14 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 2.66" for 10-yr storm event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 955 cf
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 955 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.31 cfs @ 12.09 hrs, Volume= 955 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.27' @ 12.09 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.8 min calculated for 955 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (837.6 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=28.27' TW=28.05' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.31 cfs @ 1.75 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 112,201 sf, 70.03% Impervious, Inflow Depth > 3.97" for 10-yr storm event
Inflow = 6.01 cfs @ 12.07 hrs, Volume= 37,166 cf
Outflow = 5.51 cfs @ 12.26 hrs, Volume= 36,510 cf, Atten= 8%, Lag= 11.0 min
Primary = 5.51 cfs @ 12.26 hrs, Volume= 36,510 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.27' @ 12.26 hrs Surf.Area= 2,840 sf Storage= 4,772 cf

Plug-Flow detention time= 34.8 min calculated for 36,510 cf (98% of inflow)
Center-of-Mass det. time= 20.6 min (862.4 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=5.51 cfs @ 12.26 hrs HW=28.27' TW=22.98' (Dynamic Tailwater)
└1=**Culvert** (Passes 5.51 cfs of 9.91 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 1.77 cfs @ 9.04 fps)
  └3=**Orifice/Grate** (Weir Controls 3.73 cfs @ 1.71 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area =	48,550 sf,	59.43% Impervious,	Inflow Depth =	3.51"	for 10-yr storm event
Inflow =	4.01 cfs @	12.14 hrs, Volume=	14,209 cf		
Outflow =	3.11 cfs @	12.22 hrs, Volume=	14,208 cf,	Atten= 23%,	Lag= 5.1 min
Primary =	3.11 cfs @	12.22 hrs, Volume=	14,208 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.78' @ 12.23 hrs Surf.Area= 1,124 sf Storage= 1,074 cf

Plug-Flow detention time= 6.7 min calculated for 14,204 cf (100% of inflow)
Center-of-Mass det. time= 6.7 min (824.7 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=3.11 cfs @ 12.22 hrs HW=28.78' TW=28.27' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 2.71 cfs @ 3.45 fps)
└2=**Sharp-Crested Vee/Trap Weir** (Weir Controls 0.39 cfs @ 1.50 fps)

Summary for Pond 20P: DMH #1

Inflow Area =	20,785 sf,	60.64% Impervious,	Inflow Depth =	3.81"	for 10-yr storm event
Inflow =	1.70 cfs @	12.09 hrs, Volume=	6,606 cf		
Outflow =	1.70 cfs @	12.09 hrs, Volume=	6,606 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	1.70 cfs @	12.09 hrs, Volume=	6,606 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 27.77' @ 12.24 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.3 min calculated for 6,606 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (801.6 - 801.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.70 cfs @ 12.09 hrs HW=27.63' TW=26.98' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.70 cfs @ 3.56 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area =	10,234 sf,	53.03% Impervious,	Inflow Depth =	3.51"	for 10-yr storm event
Inflow =	1.00 cfs @	12.07 hrs, Volume=	2,995 cf		
Outflow =	0.66 cfs @	12.14 hrs, Volume=	2,994 cf,	Atten= 34%,	Lag= 3.9 min
Primary =	0.66 cfs @	12.14 hrs, Volume=	2,994 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.19' @ 12.16 hrs Surf.Area= 805 sf Storage= 303 cf

Plug-Flow detention time= 12.5 min calculated for 2,993 cf (100% of inflow)
Center-of-Mass det. time= 12.3 min (825.8 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 12.14 hrs HW=28.18' TW=27.69' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.66 cfs of 2.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.66 cfs @ 3.37 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 4.11" for 10-yr storm event
Inflow = 1.10 cfs @ 12.08 hrs, Volume= 3,612 cf
Outflow = 1.09 cfs @ 12.08 hrs, Volume= 3,612 cf, Atten= 0%, Lag= 0.1 min
Primary = 1.09 cfs @ 12.08 hrs, Volume= 3,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.05' @ 12.09 hrs Surf.Area= 20 sf Storage= 13 cf

Plug-Flow detention time= 0.7 min calculated for 3,611 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (781.1 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.09 cfs @ 12.08 hrs HW=28.04' TW=27.61' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.09 cfs @ 2.87 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 5.00" for 10-yr storm event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf, Atten= 1%, Lag= 0.1 min
Primary = 0.44 cfs @ 12.07 hrs, Volume= 1,450 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 28.11' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.7 min calculated for 1,450 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (765.1 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=28.10' TW=28.04' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.44 cfs @ 1.54 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth = 5.24" for 10-yr storm event
Inflow = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf
Outflow = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf, Atten= 1%, Lag= 0.1 min
Primary = 0.36 cfs @ 12.07 hrs, Volume= 1,207 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.16' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf

Plug-Flow detention time= 0.8 min calculated for 1,206 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (753.3 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.07 hrs HW=28.15' TW=28.04' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.36 cfs @ 1.72 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 42,100 sf, 83.74% Impervious, Inflow Depth > 4.50" for 10-yr storm event
Inflow = 4.29 cfs @ 12.07 hrs, Volume= 15,792 cf
Outflow = 1.52 cfs @ 12.02 hrs, Volume= 15,736 cf, Atten= 65%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.02 hrs, Volume= 15,736 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.76' @ 12.33 hrs Surf.Area= 2,504 sf Storage= 2,432 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 18.4 min calculated for 15,731 cf (100% of inflow)
Center-of-Mass det. time= 15.1 min (876.6 - 861.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 12.02 hrs HW=30.10' TW=27.52' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.52 cfs of 8.52 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.52 cfs @ 7.75 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 4.78" for 10-yr storm event
Inflow = 0.49 cfs @ 12.07 hrs, Volume= 1,565 cf
Outflow = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.82' @ 12.07 hrs Surf.Area= 92 sf Storage= 43 cf

Plug-Flow detention time= 25.3 min calculated for 1,528 cf (98% of inflow)
Center-of-Mass det. time= 10.9 min (784.9 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.07 hrs HW=31.82' TW=30.35' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 4.67" for 10-yr storm event
Inflow = 0.49 cfs @ 12.07 hrs, Volume= 1,528 cf
Outflow = 0.47 cfs @ 12.07 hrs, Volume= 1,528 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.07 hrs, Volume= 1,528 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.76' @ 12.33 hrs Surf.Area= 10 sf Storage= 25 cf

Plug-Flow detention time= 1.4 min calculated for 1,528 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (786.4 - 784.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.07 hrs HW=30.36' TW=30.34' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.47 cfs @ 0.60 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 5.00" for 10-yr storm event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 1,760 cf
Outflow = 0.54 cfs @ 12.07 hrs, Volume= 1,718 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.54 cfs @ 12.07 hrs, Volume= 1,718 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.07' @ 12.07 hrs Surf.Area= 113 sf Storage= 50 cf

Plug-Flow detention time= 26.7 min calculated for 1,718 cf (98% of inflow)
Center-of-Mass det. time= 12.0 min (776.4 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 12.07 hrs HW=32.07' TW=30.36' (Dynamic Tailwater)
└**1=Orifice/Grate** (Weir Controls 0.54 cfs @ 0.89 fps)

Summary for Pond 27P: CB #7

Inflow Area = 10,420 sf, 96.87% Impervious, Inflow Depth > 4.58" for 10-yr storm event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 3,981 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 3,980 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 3,980 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.76' @ 12.33 hrs Surf.Area= 11 sf Storage= 26 cf

Plug-Flow detention time= 0.9 min calculated for 3,979 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,085.2 - 1,084.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=30.36' TW=30.34' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.52 cfs @ 0.67 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=4.44"
Flow Length=515' Tc=5.2 min CN=77 Runoff=8.19 cfs 24,733 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=381,680 sf 21.25% Impervious Runoff Depth=3.27"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=26.57 cfs 103,925 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=3.68"
Flow Length=230' Tc=5.0 min CN=70 Runoff=2.08 cfs 6,208 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=661,184 sf 19.85% Impervious Runoff Depth=3.37"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=44.93 cfs 185,731 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=3.90"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.45 cfs 1,399 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=5.44"
Flow Length=127' Tc=5.0 min CN=86 Runoff=3.16 cfs 9,775 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=4.88"
Flow Length=563' Tc=9.9 min CN=81 Runoff=5.53 cfs 19,742 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=10,234 sf 53.03% Impervious Runoff Depth=4.88"
Flow Length=97' Tc=5.0 min CN=81 Runoff=1.37 cfs 4,161 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=6.49"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.57 cfs 1,880 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth>6.72"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.46 cfs 1,549 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=5.90"
Flow Length=149' Tc=5.0 min CN=90 Runoff=4.30 cfs 13,647 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=6.25"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.63 cfs 2,047 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=6.49"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.69 cfs 2,281 cf

Subcatchment 31S: Porous Pavement Runoff Area=6,200 sf 100.00% Impervious Runoff Depth>5.60"
Tc=790.0 min CN=98 Runoff=0.07 cfs 2,896 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.44' Max Vel=4.58 fps Inflow=24.46 cfs 110,133 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=24.45 cfs 110,133 cf

Reach 100R: NHDOT Swale Inflow=37.11 cfs 184,444 cf
Outflow=37.11 cfs 184,444 cf

Reach 200R: NHDOT Swale Inflow=43.09 cfs 194,719 cf
Outflow=43.09 cfs 194,719 cf

Pond 1P: NHDOT Culvert Peak Elev=23.64' Storage=840 cf Inflow=37.28 cfs 184,445 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=37.11 cfs 184,444 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=30.56' Storage=1,505 cf Inflow=26.57 cfs 103,925 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=23.49 cfs 103,925 cf

Pond 3P: Existing CB Peak Elev=30.38' Storage=17 cf Inflow=2.08 cfs 6,208 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=2.08 cfs 6,208 cf

Pond 4P: NHDOT Culvert Peak Elev=28.43' Storage=5,572 cf Inflow=46.41 cfs 194,719 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=43.09 cfs 194,719 cf

Pond 5P: Existing CB Peak Elev=28.61' Storage=9 cf Inflow=0.45 cfs 1,399 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.45 cfs 1,399 cf

