AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

21 January 2020

Juliet Walker, Planning Director
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for TAC Review for Subdivision Approval at 201 Kearsarge Way, Tax Map 218 / Lot 5

Dear Ms. Walker:

On behalf of Richard Fusegni we hereby submit the attached and enclosed Subdivision Plans for TAC Review of the Fusegni Subdivision at 201 Kearsarge Way. The project consists of the subdivision of one lot into 3 lots with the associated site and infrastructure improvements. The existing residence will be demolished and three new homes constructed. In accordance with the feedback from our TAC Workshop we include conceptual designs for the proposed homes on the three lots.

We look forward to the TAC Committee's review of this submission. If there are any questions or comments please feel free to reach out to me.

Sincerely,

John Chagnon

John R. Chagnon, PE

CC: Richard Fusegni, Bernie Pelech

STATEMENT OF AUTHORIZATION

The undersigned, Richard Fusegni, owner of property at 201 Kearsarge Way, Portsmouth, NH, do hereby authorize Bernard W. Pelech, and Bosen and Associates as attorneys, and Ambit Engineering, Inc as project engineers to prepare and file any and all applications for the City of Portsmouth Planning Board, and further authorizes Bernard W. Pelech and Bosen and Associates, and Ambit Engineering to represent my interests before the Planning Board for the City of Portsmouth with regard to the subdivision of the property located at 201 Kearsarge Way.

Richard Fusegni

Signature

Oct. 3-2019

Date

City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision 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 subdivision review requirements. Please refer to the Subdivision review regulations for full details.

Applicant Responsibilities (Section III.C): Applicable fees are due upon application submittal along with required number of copies of the Preliminary or final plat and supporting documents and studies. Please consult with Planning staff for submittal requirements.

Owner: Richard P. Fusegni Date Submitted: 1/21/2020

Applicant: Ambit Engineering, Inc.

Phone Number: 603-430-9282 E-mail: jrc@ambitengineering.com

Site Address 1: 201 Kearsarge Way Map: 218 Lot: 5

Site Address 2: _____ Map: _____ Lot: _____

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Completed Application form. **(III.C.2-3)**		N/A
☒	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). **(III.C.4)**		N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Name and address of record owner, any option holders, descriptive name of subdivision, engineer and/or surveyor or name of person who prepared the plat. **(Section IV.1/V.1)**	Cover sheet	☑ Preliminary Plat ☑ Final Plat	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	**Preliminary Plat** Names and addresses of all adjoining property owners. **(Section IV.2)** **Final Plat** Names and addresses of all abutting property owners, locations of buildings within one hundred (100) feet of the parcel, and any new house numbers within the subdivision. **(Section V.2)**	Subdivision plan House # TBD	☑ Preliminary Plat ☑ Final Plat	N/A
☐	North point, date, and bar scale. **(Section IV.3/V3)**	Required on all Plan Sheets	☑ Preliminary Plat ☑ Final Plat	N/A
☐	Zoning classification and minimum yard dimensions required. **(Section IV.4/V.4)**	Subdivision plan	☑ Preliminary Plat ☑ Final Plat	N/A
☐	**Preliminary Plat** Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). **(Section IV.5)** **Final Plat** Scale (not to be smaller than 1"=100'), Location map (at a scale of 1"=1,000') showing the property being subdivided and its relation to the surrounding area within a radius of 2,000 feet. Said location map shall delineate all streets and other major physical features that my either affect or be affected by the proposed development. **(Section V.5)**	Cover sheet	☑ Preliminary Plat ☑ Final Plat	N/A
☐	Location and approximate dimensions of all existing and proposed property lines including the entire area proposed to be subdivided, the areas of proposed lots, and any adjacent parcels in the same ownership. **(Section IV.6)**	Subdivision plan	☑ Preliminary Plat ☑ Final Plat	
☐	Dimensions and areas of all lots and any and all property to be dedicated or reserved for schools, parks, playgrounds, or other public purpose. Dimensions shall include radii and length of all arcs and calculated bearing for all straight lines. **(Section V.6/ IV.7)**	N/A	☑ Preliminary Plat ☑ Final Plat	N/A
☐	Location, names, and present widths of all adjacent streets, with a designation as to whether public or private and approximate location of existing utilities to be used. Curbs and sidewalks shall be shown. **(Section IV.8/V.7)**	Subdivision plan	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	Sheet C1	☑ Preliminary Plat ☑ Final Plat	
☐	**Preliminary Plat** Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	Sheet C3	☑ Preliminary Plat ☑ Final Plat	
☐	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	N/A	☑ Preliminary Plat ☑ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	Subdivsion plan	☑ Preliminary Plat ☑ Final Plat	
☐	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	Cheet C2	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law. **(Section V.10)**	N/A	☐ Preliminary Plat ☑ Final Plat	
☐	For subdivisions involving greater than five (5) acres or fifty (50) lots, the final plat shall show hazard zones and shall include elevation data for flood hazard zones. **(Section V.11)**	Not in flood zone	☐ Preliminary Plat ☑ Final Plat	
☐	Location of all permanent monuments. **(Section V.12)**	Subdivision plan	☐ Preliminary Plat ☑ Final Plat	

General Requirements[1]			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Basic Requirements: (VI.1)** a. Conformity to Official Plan or Map b. Hazards c. Relation to Topography d. Planned Unit Development	Sheet C1	
☐	**2. Lots: (VI.2)** a. Lot Arrangement b. Lot sizes c. Commercial and Industrial Lots	Subdivision plan	
☐	**3. Streets: (VI.3)** a. Relation to adjoining Street System b. Street Rights-of-Way c. Access d. Parallel Service Roads e. Street Intersection Angles f. Merging Streets g. Street Deflections and Vertical Alignment h. Marginal Access Streets i. Cul-de-Sacs j. Rounding Street Corners k. Street Name Signs l. Street Names m. Block Lengths n. Block Widths o. Grade of Streets p. Grass Strips	N/A	
☐	**4. Curbing: (VI.4)**	N/A	
☐	**5. Driveways: (VI.5)**	Sheet C1	
☐	**6. Drainage Improvements: (VI.6)**	Sheet C2	
☐	**7. Municipal Water Service: (VI.7)**	Sheet C3 / P1	
☐	**8. Municipal Sewer Service: (VI.8)**	Sheet C3 / P1	
☐	**9. Installation of Utilities: (VI.9)** a. All Districts b. Indicator Tape	Sheet C3 / P1	
☐	**10. On-Site Water Supply: (VI.10)**	N/A	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	N/A	
☐	**12. Open Space: (VI.12)** a. Natural Features b. Buffer Strips c. Parks d. Tree Planting	Subdivision plan	
☐	**13. Flood Hazard Areas: (VI.13)** a. Permits b. Minimization of Flood Damage c. Elevation and Flood-Proofing Records d. Alteration of Watercourses	N/A	
☐	**14. Erosion and Sedimentation Control (VI.14)**	Sheet C2	

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐ ☐ ☐	**15. Easements (VI.15)** a. Utilities b. Drainage	Subdivision plan	
☐	**16. Monuments: (VI.16)**	Subdivision plan	
☐	**17. Benchmarks: (VI.17)**	Sheet C2	
☐	**18. House Numbers (VI.18)**	TBD	

Design Standards			
	Required Items for Submittal	**Indicate compliance and/or provide explanation as to alternative design**	**Waiver Requested**
☐	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	N/A	
☐	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Drainage Analysis	
☐	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	Sheet P1	
☐	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Sheet P1	

Applicant's/Representative's Signature: John Chagnon **Date:** 1-21-20

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

PROPOSED SUBDIVISION RESIDENTIAL DEVELOPMENT
201 KEARSARGE WAY
PORTSMOUTH, NEW HAMPSHIRE
PERMIT PLANS

OWNER:

RICHARD P. FUSEGNI
201 KEARSARGE WAY
PORTSMOUTH, N.H. 03801
TEL. (603)502-9009

CIVIL ENGINEER & LAND SURVEYOR:

AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
TEL. (603) 430-9282
FAX (603) 436-2315

PORTSMOUTH ZONING MAP

Residential Districts
- R Rural
- SRA Single Residence A
- SRB Single Residence B
- GRA General Residence A
- GRB General Residence B
- GRC General Residence C
- GA/MH Garden Apartment/Mobile Home Park

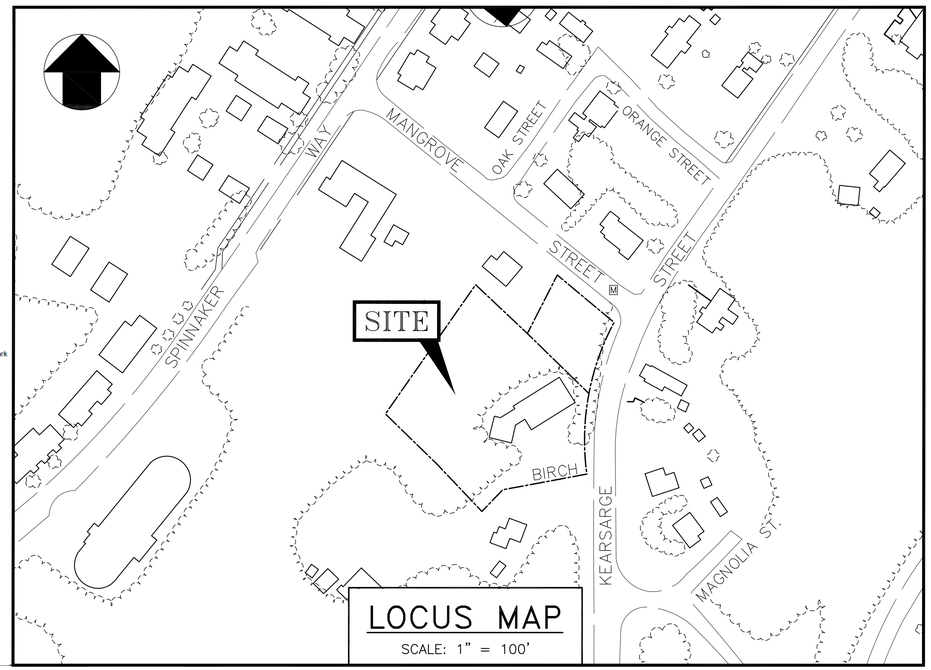
Mixed Residential Districts
- MRO Mixed Residential Office
- MRB Mixed Residential Business
- G1 Gateway Corridor
- G2 Gateway Center

Business Districts
- GB General Business
- B Business
- WB Waterfront Business

Industrial Districts
- OR Office Research
- I Industrial
- WI Waterfront Industrial

Airport Districts
- AIR Airport
- AI Airport Industrial
- PI Pease Industrial
- ABC Airport Business Commercial

Conservation Districts
- M Municipal
- NRP Natural Resource Protection



LOCUS MAP
SCALE: 1" = 100'

LEGEND:

EXISTING	PROPOSED	
		PROPERTY LINE
		SETBACK
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	G	GAS LINE
D	D	STORM DRAIN
W	W	WATER LINE
WS	WS	WATER SERVICE
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
		SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
S	SMH	SEWER MANHOLE
D	DMH	DRAIN MANHOLE
T	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

DIG SAFE
MA – ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

INDEX OF SHEETS

UTILITY CONTACTS

ELECTRIC:
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436-7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

NATURAL GAS:
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294-5144
ATTN: DAVE BEAULIEU

CABLE:
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679-5695 (X1037)
ATTN: MIKE COLLINS

SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427-1530
ATTN: JIM TOW

COMMUNICATIONS:
CONSOLIDATED COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427-5525