Pond 10P: Raingarden #2 Peak Elev=28.41' Storage=5,161 cf Inflow=10.21 cfs 50,243 cf
Outflow=8.63 cfs 49,580 cf

Pond 11P: 12" Culvert Peak Elev=29.51' Storage=1,336 cf Inflow=5.53 cfs 19,742 cf
Outflow=6.51 cfs 19,741 cf

Pond 20P: DMH #1 Peak Elev=28.56' Storage=22 cf Inflow=2.53 cfs 8,988 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=2.50 cfs 8,988 cf

Pond 21P: Raingarden #1 Peak Elev=29.71' Storage=381 cf Inflow=1.37 cfs 4,161 cf
Outflow=1.17 cfs 4,160 cf

Pond 22P: DMH #2 Peak Elev=28.59' Storage=24 cf Inflow=1.43 cfs 4,828 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.41 cfs 4,828 cf

Pond 23P: CB #3 Peak Elev=28.60' Storage=13 cf Inflow=0.57 cfs 1,880 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.55 cfs 1,880 cf

Pond 24P: CB #4 Peak Elev=28.60' Storage=11 cf Inflow=0.46 cfs 1,549 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.44 cfs 1,549 cf

Pond 25P: Raingarden #3 Peak Elev=31.10' Storage=3,374 cf Inflow=5.60 cfs 20,792 cf
Outflow=2.40 cfs 20,728 cf

Pond 26A: Depressed Island Peak Elev=31.83' Storage=44 cf Inflow=0.63 cfs 2,047 cf
Outflow=0.63 cfs 2,010 cf

Pond 26P: CB #6 Peak Elev=31.11' Storage=28 cf Inflow=0.63 cfs 2,010 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.62 cfs 2,010 cf

Pond 27A: Depressed Island Peak Elev=32.09' Storage=51 cf Inflow=0.69 cfs 2,281 cf
Outflow=0.69 cfs 2,239 cf

Pond 27P: CB #7 Peak Elev=31.11' Storage=30 cf Inflow=0.69 cfs 5,135 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.67 cfs 5,134 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 379,973 cf Average Runoff Depth = 3.61"
73.70% Pervious = 930,846 sf 26.30% Impervious = 332,097 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 8.19 cfs @ 12.08 hrs, Volume= 24,733 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 26.57 cfs @ 12.18 hrs, Volume= 103,925 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	81,107	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	83,365	48	Brush, Good, HSG B
	910	61	>75% Grass cover, Good, HSG B
	381,680	66	Weighted Average
	300,573		78.75% Pervious Area
	81,107		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 2.08 cfs @ 12.08 hrs, Volume= 6,208 cf, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 44.93 cfs @ 12.21 hrs, Volume= 185,731 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	62,149	48	Brush, Good, HSG B
	661,184	67	Weighted Average
	529,939		80.15% Pervious Area
	131,245		19.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 3.16 cfs @ 12.07 hrs, Volume= 9,775 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 5.53 cfs @ 12.13 hrs, Volume= 19,742 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 1.37 cfs @ 12.07 hrs, Volume= 4,161 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,807	61	>75% Grass cover, Good, HSG B
	10,234	81	Weighted Average
	4,807		46.97% Pervious Area
	5,427		53.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 1,880 cf, Depth= 6.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.46 cfs @ 12.07 hrs, Volume= 1,549 cf, Depth> 6.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 4.30 cfs @ 12.07 hrs, Volume= 13,647 cf, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.63 cfs @ 12.07 hrs, Volume= 2,047 cf, Depth= 6.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 2,281 cf, Depth= 6.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 31S: Porous Pavement

Runoff = 0.07 cfs @ 21.94 hrs, Volume= 2,896 cf, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr storm Rainfall=7.08"

	Area (sf)	CN	Description
*	6,200	98	Porous Pavement, HSG B
	6,200		100.00% Impervious Area

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

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 401,895 sf, 21.40% Impervious, Inflow Depth = 3.29" for 25-yr storm event
Inflow = 24.46 cfs @ 12.25 hrs, Volume= 110,133 cf
Outflow = 24.45 cfs @ 12.25 hrs, Volume= 110,133 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 4.58 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 1.0 min

Peak Storage= 502 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 3.81" for 25-yr storm event
Inflow = 37.11 cfs @ 12.20 hrs, Volume= 184,444 cf
Outflow = 37.11 cfs @ 12.20 hrs, Volume= 184,444 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 3.43" for 25-yr storm event
Inflow = 43.09 cfs @ 12.27 hrs, Volume= 194,719 cf
Outflow = 43.09 cfs @ 12.27 hrs, Volume= 194,719 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 3.81" for 25-yr storm event
Inflow = 37.28 cfs @ 12.18 hrs, Volume= 184,445 cf
Outflow = 37.11 cfs @ 12.20 hrs, Volume= 184,444 cf, Atten= 0%, Lag= 1.7 min
Primary = 37.11 cfs @ 12.20 hrs, Volume= 184,444 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 23.64' @ 12.20 hrs Surf.Area= 1,635 sf Storage= 840 cf

Plug-Flow detention time= 0.2 min calculated for 184,380 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (843.0 - 842.8)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=37.11 cfs @ 12.20 hrs HW=23.64' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 37.11 cfs @ 5.57 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 381,680 sf, 21.25% Impervious, Inflow Depth = 3.27" for 25-yr storm event
Inflow = 26.57 cfs @ 12.18 hrs, Volume= 103,925 cf
Outflow = 23.49 cfs @ 12.26 hrs, Volume= 103,925 cf, Atten= 12%, Lag= 4.4 min
Primary = 23.49 cfs @ 12.26 hrs, Volume= 103,925 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 30.56' @ 12.26 hrs Surf.Area= 4,055 sf Storage= 1,505 cf

Plug-Flow detention time= 0.2 min calculated for 103,889 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (845.9 - 845.6)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=23.49 cfs @ 12.26 hrs HW=30.56' TW=25.54' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 23.49 cfs @ 4.79 fps)

Summary for Pond 3P: Existing CB

Inflow Area = 20,215 sf, 24.32% Impervious, Inflow Depth = 3.68" for 25-yr storm event
Inflow = 2.08 cfs @ 12.08 hrs, Volume= 6,208 cf
Outflow = 2.08 cfs @ 12.07 hrs, Volume= 6,208 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.08 cfs @ 12.07 hrs, Volume= 6,208 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.38' @ 12.07 hrs Surf.Area= 4 sf Storage= 17 cf

Plug-Flow detention time= 0.4 min calculated for 6,208 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (829.7 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=2.07 cfs @ 12.07 hrs HW=30.37' TW=25.48' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.07 cfs @ 5.94 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 3.43" for 25-yr storm event
Inflow = 46.41 cfs @ 12.20 hrs, Volume= 194,719 cf
Outflow = 43.09 cfs @ 12.27 hrs, Volume= 194,719 cf, Atten= 7%, Lag= 4.0 min
Primary = 43.09 cfs @ 12.27 hrs, Volume= 194,719 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.43' @ 12.27 hrs Surf.Area= 5,146 sf Storage= 5,572 cf

Plug-Flow detention time= 1.5 min calculated for 194,652 cf (100% of inflow)
Center-of-Mass det. time= 1.5 min (844.5 - 843.0)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=43.08 cfs @ 12.27 hrs HW=28.43' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 43.08 cfs @ 6.09 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 3.90" for 25-yr storm event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf, Atten= 1%, Lag= 0.2 min
Primary = 0.45 cfs @ 12.09 hrs, Volume= 1,399 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.61' @ 12.26 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.7 min calculated for 1,399 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (826.5 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.09 hrs HW=28.44' TW=28.31' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.45 cfs @ 1.51 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 112,201 sf, 70.03% Impervious, Inflow Depth > 5.37" for 25-yr storm event
Inflow = 10.21 cfs @ 12.15 hrs, Volume= 50,243 cf
Outflow = 8.63 cfs @ 12.20 hrs, Volume= 49,580 cf, Atten= 15%, Lag= 2.9 min
Primary = 8.63 cfs @ 12.20 hrs, Volume= 49,580 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.41' @ 12.20 hrs Surf.Area= 2,922 sf Storage= 5,161 cf

Plug-Flow detention time= 29.4 min calculated for 49,580 cf (99% of inflow)
Center-of-Mass det. time= 18.4 min (850.8 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=8.62 cfs @ 12.20 hrs HW=28.41' TW=23.64' (Dynamic Tailwater)
└**1=Culvert** (Passes 8.62 cfs of 10.17 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.81 cfs @ 9.21 fps)
  └**3=Orifice/Grate** (Weir Controls 6.81 cfs @ 2.09 fps)

Summary for Pond 11P: 12" Culvert

Inflow Area =	48,550 sf,	59.43% Impervious,	Inflow Depth =	4.88"	for 25-yr storm event
Inflow =	5.53 cfs @	12.13 hrs, Volume=	19,742 cf		
Outflow =	6.51 cfs @	12.15 hrs, Volume=	19,741 cf,	Atten= 0%,	Lag= 0.9 min
Primary =	6.51 cfs @	12.15 hrs, Volume=	19,741 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.51' @ 12.15 hrs Surf.Area= 1,275 sf Storage= 1,336 cf

Plug-Flow detention time= 6.3 min calculated for 19,734 cf (100% of inflow)
Center-of-Mass det. time= 6.3 min (815.0 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=6.49 cfs @ 12.15 hrs HW=29.50' TW=28.37' (Dynamic Tailwater)
├**1=Culvert** (Inlet Controls 4.02 cfs @ 5.12 fps)
└**2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 2.47 cfs @ 3.89 fps)

Summary for Pond 20P: DMH #1

Inflow Area =	20,785 sf,	60.64% Impervious,	Inflow Depth =	5.19"	for 25-yr storm event
Inflow =	2.53 cfs @	12.09 hrs, Volume=	8,988 cf		
Outflow =	2.50 cfs @	12.10 hrs, Volume=	8,988 cf,	Atten= 1%,	Lag= 0.2 min
Primary =	2.50 cfs @	12.10 hrs, Volume=	8,988 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 28.56' @ 12.27 hrs Surf.Area= 13 sf Storage= 22 cf

Plug-Flow detention time= 0.3 min calculated for 8,988 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (794.7 - 794.4)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.50 cfs @ 12.10 hrs HW=28.08' TW=27.55' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.50 cfs @ 3.30 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area =	10,234 sf, 53.03% Impervious,	Inflow Depth =	4.88"	for 25-yr storm event
Inflow =	1.37 cfs @ 12.07 hrs, Volume=	4,161 cf		
Outflow =	1.17 cfs @ 12.11 hrs, Volume=	4,160 cf,	Atten= 15%,	Lag= 2.2 min
Primary =	1.17 cfs @ 12.11 hrs, Volume=	4,160 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.71' @ 12.12 hrs Surf.Area= 805 sf Storage= 381 cf

Plug-Flow detention time= 11.4 min calculated for 4,159 cf (100% of inflow)
Center-of-Mass det. time= 11.3 min (815.5 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.16 cfs @ 12.11 hrs HW=29.68' TW=28.16' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.16 cfs of 4.65 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.92 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area =	10,551 sf,	68.02% Impervious,	Inflow Depth =	5.49"	for 25-yr storm event
Inflow =	1.43 cfs @	12.08 hrs, Volume=	4,828 cf		
Outflow =	1.41 cfs @	12.08 hrs, Volume=	4,828 cf,	Atten= 1%,	Lag= 0.2 min
Primary =	1.41 cfs @	12.08 hrs, Volume=	4,828 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.59' @ 12.26 hrs Surf.Area= 20 sf Storage= 24 cf

Plug-Flow detention time= 0.6 min calculated for 4,826 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (776.2 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.41 cfs @ 12.08 hrs HW=28.28' TW=27.98' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.41 cfs @ 2.53 fps)

Summary for Pond 23P: CB #3

Inflow Area =	3,478 sf,	92.96% Impervious,	Inflow Depth =	6.49"	for 25-yr storm event
Inflow =	0.57 cfs @	12.07 hrs, Volume=	1,880 cf		
Outflow =	0.55 cfs @	12.07 hrs, Volume=	1,880 cf,	Atten= 3%,	Lag= 0.0 min
Primary =	0.55 cfs @	12.07 hrs, Volume=	1,880 cf		

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 28.60' @ 12.26 hrs Surf.Area= 13 sf Storage= 13 cf

Plug-Flow detention time= 0.8 min calculated for 1,880 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (759.5 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.07 hrs HW=28.27' TW=28.22' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.55 cfs @ 1.34 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth > 6.72" for 25-yr storm event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 1,549 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,549 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.07 hrs, Volume= 1,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.60' @ 12.26 hrs Surf.Area= 13 sf Storage= 11 cf

Plug-Flow detention time= 0.8 min calculated for 1,549 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (749.0 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=28.29' TW=28.22' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.44 cfs @ 1.44 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 42,100 sf, 83.74% Impervious, Inflow Depth > 5.93" for 25-yr storm event
Inflow = 5.60 cfs @ 12.07 hrs, Volume= 20,792 cf
Outflow = 2.40 cfs @ 12.25 hrs, Volume= 20,728 cf, Atten= 57%, Lag= 10.5 min
Primary = 2.40 cfs @ 12.25 hrs, Volume= 20,728 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.10' @ 12.25 hrs Surf.Area= 3,065 sf Storage= 3,374 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 18.8 min calculated for 20,721 cf (100% of inflow)
Center-of-Mass det. time= 16.0 min (868.5 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.40 cfs @ 12.25 hrs HW=31.10' TW=28.39' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.40 cfs of 9.67 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.56 cfs @ 7.93 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.84 cfs @ 1.04 fps)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 6.25" for 25-yr storm event
Inflow = 0.63 cfs @ 12.07 hrs, Volume= 2,047 cf
Outflow = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.83' @ 12.07 hrs Surf.Area= 92 sf Storage= 44 cf

Plug-Flow detention time= 20.6 min calculated for 2,010 cf (98% of inflow)
Center-of-Mass det. time= 9.2 min (776.8 - 767.6)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.63 cfs @ 12.07 hrs HW=31.83' TW=30.68' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Weir Controls 0.63 cfs @ 0.94 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 6.14" for 25-yr storm event
Inflow = 0.63 cfs @ 12.07 hrs, Volume= 2,010 cf
Outflow = 0.62 cfs @ 12.07 hrs, Volume= 2,010 cf, Atten= 2%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.07 hrs, Volume= 2,010 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.11' @ 12.24 hrs Surf.Area= 8 sf Storage= 28 cf

Plug-Flow detention time= 1.4 min calculated for 2,010 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (778.2 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.07 hrs HW=30.67' TW=30.64' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.61 cfs @ 0.78 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 6.49" for 25-yr storm event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 2,281 cf
Outflow = 0.69 cfs @ 12.07 hrs, Volume= 2,239 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.69 cfs @ 12.07 hrs, Volume= 2,239 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.09' @ 12.07 hrs Surf.Area= 115 sf Storage= 51 cf

Plug-Flow detention time= 21.8 min calculated for 2,239 cf (98% of inflow)
Center-of-Mass det. time= 10.1 min (768.9 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.07 hrs HW=32.09' TW=30.69' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.97 fps)

Summary for Pond 27P: CB #7

Inflow Area = 10,420 sf, 96.87% Impervious, Inflow Depth > 5.91" for 25-yr storm event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 5,135 cf
Outflow = 0.67 cfs @ 12.07 hrs, Volume= 5,134 cf, Atten= 3%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.07 hrs, Volume= 5,134 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.11' @ 12.24 hrs Surf.Area= 9 sf Storage= 30 cf

Plug-Flow detention time= 0.8 min calculated for 5,132 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,077.9 - 1,077.2)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.07 hrs HW=30.68' TW=30.65' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.67 cfs @ 0.86 fps)

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 points x 8
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Remaining Front Runoff Area=66,878 sf 35.36% Impervious Runoff Depth=5.73"
Flow Length=515' Tc=5.2 min CN=77 Runoff=10.50 cfs 31,910 cf

Subcatchment 2S: E Portion of Site and N Runoff Area=381,680 sf 21.25% Impervious Runoff Depth=4.41"
Flow Length=1,317' Tc=13.0 min CN=66 Runoff=36.16 cfs 140,347 cf

Subcatchment 3S: N Abutting Lot Runoff Area=20,215 sf 24.32% Impervious Runoff Depth=4.89"
Flow Length=230' Tc=5.0 min CN=70 Runoff=2.76 cfs 8,235 cf

Subcatchment 4S: S Portion of Site and E Runoff Area=661,184 sf 19.85% Impervious Runoff Depth=4.53"
Flow Length=1,895' Tc=15.1 min CN=67 Runoff=60.83 cfs 249,662 cf

Subcatchment 5S: Remaining Land N of Runoff Area=4,307 sf 28.53% Impervious Runoff Depth=5.13"
Flow Length=252' Tc=5.9 min CN=72 Runoff=0.60 cfs 1,840 cf

Subcatchment 10S: Front Portion to Pond Runoff Area=21,551 sf 67.14% Impervious Runoff Depth=6.81"
Flow Length=127' Tc=5.0 min CN=86 Runoff=3.91 cfs 12,225 cf

Subcatchment 11S: N & NW Portion of Site Runoff Area=48,550 sf 59.43% Impervious Runoff Depth=6.21"
Flow Length=563' Tc=9.9 min CN=81 Runoff=6.97 cfs 25,108 cf

Subcatchment 21S: SE Corner of New Site Runoff Area=10,234 sf 53.03% Impervious Runoff Depth=6.21"
Flow Length=97' Tc=5.0 min CN=81 Runoff=1.73 cfs 5,293 cf

Subcatchment 23S: New Entrance Runoff Area=3,478 sf 92.96% Impervious Runoff Depth=7.89"
Flow Length=81' Tc=5.0 min CN=95 Runoff=0.68 cfs 2,287 cf

Subcatchment 24S: New Entrance Runoff Area=2,766 sf 98.16% Impervious Runoff Depth>8.13"
Flow Length=69' Tc=5.0 min CN=97 Runoff=0.55 cfs 1,874 cf

Subcatchment 25S: NW Corner of New Site Runoff Area=27,750 sf 78.52% Impervious Runoff Depth=7.29"
Flow Length=149' Tc=5.0 min CN=90 Runoff=5.25 cfs 16,854 cf

Subcatchment 26S: SE Central Portion of Runoff Area=3,930 sf 85.85% Impervious Runoff Depth=7.65"
Flow Length=109' Tc=5.0 min CN=93 Runoff=0.76 cfs 2,505 cf

Subcatchment 27S: E Central Portion New Runoff Area=4,220 sf 92.27% Impervious Runoff Depth=7.89"
Flow Length=70' Tc=5.0 min CN=95 Runoff=0.83 cfs 2,774 cf

Subcatchment 31S: Porous Pavement Runoff Area=6,200 sf 100.00% Impervious Runoff Depth>6.77"
Tc=790.0 min CN=98 Runoff=0.08 cfs 3,495 cf

Reach 2R: Wetland Flow Path Avg. Flow Depth=0.56' Max Vel=5.24 fps Inflow=44.25 cfs 148,582 cf
n=0.035 L=94.0' S=0.0440 '/' Capacity=428.00 cfs Outflow=38.24 cfs 148,582 cf

Reach 100R: NHDOT Swale Inflow=47.56 cfs 242,633 cf
Outflow=47.56 cfs 242,633 cf

Reach 200R: NHDOT Swale Inflow=52.79 cfs 260,953 cf
Outflow=52.79 cfs 260,953 cf

Pond 1P: NHDOT Culvert Peak Elev=24.41' Storage=2,996 cf Inflow=54.46 cfs 242,634 cf
36.0" Round Culvert n=0.012 L=255.0' S=0.0091 '/' Outflow=47.56 cfs 242,633 cf

Pond 2P: 30" CMP Wetland Outlet Peak Elev=37.40' Storage=3,956 cf Inflow=36.16 cfs 140,347 cf
30.0" Round Culvert n=0.024 L=216.0' S=0.0069 '/' Outflow=42.78 cfs 140,347 cf