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

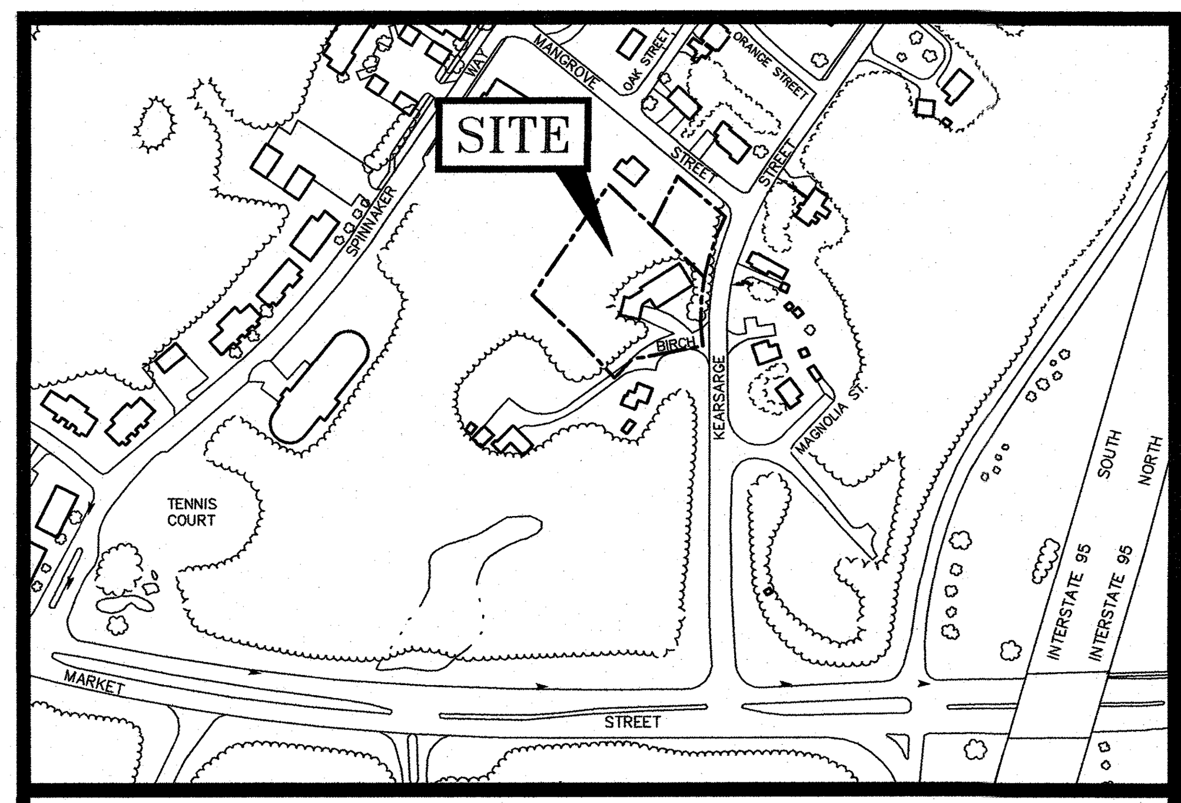
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

PROPOSED RESIDENTIAL DEVELOPMENT
201 KEARSARGE WAY
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

PLAN SET SUBMITTAL DATE: 21 JANUARY 2020



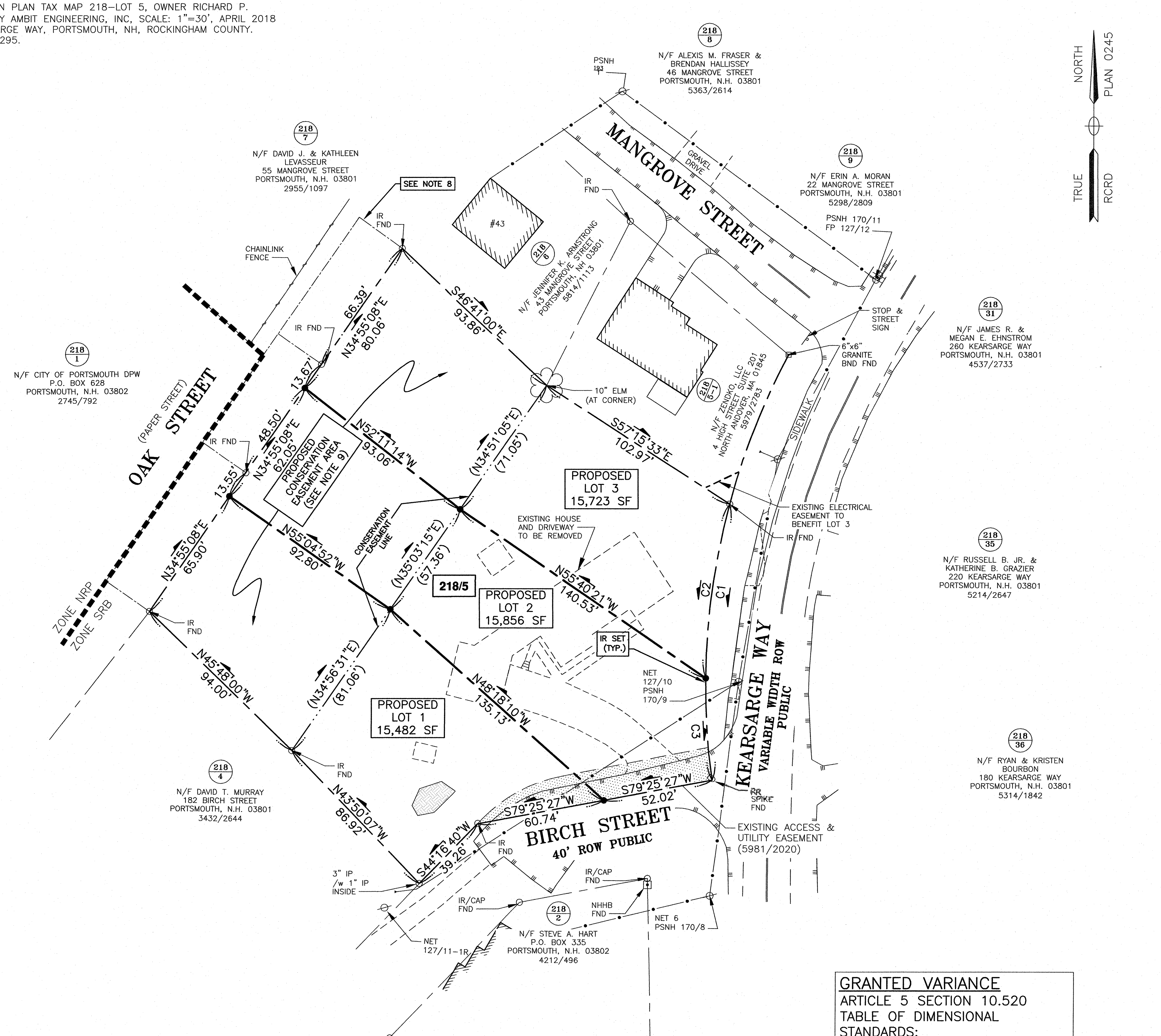
LOCATION MAP SCALE: 1" = 300'

PLAN REFERENCES

1) "SUBDIVISION PLAN TAX MAP 218-LOT 5, OWNER RICHARD P. FUSEGNI", BY AMBIT ENGINEERING, INC, SCALE: 1"=30', APRIL 2018 201 KEARSARGE WAY, PORTSMOUTH, NH, ROCKINGHAM COUNTY. RCRD-D-41295.

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
11/21	MAP 11/LOT 21
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
IR SET	IRON ROD SET
DH FND	DRILL HOLE FOUND
DH SET	DRILL HOLE SET
NHHB	NHDOT BOUND FOUND
	EDGE OF PAVEMENT
	OVERHEAD WIRE
	LEDGE OUTCROP



NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 218 AS LOT 5.

2) OWNER OF RECORD:
RICHARD P. FUSEGNI
201 KEARSARGE WAY
PORTSMOUTH, N.H. 03801
5476/2661 (5979/2783)
RCRD PLAN 0245

3) PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E, EFFECTIVE MAY 17, 2005.

4) EXISTING LOT AREA:
47,062 S.F.
1.0804 AC.

5) PARCEL IS LOCATED IN THE SINGLE RESIDENCE B (SRB) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
MIN. LOT AREA: 15,000 S.F.
FRONTAGE: 100 FT.
SETBACKS: FRONT: 30 FT.
SIDE: 10 FT.
REAR: 30 FT.
MAXIMUM STRUCTURE HEIGHT: 35 FT.
MAXIMUM STRUCTURE COVERAGE: 20%
MINIMUM OPEN SPACE: 40%

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE SUBDIVISION OF TAX MAP 218 LOT 5 INTO 3 LOTS.

8) OAK STREET WAS CREATED BY A PLAN DATED 1919 AND WAS NEVER CONSTRUCTED. BY OPERATION OF LAW THE AREAS SHOWN BELONG TO THE RESPECTIVE LOTS BY WAY OF APPROPRIATION OF REVERSION RIGHTS. AREAS SHOWN ARE NOT INCLUDED IN EXISTING LOT AREA.

9) PROPOSED CONSERVATION EASEMENT AREA RESTRICTIONS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTSMOUTH. CONSERVATION EASEMENT RESTRICTIONS WILL ALLOW FOR INSTALLATION AND MAINTENANCE OF PROPOSED DRAINAGE.

GRANTED VARIANCE

ARTICLE 5 SECTION 10.520
TABLE OF DIMENSIONAL STANDARDS:
STREET FRONTAGE:
* PROPOSED LOT 3: FRONTAGE OF 83 FEET WHERE 100 FEET IS REQUIRED

APPROVED 9/17/2019

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	330.00'	131.02'	130.16'	S03°34'31"W	22°44'52"
C2	330.00'	82.84'	82.62'	S07°45'28"W	14°22'59"
C3	330.00'	48.18'	48.13'	S03°36'58"E	8°21'53"

GRAPHIC SCALE
30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

JOHN R. CHAGNON, LLS — 1-21-20
DATE

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 738 LICENSED LAND SURVEYOR

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	1/21/20
1	REVISED FOR SUBMISSION	10/8/19
0	ISSUED FOR COMMENT	4/16/19