Pond 3P: Existing CB Peak Elev=31.55' Storage=17 cf Inflow=2.76 cfs 8,235 cf
8.0" Round Culvert n=0.012 L=44.0' S=0.0684 '/' Outflow=2.76 cfs 8,235 cf

Pond 4P: NHDOT Culvert Peak Elev=29.24' Storage=11,473 cf Inflow=62.59 cfs 260,954 cf
36.0" Round Culvert n=0.012 L=218.0' S=0.0075 '/' Outflow=52.79 cfs 260,953 cf

Pond 5P: Existing CB Peak Elev=29.47' Storage=20 cf Inflow=0.60 cfs 1,840 cf
12.0" Round Culvert n=0.012 L=65.0' S=0.0074 '/' Outflow=0.57 cfs 1,840 cf

Pond 10P: Raingarden #2 Peak Elev=28.77' Storage=6,270 cf Inflow=14.17 cfs 62,812 cf
Outflow=10.84 cfs 62,142 cf

Pond 11P: 12" Culvert Peak Elev=29.85' Storage=1,336 cf Inflow=6.97 cfs 25,108 cf
Outflow=7.27 cfs 25,107 cf

Pond 20P: DMH #1 Peak Elev=29.42' Storage=33 cf Inflow=2.80 cfs 11,292 cf
12.0" Round Culvert n=0.012 L=76.0' S=0.0074 '/' Outflow=2.75 cfs 11,292 cf

Pond 21P: Raingarden #1 Peak Elev=30.11' Storage=559 cf Inflow=1.73 cfs 5,293 cf
Outflow=1.17 cfs 5,291 cf

Pond 22P: DMH #2 Peak Elev=29.46' Storage=41 cf Inflow=1.73 cfs 6,001 cf
12.0" Round Culvert n=0.012 L=69.0' S=0.0074 '/' Outflow=1.67 cfs 6,000 cf

Pond 23P: CB #3 Peak Elev=29.47' Storage=25 cf Inflow=0.68 cfs 2,287 cf
12.0" Round Culvert n=0.012 L=9.0' S=0.0100 '/' Outflow=0.65 cfs 2,287 cf

Pond 24P: CB #4 Peak Elev=29.47' Storage=22 cf Inflow=0.55 cfs 1,874 cf
12.0" Round Culvert n=0.012 L=25.0' S=0.0100 '/' Outflow=0.52 cfs 1,874 cf

Pond 25P: Raingarden #3 Peak Elev=31.22' Storage=3,760 cf Inflow=6.81 cfs 25,550 cf
Outflow=4.22 cfs 25,480 cf

Pond 26A: Depressed Island Peak Elev=31.84' Storage=45 cf Inflow=0.76 cfs 2,505 cf
Outflow=0.76 cfs 2,468 cf

Pond 26P: CB #6 Peak Elev=31.24' Storage=29 cf Inflow=0.76 cfs 2,468 cf
12.0" Round Culvert n=0.012 L=40.0' S=0.0063 '/' Outflow=0.74 cfs 2,468 cf

Pond 27A: Depressed Island Peak Elev=32.10' Storage=52 cf Inflow=0.83 cfs 2,774 cf
Outflow=0.83 cfs 2,733 cf

Pond 27P: CB #7 Peak Elev=31.24' Storage=31 cf Inflow=0.83 cfs 6,228 cf
12.0" Round Culvert n=0.012 L=60.0' S=0.0042 '/' Outflow=0.82 cfs 6,227 cf

Total Runoff Area = 1,262,943 sf Runoff Volume = 504,409 cf Average Runoff Depth = 4.79"
73.70% Pervious = 930,846 sf 26.30% Impervious = 332,097 sf

Summary for Subcatchment 1S: Remaining Front Portion of Site

Runoff = 10.50 cfs @ 12.08 hrs, Volume= 31,910 cf, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	23,649	98	Impervious
	12,939	74	>75% Grass cover, Good, HSG C
	30,290	61	>75% Grass cover, Good, HSG B
	66,878	77	Weighted Average
	43,229		64.64% Pervious Area
	23,649		35.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	32	0.0200	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.8	189	0.0057	1.13		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	294	0.0307	2.63		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	515	Total			

Summary for Subcatchment 2S: E Portion of Site and N Central Offsite

Runoff = 36.16 cfs @ 12.18 hrs, Volume= 140,347 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	81,107	98	Impervious
	82	74	>75% Grass cover, Good, HSG C
	724	70	Woods, Good, HSG C
	39,719	65	Brush, Good, HSG C
	152,788	61	>75% Grass cover, Good, HSG B
	22,985	55	Woods, Good, HSG B
	83,365	48	Brush, Good, HSG B
	910	61	>75% Grass cover, Good, HSG B
	381,680	66	Weighted Average
	300,573		78.75% Pervious Area
	81,107		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
5.8	529	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	50	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.6	95	0.0262	2.55	40.82	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.100 Earth, dense brush, high stage
1.2	18	0.0001	0.25	0.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
1.1	164	0.0239	2.42	48.41	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
3.1	355	0.0152	1.93	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
13.0	1,317	Total			

Summary for Subcatchment 3S: N Abutting Lot

Runoff = 2.76 cfs @ 12.07 hrs, Volume= 8,235 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	4,916	98	Impervious
	15,299	61	>75% Grass cover, Good, HSG B
	20,215	70	Weighted Average
	15,299		75.68% Pervious Area
	4,916		24.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	190	0.0591	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 4S: S Portion of Site and E & S Offsite

Runoff = 60.83 cfs @ 12.20 hrs, Volume= 249,662 cf, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	131,245	98	Impervious
	5,382	74	>75% Grass cover, Good, HSG C
	2,411	70	Woods, Good, HSG C
	44,222	65	Brush, Good, HSG C
	304,492	61	>75% Grass cover, Good, HSG B
	111,283	55	Woods, Good, HSG B
	62,149	48	Brush, Good, HSG B
	661,184	67	Weighted Average
	529,939		80.15% Pervious Area
	131,245		19.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
2.9	769	0.0469	4.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	147	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	41	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
0.8	86	0.0136	1.75		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	368	0.0117	1.69	33.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Very weedy reaches w/pools
0.2	36	0.0200	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.024
3.9	347	0.0091	1.49	29.87	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' Top.W=18.00' n= 0.100 Earth, dense brush, high stage
0.5	71	0.0185	2.61	94.03	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 8.0 '/' Top.W=34.00' n= 0.080 Earth, long dense weeds
15.1	1,895	Total			

Summary for Subcatchment 5S: Remaining Land N of New Entrance

Runoff = 0.60 cfs @ 12.09 hrs, Volume= 1,840 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	1,229	98	Impervious
	3,078	61	>75% Grass cover, Good, HSG B
	4,307	72	Weighted Average
	3,078		71.47% Pervious Area
	1,229		28.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	29	0.0200	1.06		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	39	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	99	0.0082	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	26	0.0082	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	59	0.0121	2.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	252	Total			

Summary for Subcatchment 10S: Front Portion to Pond

Runoff = 3.91 cfs @ 12.07 hrs, Volume= 12,225 cf, Depth= 6.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	14,469	98	Impervious
	7,082	61	>75% Grass cover, Good, HSG B
	21,551	86	Weighted Average
	7,082		32.86% Pervious Area
	14,469		67.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	31	0.0714	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	42	0.0714	5.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	46	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	8	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	127	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11S: N & NW Portion of Site

Runoff = 6.97 cfs @ 12.13 hrs, Volume= 25,108 cf, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	28,851	98	Impervious
	11,574	61	>75% Grass cover, Good, HSG B
	8,125	48	Brush, Good, HSG B
	48,550	81	Weighted Average
	19,699		40.57% Pervious Area
	28,851		59.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.1071	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	44	0.0714	1.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	78	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	84	0.0423	4.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	79	0.0887	6.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	84	0.0217	2.99		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	158	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.9	563	Total			

Summary for Subcatchment 21S: SE Corner of New Site

Runoff = 1.73 cfs @ 12.07 hrs, Volume= 5,293 cf, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	5,427	98	Impervious
	4,807	61	>75% Grass cover, Good, HSG B
	10,234	81	Weighted Average
	4,807		46.97% Pervious Area
	5,427		53.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	12	0.3333	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	76	0.0588	4.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	9	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	97	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 23S: New Entrance

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 2,287 cf, Depth= 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,233	98	Impervious
	245	61	>75% Grass cover, Good, HSG B
	3,478	95	Weighted Average
	245		7.04% Pervious Area
	3,233		92.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	38	0.0321	3.64		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	81	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 24S: New Entrance

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 1,874 cf, Depth> 8.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	2,715	98	Impervious
	51	61	>75% Grass cover, Good, HSG B
	2,766	97	Weighted Average
	51		1.84% Pervious Area
	2,715		98.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	28	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	41	0.0286	3.43		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	69	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 25S: NW Corner of New Site

Runoff = 5.25 cfs @ 12.07 hrs, Volume= 16,854 cf, Depth= 7.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	21,788	98	Impervious
	5,962	61	>75% Grass cover, Good, HSG B
	27,750	90	Weighted Average
	5,962		21.48% Pervious Area
	21,788		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	33	0.0150	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.3	49	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	149	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 26S: SE Central Portion of New Site

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 2,505 cf, Depth= 7.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,374	98	Impervious
	556	61	>75% Grass cover, Good, HSG B
	3,930	93	Weighted Average
	556		14.15% Pervious Area
	3,374		85.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	8	0.3333	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	77	0.0508	4.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	16	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	109	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 27S: E Central Portion New Site

Runoff = 0.83 cfs @ 12.07 hrs, Volume= 2,774 cf, Depth= 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	3,894	98	Impervious
	326	61	>75% Grass cover, Good, HSG B
	4,220	95	Weighted Average
	326		7.73% Pervious Area
	3,894		92.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	35	0.0469	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	27	0.0465	4.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	8	0.3333	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 31S: Porous Pavement

Runoff = 0.08 cfs @ 21.94 hrs, Volume= 3,495 cf, Depth> 6.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr storm Rainfall=8.49"

	Area (sf)	CN	Description
*	6,200	98	Porous Pavement, HSG B
	6,200		100.00% Impervious Area

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

Summary for Reach 2R: Wetland Flow Path

Inflow Area = 401,895 sf, 21.40% Impervious, Inflow Depth = 4.44" for 50-yr storm event
Inflow = 44.25 cfs @ 12.20 hrs, Volume= 148,582 cf
Outflow = 38.24 cfs @ 12.20 hrs, Volume= 148,582 cf, Atten= 14%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Max. Velocity= 5.24 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 1.0 min

Peak Storage= 679 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 428.00 cfs

10.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 94.0' Slope= 0.0440 '/'
Inlet Invert= 25.10', Outlet Invert= 20.96'

‡

Summary for Reach 100R: NHDOT Swale

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 5.01" for 50-yr storm event
Inflow = 47.56 cfs @ 12.27 hrs, Volume= 242,633 cf
Outflow = 47.56 cfs @ 12.27 hrs, Volume= 242,633 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Reach 200R: NHDOT Swale

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 4.59" for 50-yr storm event
Inflow = 52.79 cfs @ 12.31 hrs, Volume= 260,953 cf
Outflow = 52.79 cfs @ 12.31 hrs, Volume= 260,953 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Summary for Pond 1P: NHDOT Culvert

Inflow Area = 580,974 sf, 32.40% Impervious, Inflow Depth > 5.01" for 50-yr storm event
Inflow = 54.46 cfs @ 12.20 hrs, Volume= 242,634 cf
Outflow = 47.56 cfs @ 12.27 hrs, Volume= 242,633 cf, Atten= 13%, Lag= 3.8 min
Primary = 47.56 cfs @ 12.27 hrs, Volume= 242,633 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 24.41' @ 12.27 hrs Surf.Area= 4,457 sf Storage= 2,996 cf

Plug-Flow detention time= 0.3 min calculated for 242,549 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (834.8 - 834.5)

Volume	Invert	Avail.Storage	Storage Description
#1	20.96'	15,911 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.96	10	0	0
23.00	230	245	245
24.00	2,432	1,331	1,576
25.00	7,344	4,888	6,464
26.00	11,551	9,448	15,911

Device	Routing	Invert	Outlet Devices
#1	Primary	20.96'	**36.0" Round Culvert** L= 255.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 20.96' / 18.65' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=47.55 cfs @ 12.27 hrs HW=24.41' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 47.55 cfs @ 6.73 fps)

Summary for Pond 2P: 30" CMP Wetland Outlet

Inflow Area = 381,680 sf, 21.25% Impervious, Inflow Depth = 4.41" for 50-yr storm event
Inflow = 36.16 cfs @ 12.18 hrs, Volume= 140,347 cf
Outflow = 42.78 cfs @ 12.20 hrs, Volume= 140,347 cf, Atten= 0%, Lag= 1.2 min
Primary = 42.78 cfs @ 12.20 hrs, Volume= 140,347 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 37.40' @ 12.20 hrs Surf.Area= 7,008 sf Storage= 3,956 cf

Plug-Flow detention time= 0.7 min calculated for 140,347 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (837.6 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	26.60'	3,956 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.60	10	0	0
29.00	57	80	80
30.00	343	200	280
31.00	7,008	3,676	3,956

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**30.0" Round Culvert** L= 216.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 25.10' S= 0.0069 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=42.16 cfs @ 12.20 hrs HW=37.12' TW=25.65' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 42.16 cfs @ 8.59 fps)

Summary for Pond 3P: Existing CB

Inflow Area = 20,215 sf, 24.32% Impervious, Inflow Depth = 4.89" for 50-yr storm event
Inflow = 2.76 cfs @ 12.07 hrs, Volume= 8,235 cf
Outflow = 2.76 cfs @ 12.07 hrs, Volume= 8,235 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.76 cfs @ 12.07 hrs, Volume= 8,235 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.55' @ 12.07 hrs Surf.Area= 4 sf Storage= 17 cf

Plug-Flow detention time= 0.3 min calculated for 8,232 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (821.5 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.51'	17 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.51	13	0	0
29.47	13	12	12
29.97	4	4	17

Device	Routing	Invert	Outlet Devices
#1	Primary	28.51'	**8.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.51' / 25.50' S= 0.0684 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=2.76 cfs @ 12.07 hrs HW=31.53' TW=25.54' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.76 cfs @ 7.90 fps)

Summary for Pond 4P: NHDOT Culvert

Inflow Area = 681,969 sf, 21.09% Impervious, Inflow Depth = 4.59" for 50-yr storm event
Inflow = 62.59 cfs @ 12.20 hrs, Volume= 260,954 cf
Outflow = 52.79 cfs @ 12.31 hrs, Volume= 260,953 cf, Atten= 16%, Lag= 6.3 min
Primary = 52.79 cfs @ 12.31 hrs, Volume= 260,953 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.24' @ 12.31 hrs Surf.Area= 10,001 sf Storage= 11,473 cf

Plug-Flow detention time= 1.8 min calculated for 260,864 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (836.6 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.33'	21,437 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.33	10	0	0
28.00	2,865	3,838	3,838
29.00	8,136	5,501	9,339
30.00	16,060	12,098	21,437

Device	Routing	Invert	Outlet Devices
#1	Primary	25.33'	**36.0" Round Culvert** L= 218.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 25.33' / 23.70' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=52.78 cfs @ 12.31 hrs HW=29.24' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 52.78 cfs @ 7.47 fps)

Summary for Pond 5P: Existing CB

Inflow Area = 4,307 sf, 28.53% Impervious, Inflow Depth = 5.13" for 50-yr storm event
Inflow = 0.60 cfs @ 12.09 hrs, Volume= 1,840 cf
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 1,840 cf, Atten= 4%, Lag= 0.4 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 1,840 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.47' @ 12.30 hrs Surf.Area= 13 sf Storage= 20 cf

Plug-Flow detention time= 0.7 min calculated for 1,840 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (818.7 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.90'	37 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.90	13	0	0
29.75	13	24	24
31.25	4	13	37

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	**12.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.90' / 27.42' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.09 hrs HW=28.91' TW=28.88' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.48 cfs @ 0.76 fps)

Summary for Pond 10P: Raingarden #2

Inflow Area = 112,201 sf, 70.03% Impervious, Inflow Depth > 6.72" for 50-yr storm event
Inflow = 14.17 cfs @ 12.14 hrs, Volume= 62,812 cf
Outflow = 10.84 cfs @ 12.22 hrs, Volume= 62,142 cf, Atten= 23%, Lag= 5.0 min
Primary = 10.84 cfs @ 12.22 hrs, Volume= 62,142 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 28.77' @ 12.22 hrs Surf.Area= 3,144 sf Storage= 6,270 cf

Plug-Flow detention time= 26.0 min calculated for 62,142 cf (99% of inflow)
Center-of-Mass det. time= 16.9 min (841.9 - 825.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,998 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,959	0.0	0	0
25.00	1,959	40.0	784	784
26.50	1,959	5.0	147	931
26.75	1,959	40.0	196	1,126
27.00	2,098	100.0	507	1,634
28.00	2,674	100.0	2,386	4,020
29.00	3,282	100.0	2,978	6,998

Device	Routing	Invert	Outlet Devices
#1	Primary	24.75'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.75' / 24.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	24.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	28.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=10.84 cfs @ 12.22 hrs HW=28.77' TW=24.31' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 10.84 cfs @ 8.84 fps)
  ├2=**Orifice/Grate** (Passes < 1.90 cfs potential flow)
  └3=**Orifice/Grate** (Passes < 16.93 cfs potential flow)

Summary for Pond 11P: 12" Culvert

Inflow Area = 48,550 sf, 59.43% Impervious, Inflow Depth = 6.21" for 50-yr storm event
Inflow = 6.97 cfs @ 12.13 hrs, Volume= 25,108 cf
Outflow = 7.27 cfs @ 12.14 hrs, Volume= 25,107 cf, Atten= 0%, Lag= 0.3 min
Primary = 7.27 cfs @ 12.14 hrs, Volume= 25,107 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.85' @ 12.14 hrs Surf.Area= 1,275 sf Storage= 1,336 cf

Plug-Flow detention time= 5.9 min calculated for 25,107 cf (100% of inflow)
Center-of-Mass det. time= 5.9 min (807.8 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	1,336 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.00	230	0	0
28.00	583	407	407
29.00	1,275	929	1,336

Device	Routing	Invert	Outlet Devices
#1	Primary	27.00'	**12.0" Round Culvert** L= 30.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 27.00' / 26.75' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	28.50'	**114.0 deg x 0.5' long x 0.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Primary OutFlow Max=7.25 cfs @ 12.14 hrs HW=29.85' TW=28.60' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 4.23 cfs @ 5.38 fps)
└2=**Sharp-Crested Vee/Trap Weir** (Orifice Controls 3.02 cfs @ 4.76 fps)

Summary for Pond 20P: DMH #1

Inflow Area = 20,785 sf, 60.64% Impervious, Inflow Depth = 6.52" for 50-yr storm event
Inflow = 2.80 cfs @ 12.07 hrs, Volume= 11,292 cf
Outflow = 2.75 cfs @ 12.08 hrs, Volume= 11,292 cf, Atten= 2%, Lag= 0.3 min
Primary = 2.75 cfs @ 12.08 hrs, Volume= 11,292 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 29.42' @ 12.30 hrs Surf.Area= 13 sf Storage= 33 cf

Plug-Flow detention time= 0.3 min calculated for 11,292 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (789.8 - 789.5)

Volume	Invert	Avail.Storage	Storage Description
#1	26.85'	65 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.85	13	0	0
31.50	13	60	60
32.00	4	4	65

Device	Routing	Invert	Outlet Devices
#1	Primary	26.85'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.85' / 26.29' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.75 cfs @ 12.08 hrs HW=28.50' TW=27.83' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.75 cfs @ 3.50 fps)