REVISIONS

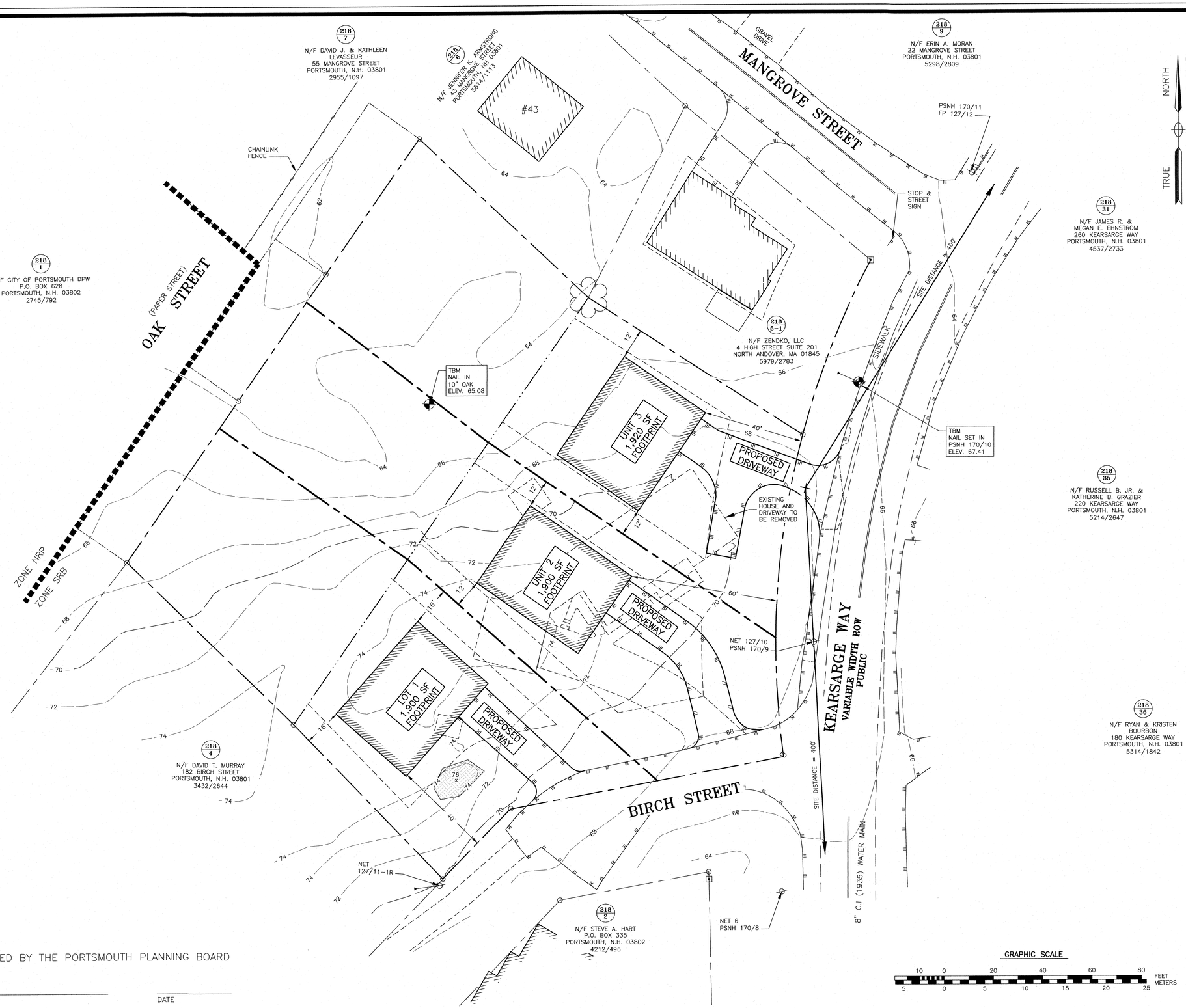
SUBDIVISION PLAN TAX MAP 218 – LOT 5

OWNER

RICHARD P. FUSEGNI
201 KEARSARGE WAY
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 30' APRIL 2019

FB 311, PG 1 2258



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NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).
4) THE PURPOSE OF THIS PLAN IS TO SHOW A CONCEPTUAL DEVELOPMENT LAYOUT ON THE PROPERTY.
5) EXISTING HOUSE AND SHED TO BE REMOVED. SEE DEMOLITION PLAN.

PROPOSED SUBDIVISION 201 KEARSARGE WAY PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	1/21/20
1	SITE LAYOUT	12/13/19
0	ISSUED FOR COMMENT	10/8/19

REVISIONS

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 738 — JOHN R. CHAGNON

SCALE: 1" = 20' OCTOBER 2019

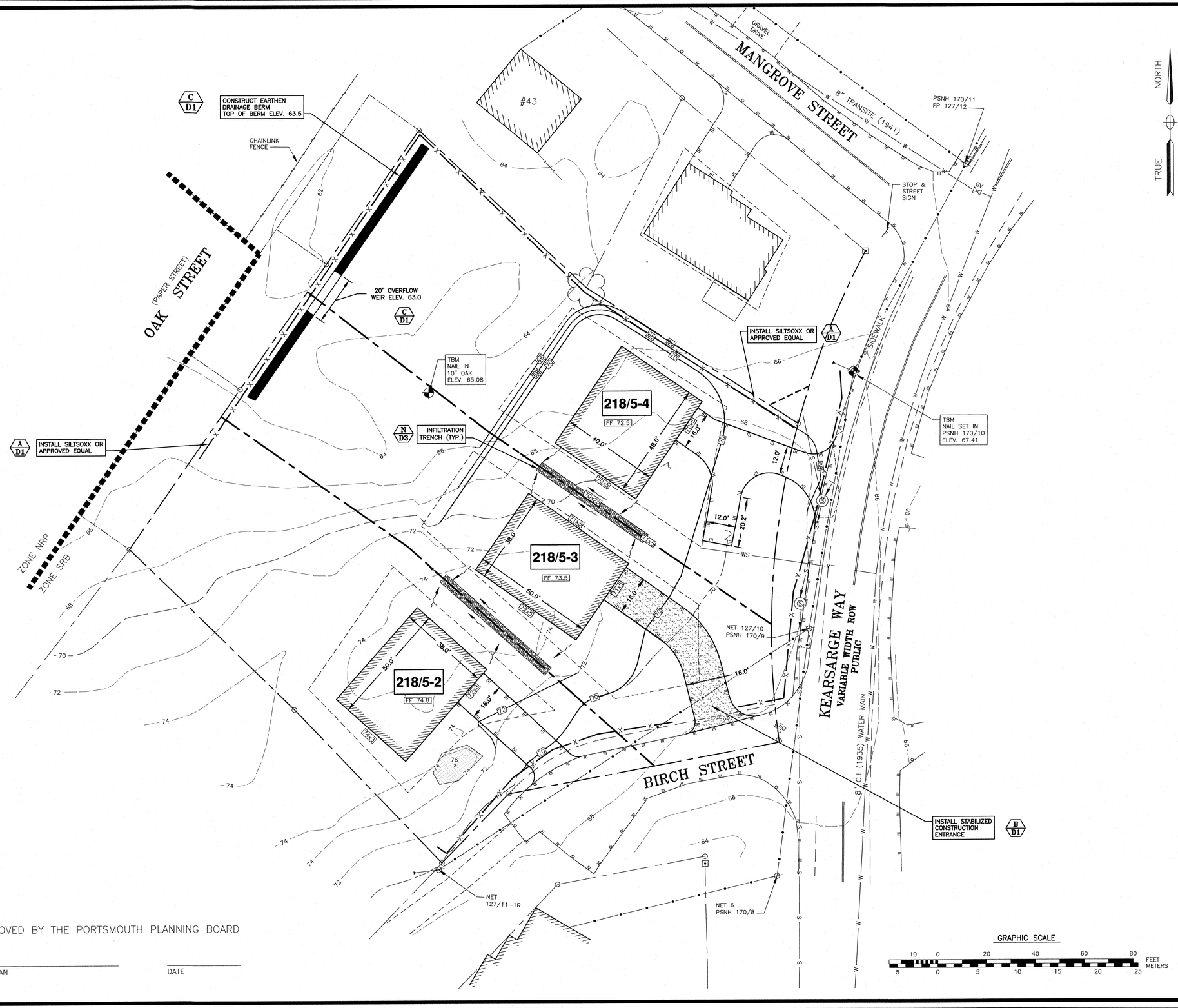
SUBDIVISION SITE PLAN

C1

FB. 311, PG 1

2258

J:\CIVIL\JN2258\JN2258\2015 Subdivision Lot 2 Pines & Spots\Dwg\2258 SUBDIVISION 2019.dwg



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3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THERE ARE NO WETLANDS ON SUBJECT PROPERTY.

5) BUILDINGS WILL BE GUTTERED TO DIRECT ROOF RUNOFF TO THE SIDE INFILTRATION TRENCH OR REAR OF THE LOT.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	1/21/20
1	SITE LAYOUT	12/13/19
0	ISSUED FOR COMMENT	10/8/19

REVISIONS

STATE OF NEW HAMPSHIRE · JOHN S. CHAGNON NO. 7861 · LICENSED PROFESSIONAL ENGINEER

SCALE: 1" = 20' JANUARY 2020

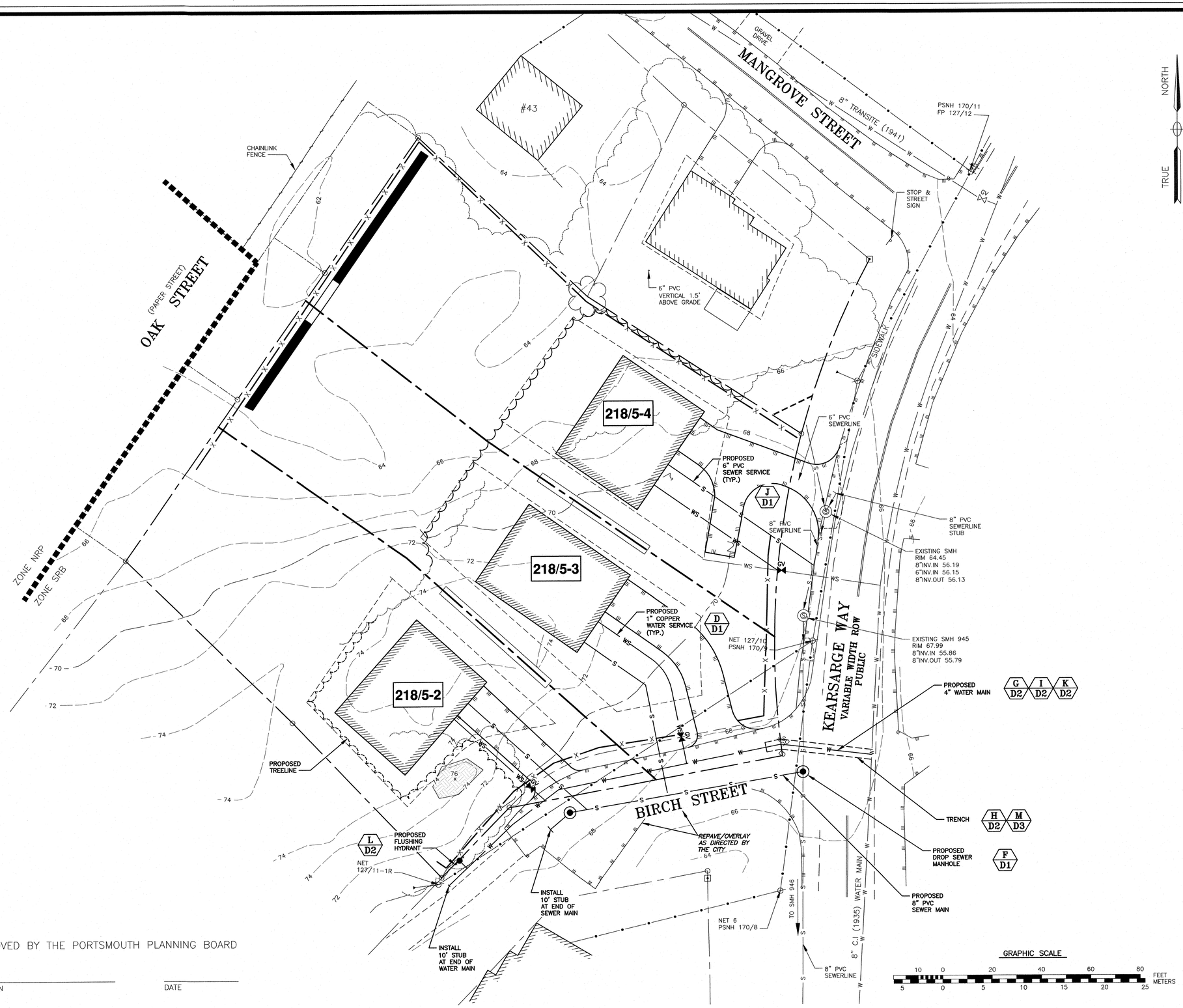
GRADING & EROSION CONTROL PLAN

C2

FB. 311, PG 1

2258

J:\JOBS\2020\2020s\2020s-2012\5-Subdivision Lot 2\Plan & Sheets\Site\2258 SUBDIVISION.dwg



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Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THERE ARE NO WETLANDS ON SUBJECT PROPERTY.