Summary for Pond 21P: Raingarden #1

Inflow Area = 10,234 sf, 53.03% Impervious, Inflow Depth = 6.21" for 50-yr storm event
Inflow = 1.73 cfs @ 12.07 hrs, Volume= 5,293 cf
Outflow = 1.17 cfs @ 12.05 hrs, Volume= 5,291 cf, Atten= 32%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.05 hrs, Volume= 5,291 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 30.11' @ 12.18 hrs Surf.Area= 893 sf Storage= 559 cf

Plug-Flow detention time= 11.3 min calculated for 5,291 cf (100% of inflow)
Center-of-Mass det. time= 11.1 min (808.5 - 797.4)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	1,654 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	805	0.0	0	0
28.25	805	40.0	322	322
29.75	805	5.0	60	382
30.00	805	40.0	81	463
31.00	1,577	100.0	1,191	1,654

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**12.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.95' S= 0.0130 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	30.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.16 cfs @ 12.05 hrs HW=29.77' TW=28.27' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.16 cfs of 4.64 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.90 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 22P: DMH #2

Inflow Area = 10,551 sf, 68.02% Impervious, Inflow Depth = 6.82" for 50-yr storm event
Inflow = 1.73 cfs @ 12.07 hrs, Volume= 6,001 cf
Outflow = 1.67 cfs @ 12.07 hrs, Volume= 6,000 cf, Atten= 3%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.07 hrs, Volume= 6,000 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.46' @ 12.30 hrs Surf.Area= 20 sf Storage= 41 cf

Plug-Flow detention time= 0.7 min calculated for 6,000 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (772.7 - 772.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.39'	72 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.39	20	0	0
30.10	20	54	54
31.60	4	18	72

Device	Routing	Invert	Outlet Devices
#1	Primary	27.39'	**12.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.39' / 26.88' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.70 cfs @ 12.07 hrs HW=28.70' TW=28.47' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.70 cfs @ 2.17 fps)

Summary for Pond 23P: CB #3

Inflow Area = 3,478 sf, 92.96% Impervious, Inflow Depth = 7.89" for 50-yr storm event
Inflow = 0.68 cfs @ 12.07 hrs, Volume= 2,287 cf
Outflow = 0.65 cfs @ 12.07 hrs, Volume= 2,287 cf, Atten= 5%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.07 hrs, Volume= 2,287 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8

Peak Elev= 29.47' @ 12.30 hrs Surf.Area= 13 sf Storage= 25 cf

Plug-Flow detention time= 0.8 min calculated for 2,286 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (755.7 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.58'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.58	13	0	0
29.65	13	27	27
31.15	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.58'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.58' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.07 hrs HW=28.70' TW=28.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.51 cfs @ 0.65 fps)

Summary for Pond 24P: CB #4

Inflow Area = 2,766 sf, 98.16% Impervious, Inflow Depth > 8.13" for 50-yr storm event
Inflow = 0.55 cfs @ 12.07 hrs, Volume= 1,874 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 1,874 cf, Atten= 5%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 1,874 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 29.47' @ 12.30 hrs Surf.Area= 13 sf Storage= 22 cf

Plug-Flow detention time= 0.9 min calculated for 1,874 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (746.2 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.74'	40 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.74	13	0	0
29.80	13	27	27
31.30	4	13	40

Device	Routing	Invert	Outlet Devices
#1	Primary	27.74'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.74' / 27.49' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.07 hrs HW=28.69' TW=28.68' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.37 cfs @ 0.62 fps)

Summary for Pond 25P: Raingarden #3

Inflow Area = 42,100 sf, 83.74% Impervious, Inflow Depth > 7.28" for 50-yr storm event
Inflow = 6.81 cfs @ 12.07 hrs, Volume= 25,550 cf
Outflow = 4.22 cfs @ 12.16 hrs, Volume= 25,480 cf, Atten= 38%, Lag= 5.4 min
Primary = 4.22 cfs @ 12.16 hrs, Volume= 25,480 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.22' @ 12.16 hrs Surf.Area= 3,370 sf Storage= 3,760 cf
Flood Elev= 31.68' Surf.Area= 4,538 sf Storage= 5,575 cf

Plug-Flow detention time= 17.6 min calculated for 25,480 cf (100% of inflow)
Center-of-Mass det. time= 15.1 min (861.3 - 846.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.25'	7,158 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.25	1,557	0.0	0	0
28.25	1,557	40.0	623	623
29.75	1,557	5.0	117	740
30.00	1,557	40.0	156	895
31.00	2,808	100.0	2,183	3,078
32.00	5,352	100.0	4,080	7,158

Device	Routing	Invert	Outlet Devices
#1	Primary	27.25'	**15.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.25' / 26.75' S= 0.0076 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	27.25'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	31.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.22 cfs @ 12.16 hrs HW=31.22' TW=28.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.22 cfs of 9.37 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.51 cfs @ 7.68 fps)
  └─**3=Orifice/Grate** (Weir Controls 2.71 cfs @ 1.54 fps)

Summary for Pond 26A: Depressed Island

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 7.65" for 50-yr storm event
Inflow = 0.76 cfs @ 12.07 hrs, Volume= 2,505 cf
Outflow = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.84' @ 12.07 hrs Surf.Area= 93 sf Storage= 45 cf

Plug-Flow detention time= 17.5 min calculated for 2,468 cf (99% of inflow)
Center-of-Mass det. time= 8.1 min (771.0 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.25'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.25	59	0	0
32.00	102	60	60
32.25	299	50	111

Device	Routing	Invert	Outlet Devices
#1	Primary	31.75'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.07 hrs HW=31.84' TW=30.98' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 26P: CB #6

Inflow Area = 3,930 sf, 85.85% Impervious, Inflow Depth = 7.54" for 50-yr storm event
Inflow = 0.76 cfs @ 12.07 hrs, Volume= 2,468 cf
Outflow = 0.74 cfs @ 12.08 hrs, Volume= 2,468 cf, Atten= 2%, Lag= 0.2 min
Primary = 0.74 cfs @ 12.08 hrs, Volume= 2,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.24' @ 12.15 hrs Surf.Area= 7 sf Storage= 29 cf

Plug-Flow detention time= 1.4 min calculated for 2,468 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (772.4 - 771.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	32 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.25	13	20	20
31.75	4	13	32

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.08 hrs HW=31.00' TW=30.96' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.74 cfs @ 0.95 fps)

Summary for Pond 27A: Depressed Island

Inflow Area = 4,220 sf, 92.27% Impervious, Inflow Depth = 7.89" for 50-yr storm event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 2,774 cf
Outflow = 0.83 cfs @ 12.07 hrs, Volume= 2,733 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.83 cfs @ 12.07 hrs, Volume= 2,733 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 32.10' @ 12.07 hrs Surf.Area= 117 sf Storage= 52 cf

Plug-Flow detention time= 18.5 min calculated for 2,732 cf (98% of inflow)
Center-of-Mass det. time= 8.8 min (763.7 - 754.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	112 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	65	0	0
32.00	101	42	42
32.50	179	70	112

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.83 cfs @ 12.07 hrs HW=32.10' TW=31.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Weir Controls 0.83 cfs @ 1.03 fps)

Summary for Pond 27P: CB #7

Inflow Area = 10,420 sf, 96.87% Impervious, Inflow Depth > 7.17" for 50-yr storm event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 6,228 cf
Outflow = 0.82 cfs @ 12.07 hrs, Volume= 6,227 cf, Atten= 2%, Lag= 0.1 min
Primary = 0.82 cfs @ 12.07 hrs, Volume= 6,227 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs / 8
Peak Elev= 31.24' @ 12.15 hrs Surf.Area= 9 sf Storage= 31 cf

Plug-Flow detention time= 0.8 min calculated for 6,227 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,072.9 - 1,072.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.75'	36 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.75	13	0	0
30.50	13	23	23
32.00	4	13	36

Device	Routing	Invert	Outlet Devices
#1	Primary	28.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.75' / 28.50' S= 0.0042 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.07 hrs HW=31.01' TW=30.96' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.81 cfs @ 1.04 fps)

APPENDIX B:

HYDROLOGIC DATA

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.785 degrees West
Latitude	43.077 degrees North
Elevation	0 feet
Date/Time	Tue, 02 Oct 2018 15:58:00 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.91	**1yr**	2.35	2.80	3.21	3.93	4.54	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.51	1.94	2.48	3.20	3.56	**2yr**	2.84	3.42	3.93	4.67	5.31	**2yr**
5yr	0.37	0.58	0.73	0.97	1.24	1.60	**5yr**	1.07	1.46	1.88	2.42	3.13	4.06	4.57	**5yr**	3.59	4.39	5.03	5.92	6.69	**5yr**
10yr	0.41	0.65	0.82	1.11	1.44	1.88	**10yr**	1.25	1.72	2.22	2.88	3.74	4.86	5.52	**10yr**	4.30	5.31	6.06	7.09	7.96	**10yr**
25yr	0.48	0.76	0.96	1.33	1.76	2.32	**25yr**	1.52	2.13	2.76	3.61	4.72	6.16	7.08	**25yr**	5.45	6.81	7.77	9.00	10.03	**25yr**
50yr	0.53	0.85	1.09	1.53	2.06	2.74	**50yr**	1.77	2.51	3.27	4.30	5.64	7.38	8.56	**50yr**	6.53	8.24	9.38	10.78	11.96	**50yr**
100yr	0.60	0.97	1.25	1.76	2.40	3.22	**100yr**	2.07	2.96	3.86	5.11	6.73	8.84	10.36	**100yr**	7.82	9.96	11.33	12.93	14.26	**100yr**
200yr	0.67	1.09	1.41	2.02	2.80	3.80	**200yr**	2.41	3.49	4.58	6.09	8.05	10.59	12.52	**200yr**	9.37	12.04	13.69	15.50	17.00	**200yr**
500yr	0.79	1.30	1.69	2.46	3.44	4.72	**500yr**	2.97	4.35	5.71	7.65	10.17	13.46	16.11	**500yr**	11.91	15.49	17.58	19.72	21.47	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	1yr	0.63	0.87	0.92	1.32	1.67	2.22	2.50	1yr	1.96	2.41	2.85	3.16	3.87	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.05	3.45	2yr	2.70	3.32	3.81	4.54	5.06	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.74	3.78	4.19	5yr	3.35	4.03	4.71	5.53	6.23	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.60	10yr	1.14	1.56	1.81	2.40	3.07	4.37	4.86	10yr	3.87	4.68	5.43	6.41	7.19	10yr
25yr	0.44	0.67	0.83	1.18	1.56	1.90	25yr	1.35	1.86	2.10	2.77	3.55	4.68	5.90	25yr	4.14	5.67	6.64	7.79	8.68	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.17	50yr	1.52	2.12	2.35	3.09	3.96	5.28	6.82	50yr	4.67	6.56	7.73	9.04	10.02	50yr
100yr	0.54	0.81	1.01	1.46	2.01	2.47	100yr	1.73	2.42	2.63	3.44	4.38	5.93	7.88	100yr	5.25	7.57	8.99	10.51	11.56	100yr
200yr	0.59	0.89	1.13	1.63	2.28	2.82	200yr	1.97	2.75	2.93	3.82	4.84	6.63	9.10	200yr	5.87	8.75	10.45	12.22	13.36	200yr
500yr	0.69	1.02	1.31	1.91	2.71	3.37	500yr	2.34	3.29	3.41	4.37	5.53	7.70	11.00	500yr	6.81	10.58	12.75	14.95	16.16	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	1yr	0.76	1.06	1.26	1.74	2.21	2.99	3.14	1yr	2.65	3.02	3.58	4.37	5.04	1yr
2yr	0.33	0.52	0.64	0.86	1.06	1.26	2yr	0.92	1.24	1.48	1.96	2.51	3.42	3.69	2yr	3.03	3.55	4.07	4.82	5.63	2yr
5yr	0.40	0.61	0.76	1.05	1.33	1.61	5yr	1.15	1.58	1.88	2.53	3.24	4.33	4.94	5yr	3.83	4.75	5.36	6.35	7.13	5yr
10yr	0.47	0.72	0.89	1.24	1.60	1.97	10yr	1.38	1.92	2.27	3.10	3.94	5.33	6.17	10yr	4.72	5.93	6.77	7.81	8.72	10yr
25yr	0.57	0.87	1.08	1.54	2.03	2.55	25yr	1.75	2.50	2.94	4.06	5.12	7.80	8.29	25yr	6.90	7.97	9.07	10.29	11.36	25yr
50yr	0.66	1.01	1.26	1.81	2.44	3.10	50yr	2.10	3.04	3.58	4.97	6.27	9.77	10.39	50yr	8.65	9.99	11.33	12.66	13.90	50yr
100yr	0.78	1.18	1.48	2.14	2.93	3.77	100yr	2.53	3.69	4.35	6.12	7.69	12.24	13.01	100yr	10.83	12.51	14.15	15.61	17.02	100yr
200yr	0.91	1.37	1.74	2.52	3.51	4.60	200yr	3.03	4.50	5.30	7.53	9.42	15.36	16.31	200yr	13.59	15.69	17.69	19.23	20.83	200yr
500yr	1.13	1.68	2.16	3.14	4.47	5.97	500yr	3.85	5.83	6.88	9.94	12.37	20.77	22.01	500yr	18.38	21.16	23.77	25.35	27.24	500yr

Powered by ACIS
Northeast Regional Climate Center

APPENDIX C:

NRCS SOILS REPORT

Soil Map—Rockingham County, New Hampshire
(PORT CITY NISSAN)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 20, Sep 7, 2018

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 26, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	9.8	100.0%
Totals for Area of Interest		**9.8**	**100.0%**

APPENDIX D:

STORMWATER OPERATIONS AND MAINTENANCE PLAN

Port City Nissan

Spaulding Turnpike
Portsmouth, NH

Stormwater Management / BMP Facilities Inspection and Maintenance Manual

Proper construction, inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality.

For the purpose of this Stormwater Management Program, a significant rainfall event is considered an event of two and one half (2.5) inches in a 24-hour period or 0.5 inches in a one-hour period. It is anticipated that a short, intense event is likely to have a higher potential of erosion for this site than a longer, high volume event.

The following provides a list of recommendations and guidelines for managing the stormwater facilities:

TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES

Function – Temporary erosion and sediment control devices are utilized during the construction period to divert, store and filter stormwater from non-stabilized surfaces. These devices include, but are not limited to: silt fences, filters, sediment traps, stone check dams, mulch, and erosion control blankets.

Maintenance

- In general, temporary erosion and sediment control devices shall be inspected and maintained on a weekly basis and following a significant storm event.
- Refer to the Site Plan drawings for the maintenance of temporary erosion and sediment control devices.

MANICURED LANDSCAPED AREAS - FERTILIZER MANAGEMENT

Function – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns. Soil tests shall be conducted to determine fertilizer application rates.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.
- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

MANICURED LANDSCAPED AREAS - LITTER CONTROL

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

DE-ICING CHEMICAL USE AND STORAGE

Function – Salt and sand is used for de-icing of drives. Care shall be taken to prevent the over-application of salt for melting ice.

Maintenance

- Proper storage of salt is critical. Salt is highly water-soluble. Contamination of fresh water wetlands and other sensitive areas can occur when salt is stored in open areas. Salt piles shall be covered at all times if not stored in a shed. Runoff from stockpiles shall be contained to keep the runoff from entering the drainage system.
- When shared driveways and walks are free of snow and ice, they should be swept clean. Disposal shall be in a solid waste disposal facility.

VEGETATIVE SWALES

Function – Vegetative swales filter sediment from stormwater, promote infiltration, and the uptake of contaminates. They are designed to treat runoff and dispose of it safely into the natural drainage system.

Maintenance

- Timely maintenance is important to keep a swale in good working condition. Mowing of grassed swales shall be monthly to keep the vegetation in vigorous condition. The cut vegetation shall be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale.
- Fertilizing shall be bi-annual or as recommended from soil testing.

- Inspect swales following significant rainfall events.
- Woody vegetation shall not be allowed to become established in the swales or rock riprap outlet protection and if present shall be removed.
- Accumulated debris disrupts flow and leads to clogging and erosion. Remove debris and litter as necessary.
- Inspect for eroded areas. Determine cause of erosion and correct deficiency as required. Monitor repaired areas.

CULVERTS AND DRAINAGE PIPES

Function – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas.

Maintenance

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from the inlet and outlet to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.

CATCH BASINS

Function – Catch basins collect stormwater, primarily from paved surfaces and roofs. Stormwater from paved areas often contains sediment and contaminants. Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

Maintenance

- Remove leaves and debris from structure grates on an as-needed basis.
- Sumps shall be cleaned on an annual basis to protect water quality and infiltration capacity. Catch basin debris shall be disposed of at a solid waste disposal facility.

RAINGARDENS

Function – Raingardens provide treatment to runoff prior to directing it to stormwater systems by filtering sediment and suspended solids, trapping them in the bottom of the garden and in the filter media itself. Additional treatment is provided by the native water-tolerant vegetation which removes nutrients and other pollutants through bio-uptake. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

Maintenance

- Raingardens should be inspected twice annually and after every significant rainfall event.

- Remove any obstructions, litter and accumulated sediment or debris as warranted but no less than once a year.
- Mowing of any grassed area in or adjacent to a raingarden shall be performed on a monthly basis (when areas are not inundated) to keep the vegetation in vigorous condition. The cut grass shall be removed to prevent the decaying organic litter from clogging the filter media or choking other vegetation.
- Select raingarden vegetation should be maintained in healthy condition. This may include pruning, removal and replacement of dead or diseased vegetation, and the removal of invasive species.
- If a raingarden does not completely drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore its filtration and/or infiltration function(s), including but not limited to removal of accumulated sediments and/or replacement or reconstruction of the filter media.

POROUS PAVEMENT

Function – Porous pavement is designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. Proper maintenance of porous pavement is crucial for ensuring its longevity and functionality to infiltrate runoff.

Maintenance

- Signs shall be installed indicating the location of porous pavement and the special maintenance required.
- New porous pavement shall be inspected several times in the first month after construction and at least annually thereafter. Inspections shall be conducted after major storms to check for surface ponding that might indicate possible clogging.
- Inspect annually for pavement deterioration or spalling.
- Vacuum sweeping shall be performed 2-4 times a year. Power washing is not allowed.
- Sand and abrasives shall not be used for winter maintenance, as they will clog the pores; de-icing materials shall be used instead.
- Never reseal or repave with impermeable materials. If the porous pavement is damaged, it can be repaired using conventional, non-porous patching mixes as long as the cumulative area repaired does not exceed 10 percent of the paved area.

GENERAL CLEAN UP

Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet basket, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.

Once in operation, all paved areas of the site should be swept at least once annually, preferably at the end of winter prior to significant spring rains.

WINTER STABILIZATION

The winter construction period is from November l through April 15. If the construction site is not stabilized with pavement, a road gravel base, 85% mature vegetation cover or riprap by November 15, then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road. Winter excavation and earthwork shall be completed such that no more than 1 acre of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the sub base gravel is installed in roadway areas or the areas of future loam and seed have been loamed, seeded, and mulched. Hay and straw mulch shall be applied at a minimum rate of 150-lbs/1,000 square feet (3 tons/acre) and shall be properly anchored. The contractor must install any added measures that may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions.

Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

Soil Stockpiles. Stockpiles of soil or subsoil will be mulched for over winter protection with hay or straw at twice the normal rate or at 150-lbs/1,000 square feet (3 tons per acre) or with a four-inch layer of wood waste erosion control mix. This will be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile will not be placed (even covered with hay or straw) within 100-feet from any natural resources.

Natural Resources Protection. Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) will be placed between any natural resource and the disturbed area.

Projects crossing the natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

Sediment Barriers. During frozen conditions, sediment barriers shall consist of wood waste filter berms, as frozen soil prevents the proper installation of hay bales and sediment silt fences.

Mulching. All areas shall be considered to be denuded until areas of future loam and seed have been loamed, seeded, and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3-tons/acre (twice the normal accepted rate of 75 lbs/1,000 square feet or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow will be removed down to a one-inch depth or less prior to application. After each day of final grading, the area will be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, track or wood cellulose fiber. When ground surface is not visible though the mulch then cover is sufficient.

After November 1, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

Mulching on Slopes and Ditches. Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230-lbs/1,000 square feet on all slopes greater than 8%. Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater that 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

Seeding. Between the dates of October 15 and April 1, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1 and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of three (3) times higher than specified for permanent seed and then mulched.

Dormant seeding may be selected and placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4-inches of loam and seed at an application rate of 5-lbs/1,000 square feet. All areas seeded during the winter will be inspected in the spring for adequate catch. All areas sufficiently vegetated (less than 75 % catch) shall be re-vegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be re-vegetated in the spring.

Trench Dewatering and Temporary Stream Diversion. Water from construction trench dewatering or temporary stream diversion will pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 100 feet of a protected natural resource.

Inspection and Monitoring. Maintenance measures shall be applied as needed during the entire construction season. After each rainfall over ½ inch in 24 hours, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. The contractor shall provide written documentation of the visual inspections. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or bare spots. Established vegetative cover means a minimum of 85 to 90 % of areas vegetated with vigorous growth.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels -- The contractor will construct and stabilize all stone-lined ditches and channels on the site by November 15. The contractor will construct and stabilize all grass-lined ditches and channels on the site by September 15. If the contractor fails to stabilize a ditch or channel to be grass-lined by September 15, then the contractor will take one of the following actions to stabilize the ditch for late fall and winter.

   Install a sod lining in the ditch -- The contractor will line the ditch with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch -- The contractor will line the ditch with stone riprap by November 15. The contractor will hire a registered Professional Engineer or Certified Professional in Erosion and Sediment Control to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor will re-grade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes -- The contractor will construct and stabilize stone-covered slopes by November 15. The contractor will seed and mulch all slopes to be vegetated by September 15. Any area having a grade greater than 15% (15H: 1V) to be a slope. If the contractor fails to stabilize any slope to be vegetated by September 15, then the contractor will take one of the following actions to stabilize the slope for late fall and winter.

   Stabilize the soil with temporary vegetation and erosion control mats -- By October 1 the contractor will seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The contractor will monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the contractor will cover the slope with a layer of wood waste compost or with stone riprap.

   Stabilize the slope with sod -- The contractor will stabilize the disturbed slope with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor will not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:IV).

   Stabilize the slope with wood waste compost – Approved materials recycled for erosion control. They can be used in lieu of loam, blankets, vegetative buffers, and silt fences. Do not use to line ditch channels or for mowed areas unless mixed with topsoil.

   The contractor will place a six-inch layer of wood waste compost on the slope by November 15. Prior to placing the wood waste compost, the contractor will remove any snow accumulation on the disturbed slope. The contractor will not use wood waste compost to stabilize slopes having grades greater than 50% (2H: 1V) or having groundwater seeps on the slope face.

   Stabilize the slope with stone riprap: The contractor will place a layer of stone riprap on the slope by November 15. The contractor shall hire a registered Professional Engineer or Certified Professional in Erosion and Sediment Control to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the timely stabilization of disturbed soils: By September 15 the contractor will seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor

fails to stabilize these soils by this date, then the contractor will take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation: By October 1 the contractor will seed the disturbed soil with winter rye at a seeding rate of 3 lbs. per 1,000 square feet lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 square feet, and anchor the mulch with plastic netting. The contractor will monitor growth of the rye over the next 30 days. If the rye fails grow at least three inches or cover at least 75% of the disturbed soil before November 15, then the contractor will mulch the area for over-winter protection.

Stabilize the soil with sod: The contractor will stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch: By November 15, the contractor will mulch the disturbed soil by spreading hay or straw at a rate of at least 180 lbs per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor will remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

APPENDIX E:

PLANS

Pre-Development Watershed Plan
Post-Development Watershed Plan

NOT FOR CONSTRUCTION

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- CC EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- EXISTING/PROPOSED SHRUBLINE
- WATERSHED BOUNDARY
- Tc PATH
- NRCS SOIL BOUNDARY
- 299B NRCS SOIL DESIGNATION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

PLAN REF. #1

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)

799

799

799

RAINGARDEN #2 (EXISTING)

RAINGARDEN #3 (EXISTING)

RAINGARDEN #1 (EXISTING)

PYLON SIGN

300' WIDE PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE EASEMENT

300' WIDE PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE EASEMENT

SINGLE RESIDENCE B ZONE / GENERAL BUSINESS ZONE

POA 100

POA 200

P3980

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER –

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 2, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC	EBS	06/18/12

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 3980-SITE.DWG

SCALE: 22"x34" 1" = 30'
11"x17" 1" = 60'

OWNERS/APPLICANTS:

TWO-WAY REALTY, LLC
120 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

PROJECT:

PORT CITY NISSAN SITE EXPANSION
MAP 236 LOT 33
120 SPAULDING TURNPIKE
PORTSMOUTH, NH

TITLE:

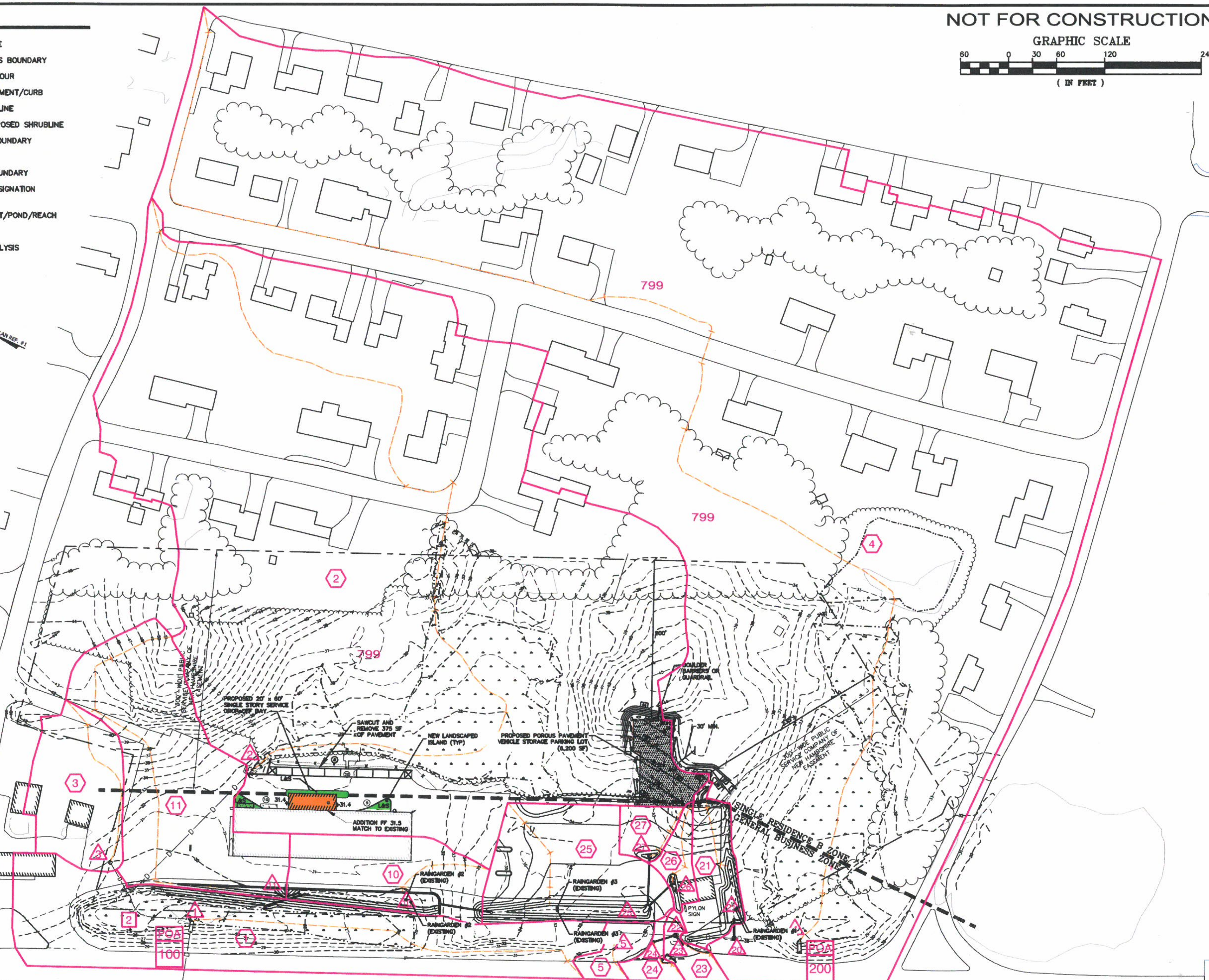
EXISTING CONDITIONS WATERSHED PLAN

SHEET NUMBER:

WS-1

LEGEND

Symbol	Description
— — —	PROPERTY LINE
—·—··—	WETLAND/SOILS BOUNDARY
----60----	EXISTING CONTOUR
———	EXISTING PAVEMENT/CURB
︶︶︶	EXISTING TREELINE
︶︶︶	EXISTING/PROPOSED SHRUBLINE
———	WATERSHED BOUNDARY
—·—	Tc PATH
-------	NRCS SOIL BOUNDARY
299B	NRCS SOIL DESIGNATION
(1) △1 [1]	SUBCATCHMENT/POND/REACH
POA	POINT OF ANALYSIS



ALTUS ENGINEERING, INC.

133 COURT STREET (603) 433-2335 PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED – PROFESSIONAL ENGINEER

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 18, 2012

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC	EBS	06/18/12

DRAWN BY: EBS

APPROVED BY: EDW

DRAWING FILE: 3980-SITE.DWG

SCALE: 22"x34" 1" = 30'
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PROJECT:

PORT CITY NISSAN SITE EXPANSION
MAP 236 LOT 33
120 SPAULDING TURNPIKE PORTSMOUTH, NH

TITLE:

PROPOSED CONDITIONS WATERSHED PLAN

SHEET NUMBER: WS-2

P3980