5) PROPOSED UTILITY CONNECTIONS TO BE REVIEWED AND APPROVED BY PORTSMOUTH DPW PRIOR TO ISSUANCE OF BUILDING PERMIT.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	1/21/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 9651
LICENSED PROFESSIONAL ENGINEER

SCALE: 1" = 20' JANUARY 2020

UTILITY PLAN

C3

FB. 311, PG 1

2258

DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).

J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL SLUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

K) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.

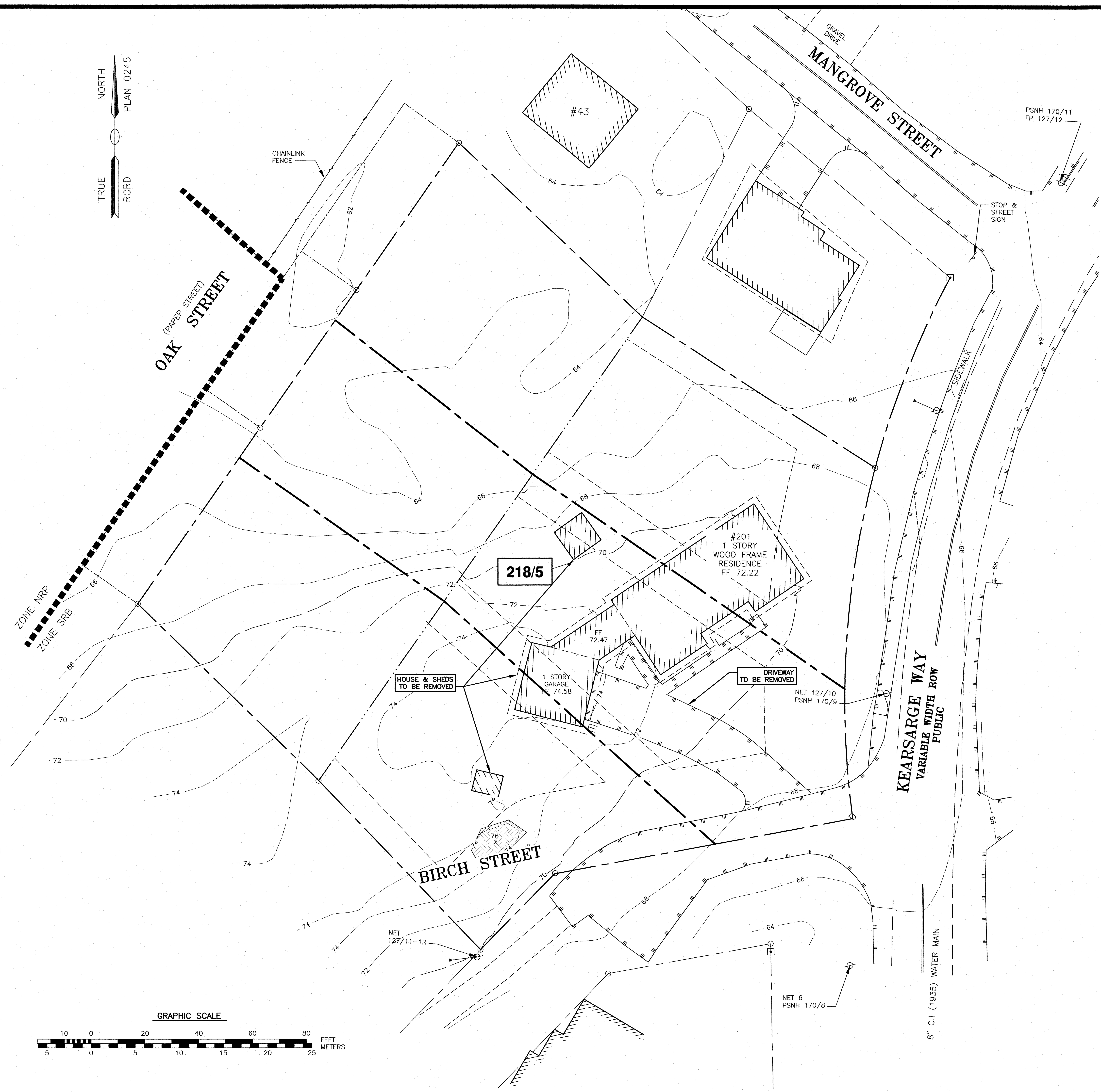
L) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

M) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

N) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

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PROPOSED SUBDIVISION 201 KEARSARGE WAY PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	1/21/20

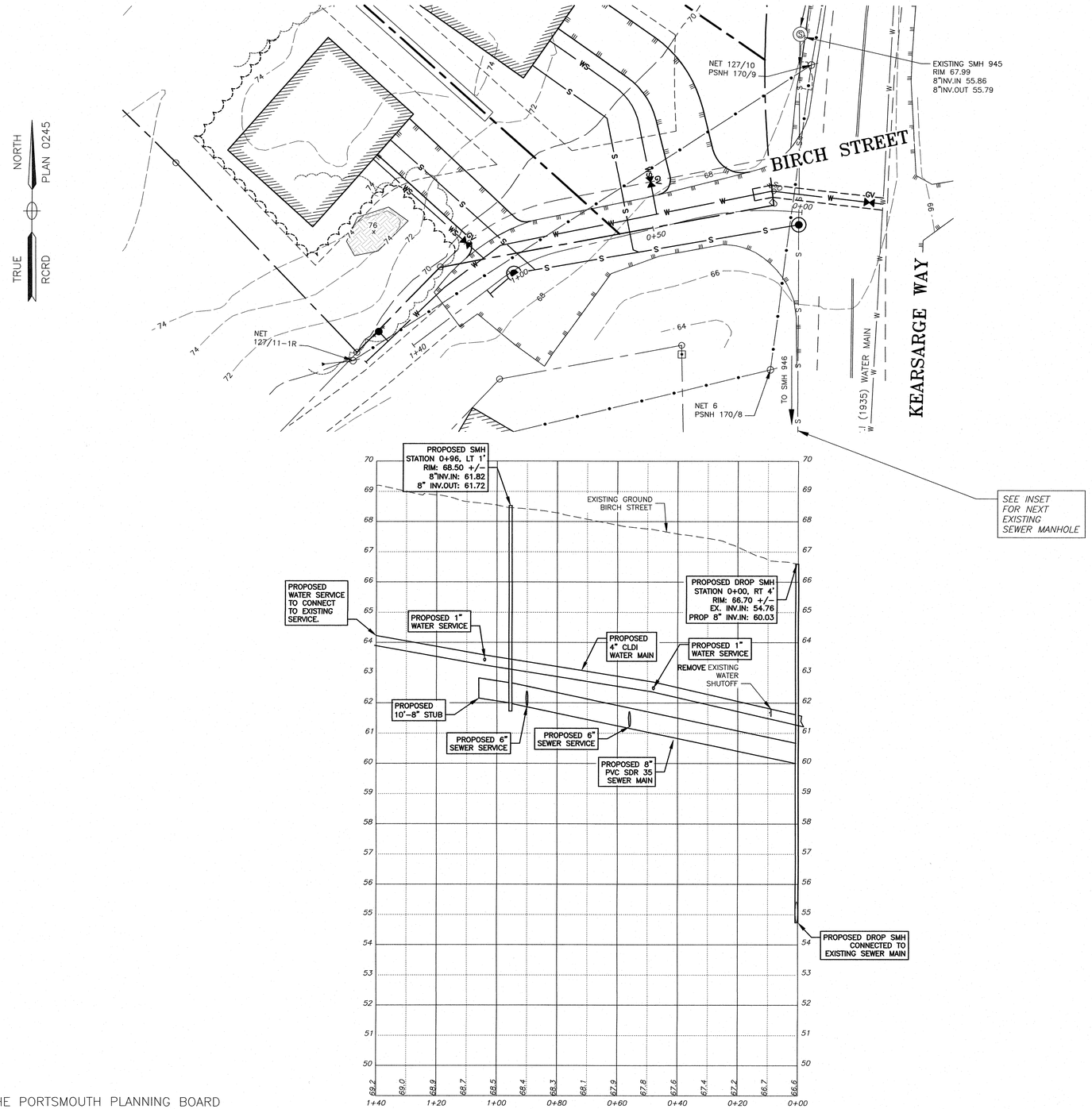
REVISIONS

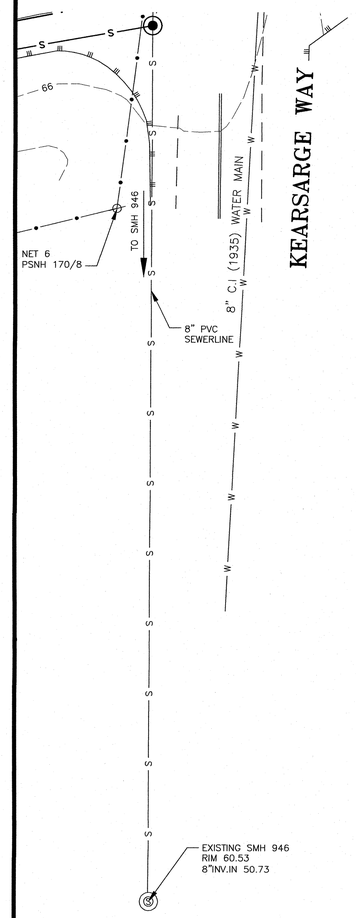
STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7851
LICENSED
PROFESSIONAL ENGINEER

SCALE: 1" = 20' JANUARY 2020

DEMOLITION PLAN C4

FB. 311, PG 1 2258





INSET

SCALE:
HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'

GRAPHIC SCALE
1" = 2' VERT.
1" = 20' HOR.

20 10 0 20 40 60 80 HORIZONTAL
2 1 0 2 4 6 8 VERTICAL

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

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PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	1/21/20
NO.	DESCRIPTION	DATE

REVISIONS

STATE OF NEW HAMPSHIRE · JOHN R. CHAGNON NO. 9851 LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN JANUARY 2020

UTILITY PLAN AND PROFILE

P1

FB. 311, PG 1

2258

J:\JOBS\2020\JN2020\JN2020-2015 Subdivision List 2\Plan & Specs\Cad\2258 SUBDIVISION 2020.dwg

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

INSTALL INLET PROTECTION AND PERIMETER CONTROLS, i.e., SILT FENCING OR SILTSOXX AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS.

CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED.

REMOVE EXISTING HOUSE AND SHED

CONSTRUCT SITE UTILITIES.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

DUST CONTROL: IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILT FENCES AND SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES AND SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

AVOID THE USE OF FUTURE OPEN SPACES (LOAM AND SEED AREAS) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ACCESS DRIVES AND PARKING AREAS.

ADDITIONAL TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNTS NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS--CONSTRUCT SILT FENCE OR SILTSOXX AROUND TOPSOIL STOCKPILE.

AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. STUMPS SHALL BE DISPOSED OF IN AN APPROVED FACILITY.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED

VEGETATIVE PRACTICE

FOR PERMANENT MEASURES AND PLANTINGS:

LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE.

FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.

SEED SHALL BE SOWN AT THE RATES SHOWN IN THE TABLE BELOW. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE, AND SHALL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.

THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.

A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE:

GENERAL COVER	PROPORTION	SEEDING RATE
CREEPING RED FESCUE	50%	100 LBS/ACRE
KENTUCKY BLUEGRASS	50%	
SLOPE SEED (USED ON ALL SLOPES GREATER THAN OR EQUAL TO 3:1)		
CREEPING RED FESCUE	42%	
TALL FESCUE	42%	48 LBS/ACRE
BIRDSFOOT TREFOIL	16%	

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH APPLICABLE STATE AND FEDERAL SEED LAWS.

FOR TEMPORARY PROTECTION OF DISTURBED AREAS:
MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:
PERENNIAL RYE: 0.7 LBS/1,000 S.F.
MULCH: 1.5 TONS/ACRE

MAINTENANCE AND PROTECTION

THE CONTRACTOR SHALL MAINTAIN ALL LOAM & SEED AREAS UNTIL FINAL ACCEPTANCE AT THE COMPLETION OF THE CONTRACT. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REMOVAL OF STONES AND OTHER FOREIGN OBJECTS OVER 1/2 INCHES IN DIAMETER WHICH MAY APPEAR AND THE FIRST TWO (2) CUTTINGS OF GRASS NO CLOSER THEN TEN (10) DAYS APART. THE FIRST CUTTING SHALL BE ACCOMPLISHED WHEN THE GRASS IS FROM 2 1/2 TO 3 INCHES HIGH. ALL BARE AND DEAD SPOTS WHICH BECOME APPARENT SHALL BE PROPERLY PREPARED, LIMED AND FERTILIZED, AND RESEEDED BY THE CONTRACTOR AT HIS EXPENSE AS MANY TIMES AS NECESSARY TO SECURE GOOD GROWTH. THE ENTIRE AREA SHALL BE MAINTAINED, WATERED AND CUT UNTIL ACCEPTANCE OF THE LAWN BY THE OWNER'S REPRESENTATIVE.

THE CONTRACTOR SHALL TAKE WHATEVER MEASURES ARE NECESSARY TO PROTECT THE GRASS WHILE IT IS DEVELOPING.

TO BE ACCEPTABLE, SEEDED AREAS SHALL CONSIST OF A UNIFORM STAND OF AT LEAST 90 PERCENT ESTABLISHED PERMANENT GRASS SPECIES, WITH UNIFORM COUNT OF AT LEAST 100 PLANTS PER SQUARE FOOT.

SEEDED AREAS WILL BE FERTILIZED AND RESEEDED AS NECESSARY TO INSURE VEGETATIVE ESTABLISHMENT.

THE SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATION IS ESTABLISHED.

THE SILT FENCE OR SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

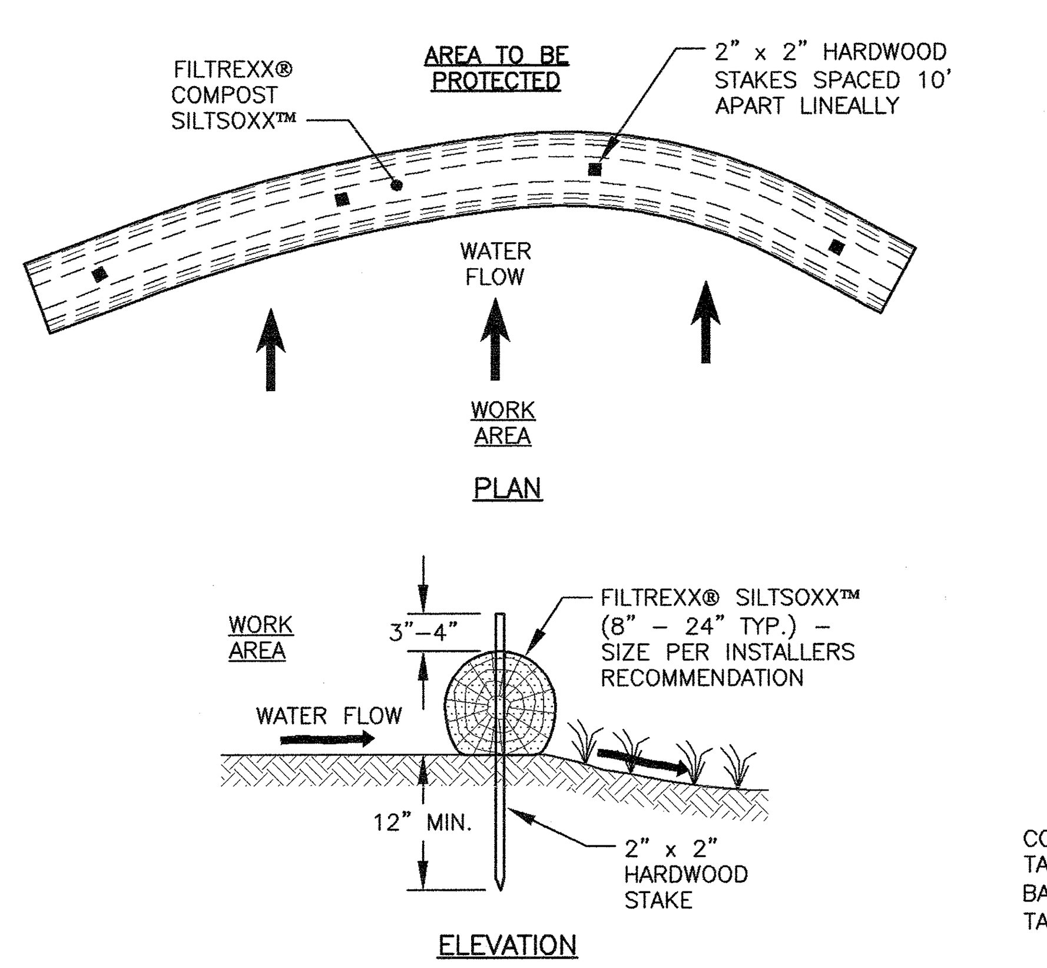
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

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 SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. 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.

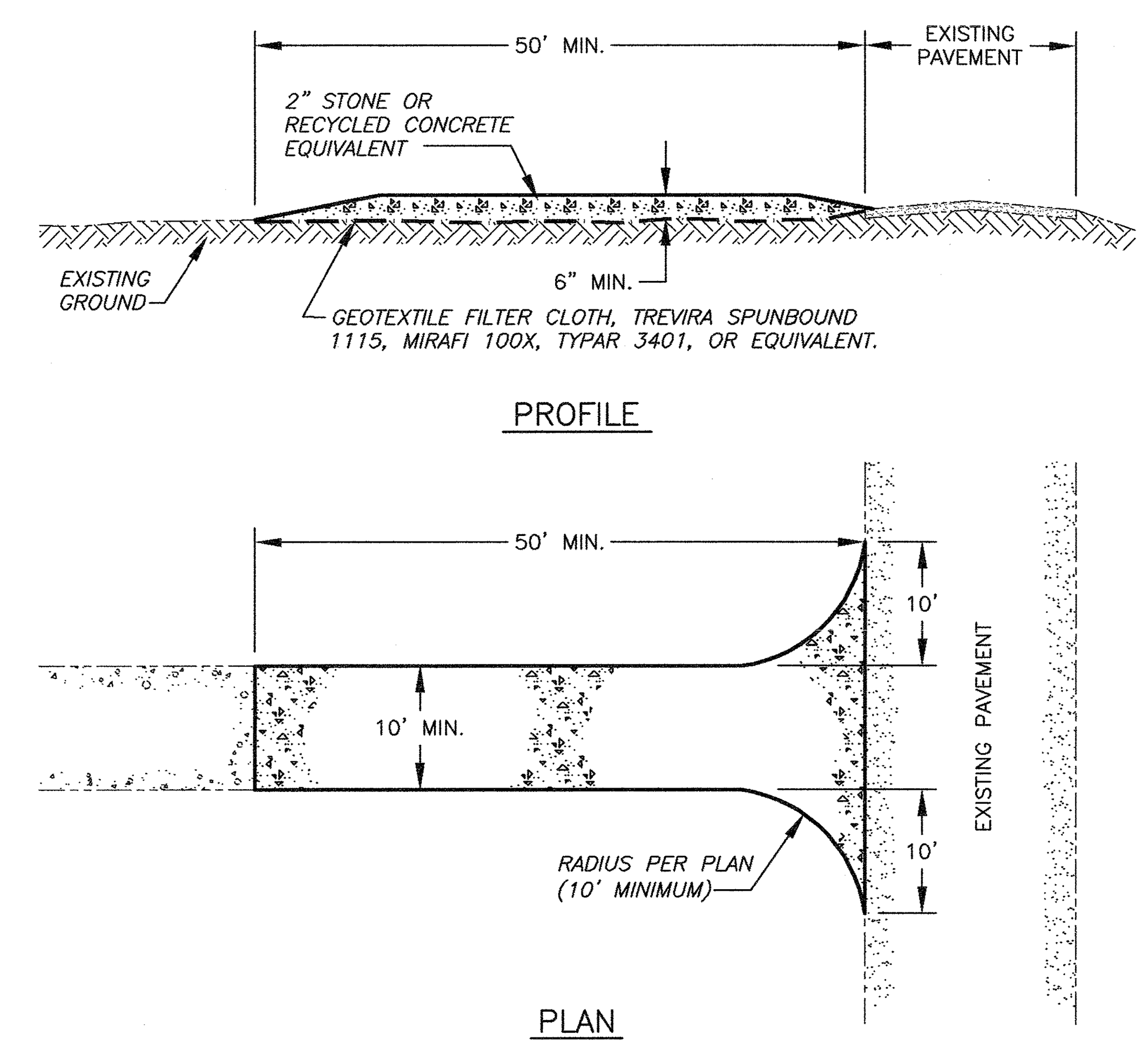
ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

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.

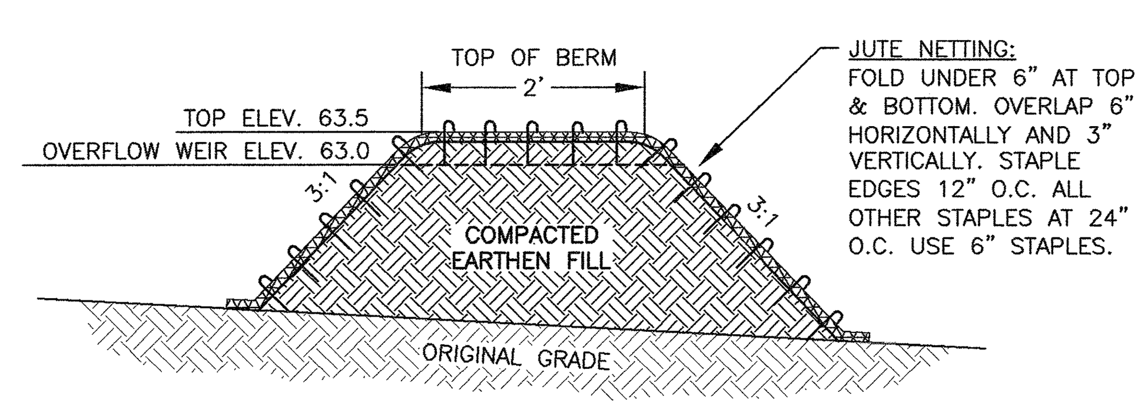


NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

A / C2 FILTREXX® SILTSOXX™ FILTRATION SYSTEM NTS

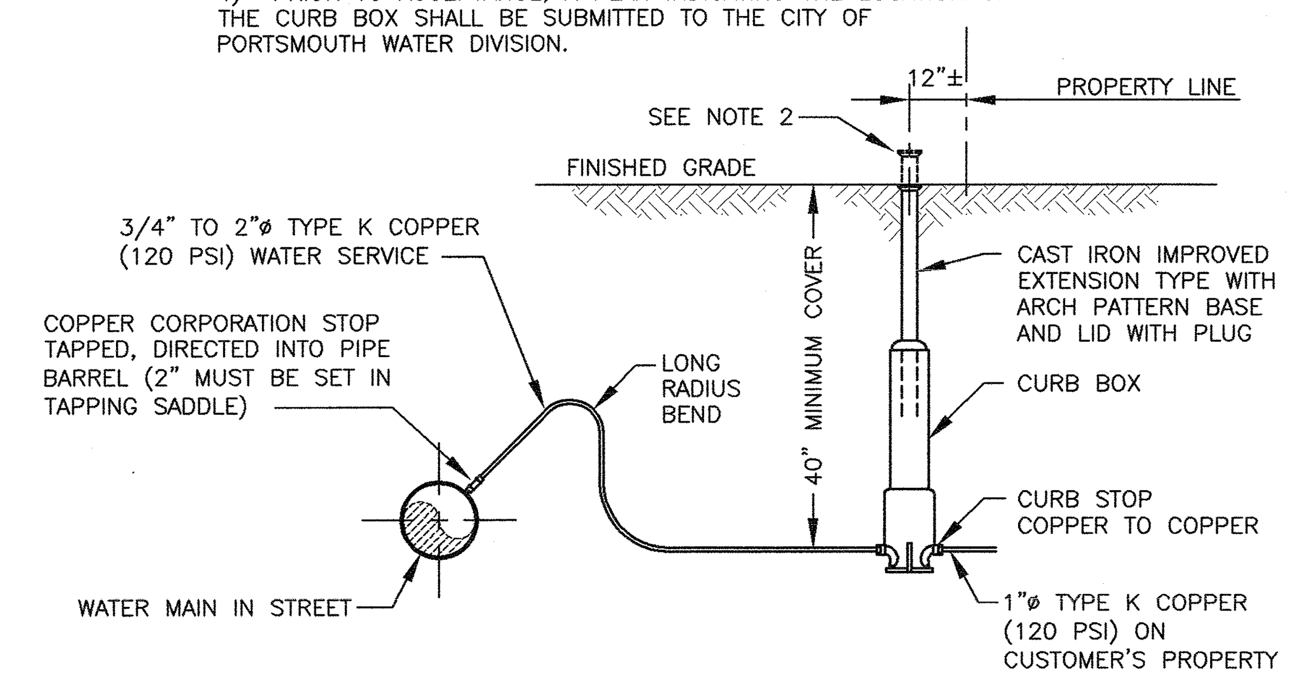


B / C2 STABILIZED CONSTRUCTION ENTRANCE NTS

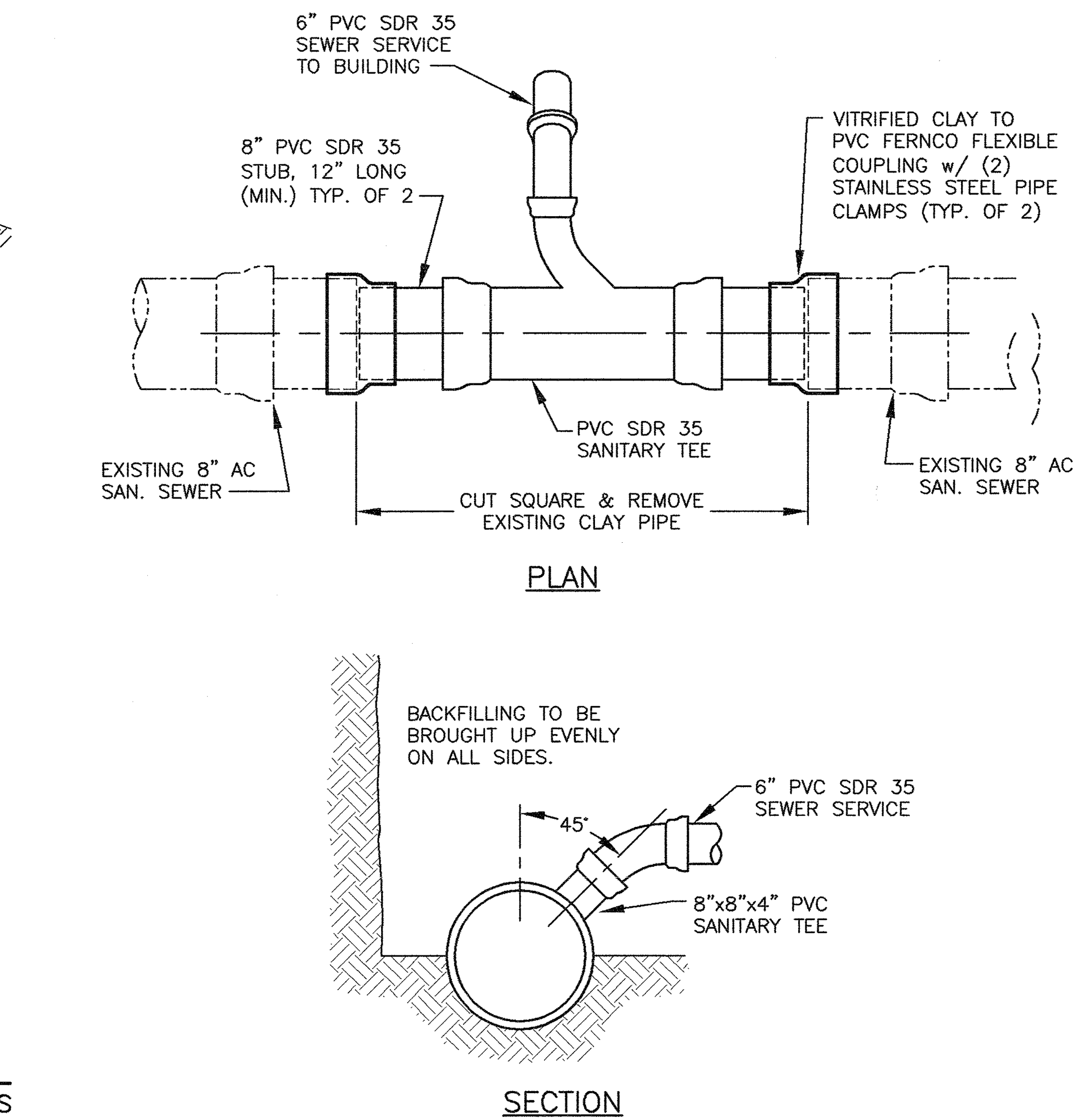


C / C2 DRAINAGE BERM NTS

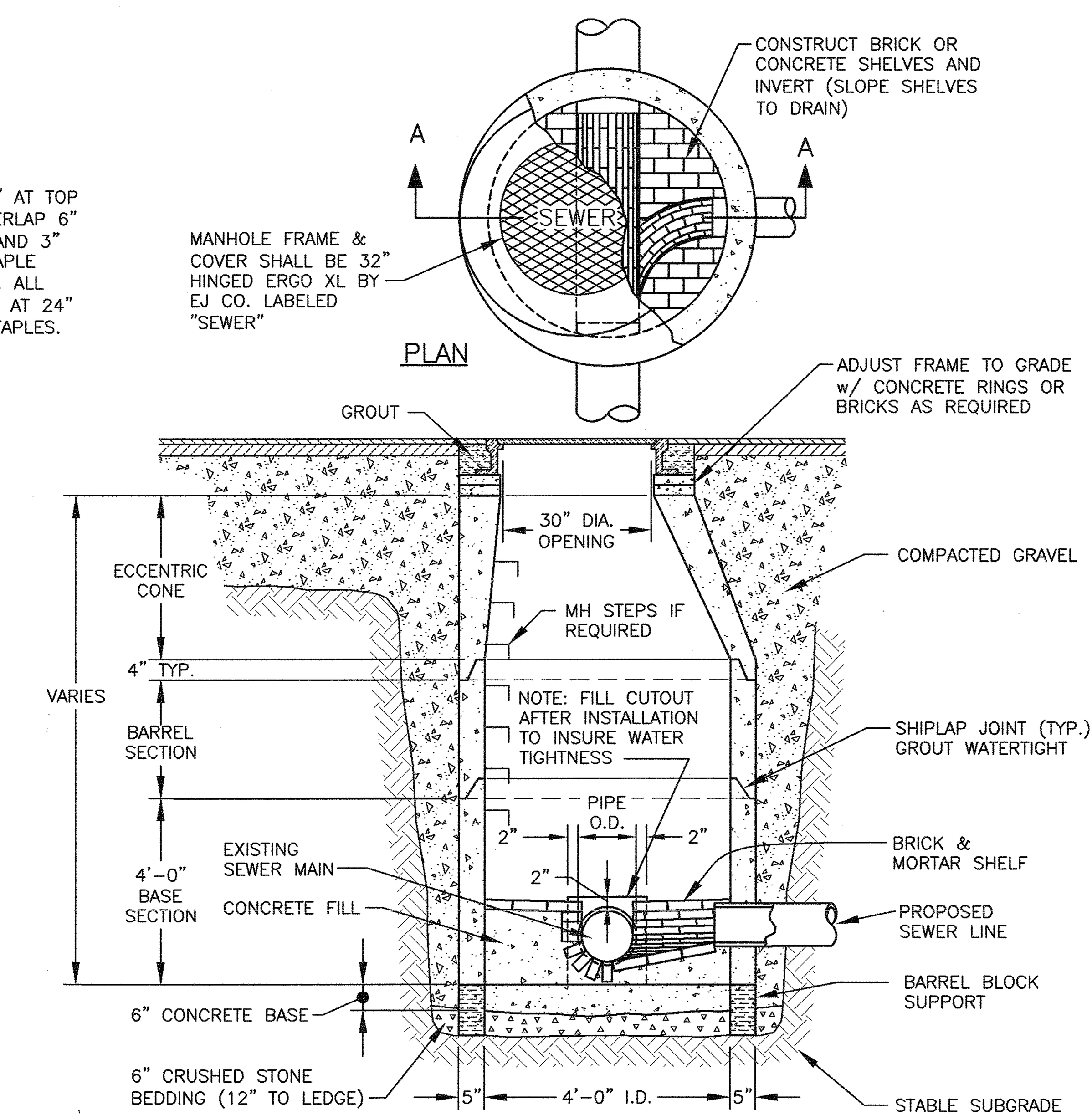
NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.



D / C3 WATER SERVICE CONNECTION (PORTSMOUTH) NTS



E / C3 SEWER SERVICE TAP DETAIL NTS



NOTES:
1) CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2) CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3) THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FOOT.
4) EACH PRECAST SECTION TO HAVE LIFTING HOLES CAST IN.

CONSTRUCTION SEQUENCE:
1) EXCAVATE AND EXPOSE EXISTING SEWER MAIN.
2) PLACE PRECAST BARREL SECTION WITH PRECAST CUTOUTS OVER PIPE.
3) USE BARREL BLOCKS AS SPACERS TO SUPPORT SECTION DURING CONCRETE BASE POUR.
4) POUR CONCRETE BASE AND CREATE SMOOTH SHELF WITH BRICK.
5) PLACE STANDARD PRECAST SECTIONS WITH CAST IRON FRAME AND SOLID COVER.
6) BREAK OUT EXISTING PIPE TO EXPOSE FLOW AT MID DIAMETER.

F / C3 SEWER MANHOLE INSTALLATION OVER EXISTING MAIN NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
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Fax (603) 436-2315

NOTES:
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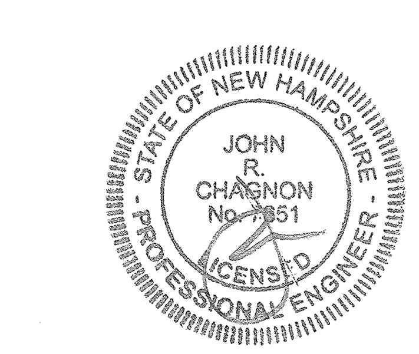
PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	1/21/20
0	ISSUED FOR COMMENT	10/8/19

REVISIONS



SCALE AS SHOWN JANUARY 2020

EROSION CONTROL NOTES & DETAILS

D1

FB. 311, PG 1

2258

HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
6"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
8"	1'-2"	1'-2"	1'-2"	1'-2"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
10"	1'-4"	1'-4"	1'-4"	1'-4"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0'
12"	1'-8"	1'-8"	1'-8"	1'-8"	1'-3"	1'-3"	1'-0"	1'-0"	0'-9"	1'-0"

* – FOR 3" AND SMALLER PIPES

HORIZONTAL ANCHOR DIMENSIONS FOR AVERAGE SOIL CONDITIONS

UP TO 150 P.S.I. WORKING PRESSURE

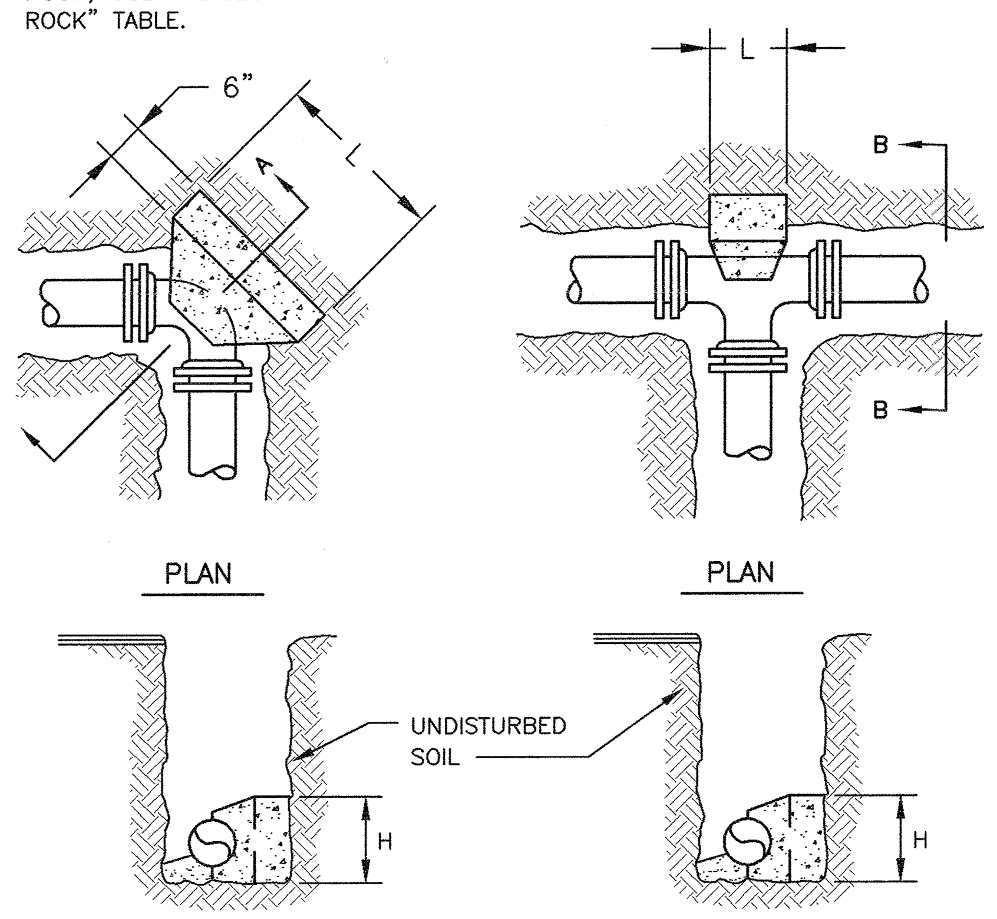
PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
6"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
8"	1'-4"	2'-8"	1'-4"	2'-8"	1'-4"	1'-6"	1'-0"	1'-0"	0'-9"	1'-0"
10"	1'-8"	3'-4"	1'-8"	3'-4"	1'-8"	2'-0"	1'-3"	1'-3"	1'-0"	1'-0'
12"	2'-0"	4'-0"	2'-0"	4'-0"	2'-0"	2'-2"	1'-6"	1'-6"	1'-3"	1'-3"

* – FOR 3" AND SMALLER PIPES

NOTES:

1) TABLES ARE BASED ON AN ALLOWABLE SOIL PRESSURE OF 3000 PSF ON UNDISTURBED EARTH BEHIND THE ANCHOR BLOCK. WHERE SOIL HAS BEEN DISTURBED BY ADJACENT EXCAVATIONS OR WHERE SOIL CANNOT WITHSTAND SUCH A PRESSURE, THE TABLE DOES NOT APPLY.

2) WHERE ENTIRE DEPTH OF PIPE IS BELOW THE TOP SURFACE OF SOUND ROCK, USE "HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK" TABLE.



ALL HORIZONTAL BENDS

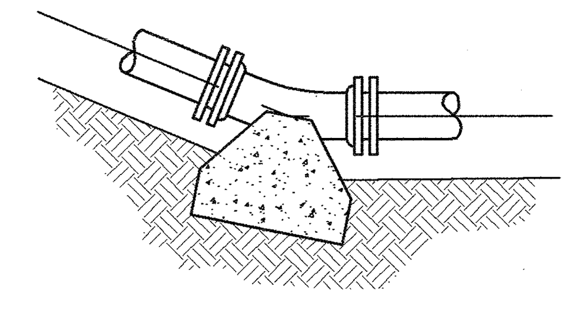
TEE OR TAPPING SLEEVE

HORIZONTAL ANCHORING

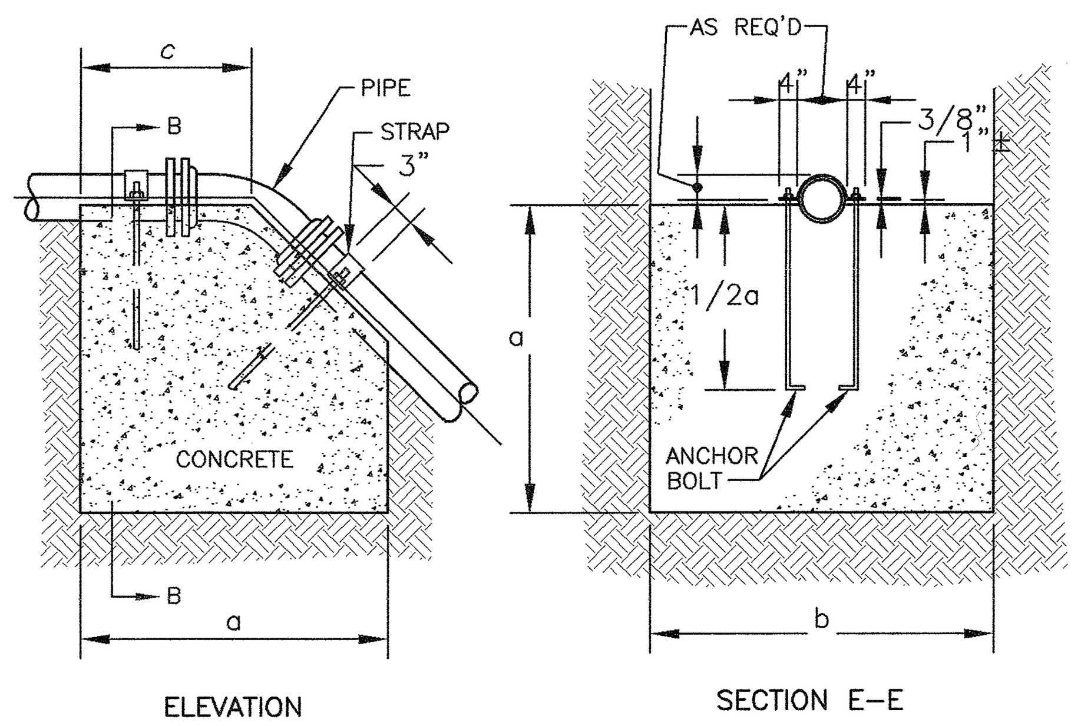
VERTICAL ANCHOR DIMENSIONS

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	45° BEND				22 1/2° BEND				11 1/4° BEND			
	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.
	a	b	c		a	b	c		a	b	c	
4"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
6"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
8"	3'-6"	3'-6"	2'-6"	3/4"	3'-0"	3'-0"	1'-9"	3/4"	2'-6"	2'-6"	1'-3"	3/4"
10"	4'-3"	4'-0"	3'-0"	3/4"	3'-6"	3'-3"	2'-0"	3/4"	2'-9"	2'-9"	1'-6"	3/4"
12"	4'-9"	4'-6"	3'-3"	3/4"	4'-0"	3'-9"	2'-6"	3/4"	3'-3"	3'-3"	1'-9"	3/4"

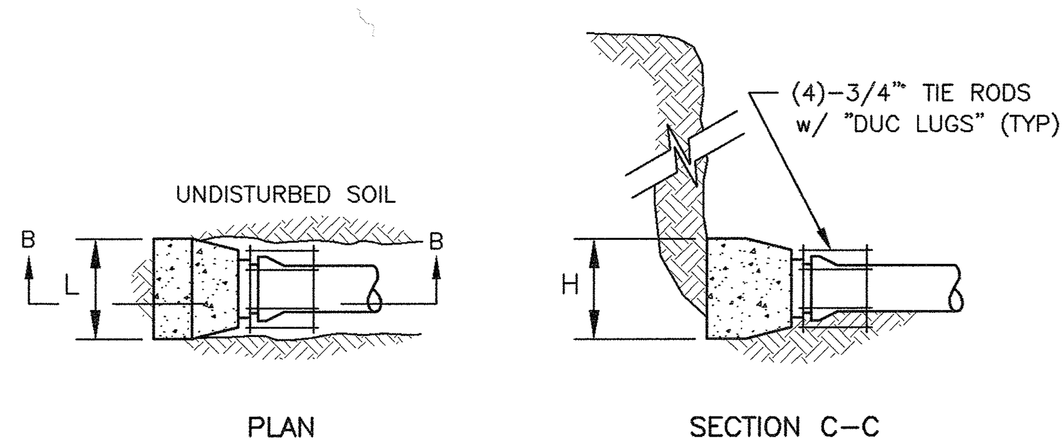


USE SAME DIMENSIONS AS FOR HORIZONTAL BEND ANCHORS



VERTICAL BEND

ALL EXPOSED PORTIONS OF ANCHOR STRAPS TO RECEIVE TWO FIELD COATS (MIN.) OF BITUMASTIC MATERIAL



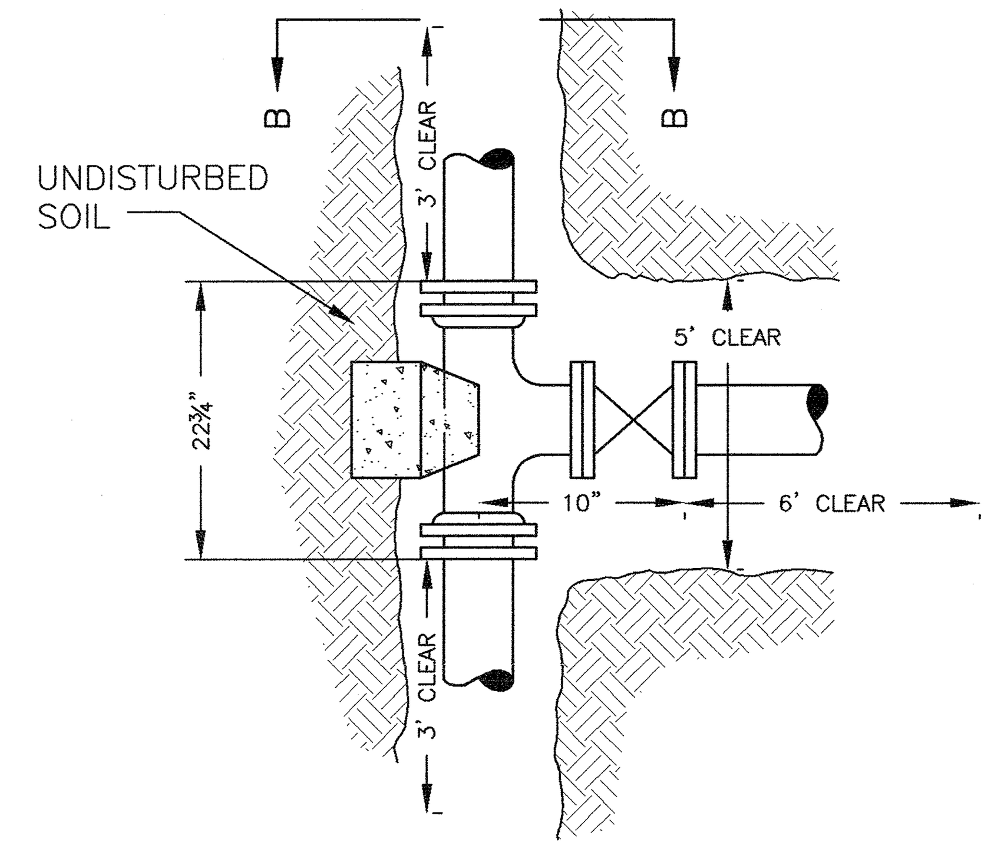
RESTRAINED PLUG OR CAP

NOTE: SEE CHART "HORIZONTAL ANCHOR DIMENSIONS" TIE RODS TO BE PROVIDED IN LIEU OF THRUST BLOCK

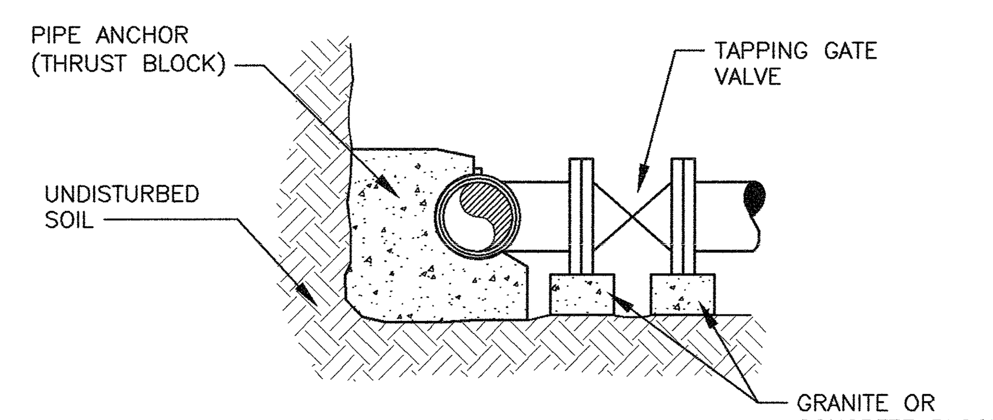
VERTICAL ANCHORING

G / C3 PRESSURE PIPE ANCHORING DETAILS

INSTALL PER PORTSMOUTH REQUIREMENTS NTS



PLAN



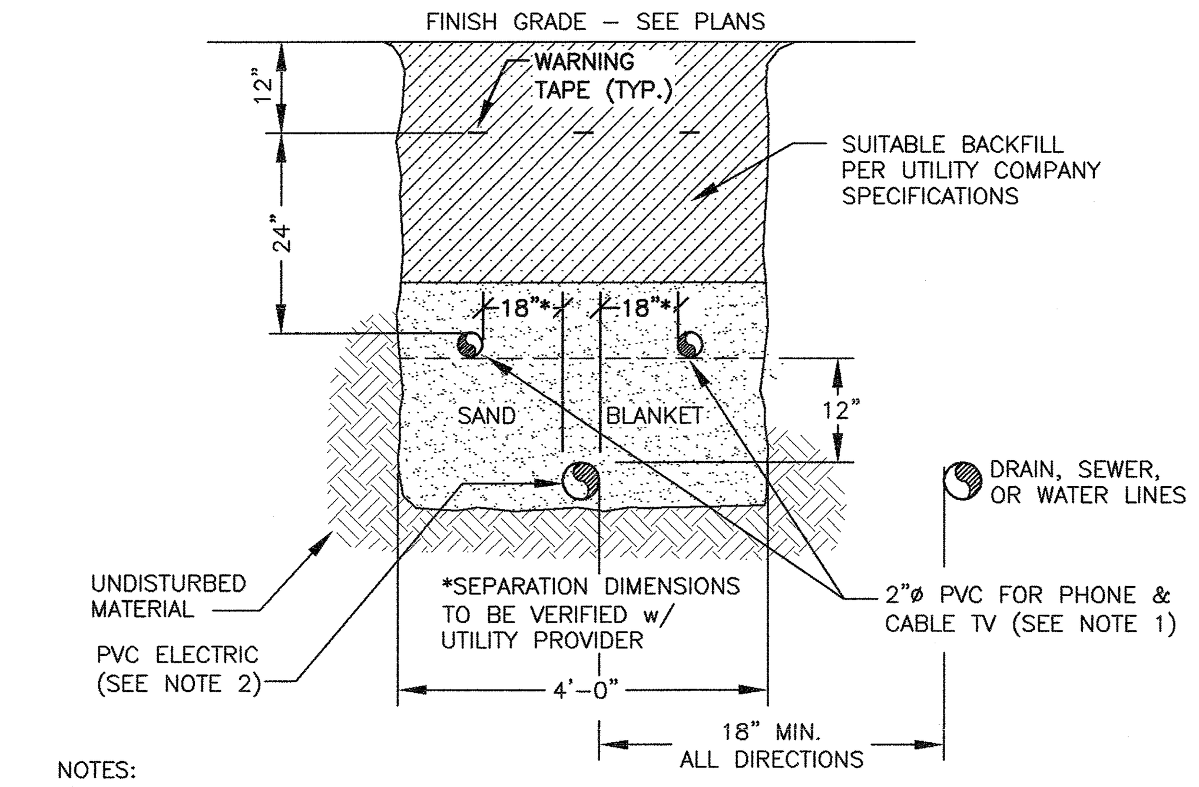
SECTION B–B

NOTES:

1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.
2) ALL JOINTS SHALL BE MECHANICAL.
3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

I / C3 TAPPING SLEEVE AND GATE

INSTALL PER PORTSMOUTH REQUIREMENTS NTS



NOTES:

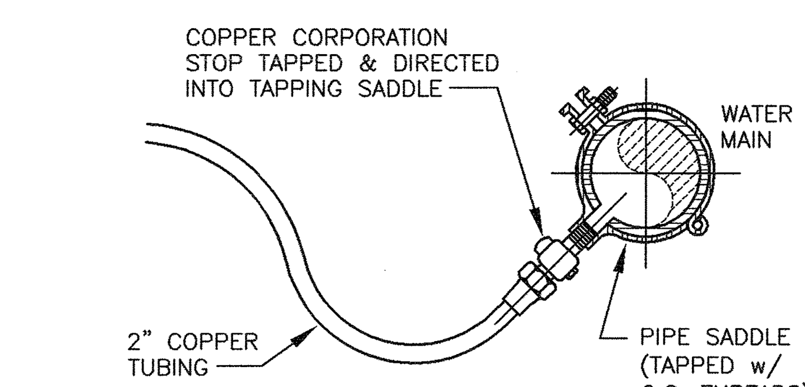
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

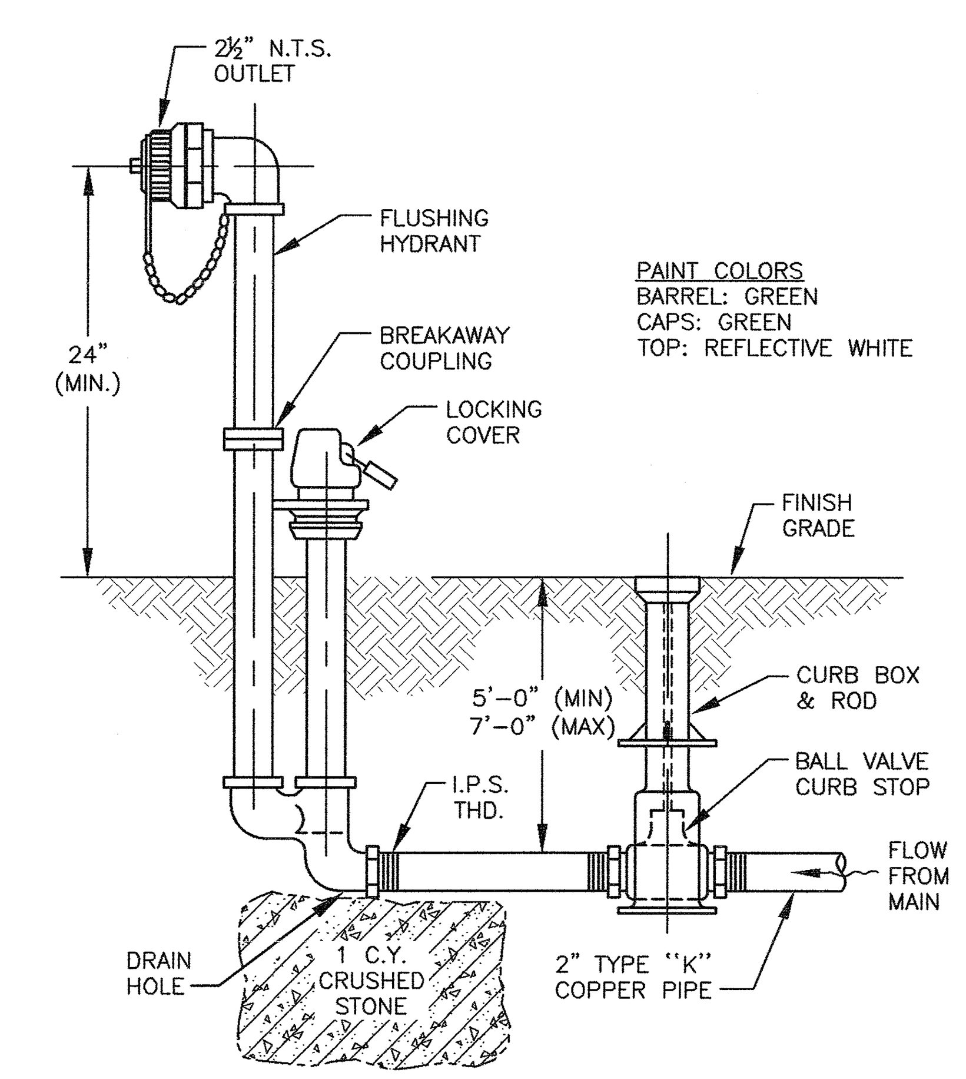
K / C3 UTILITY TRENCH

ELECTRIC/PHONE/CABLE NTS

NOTES:

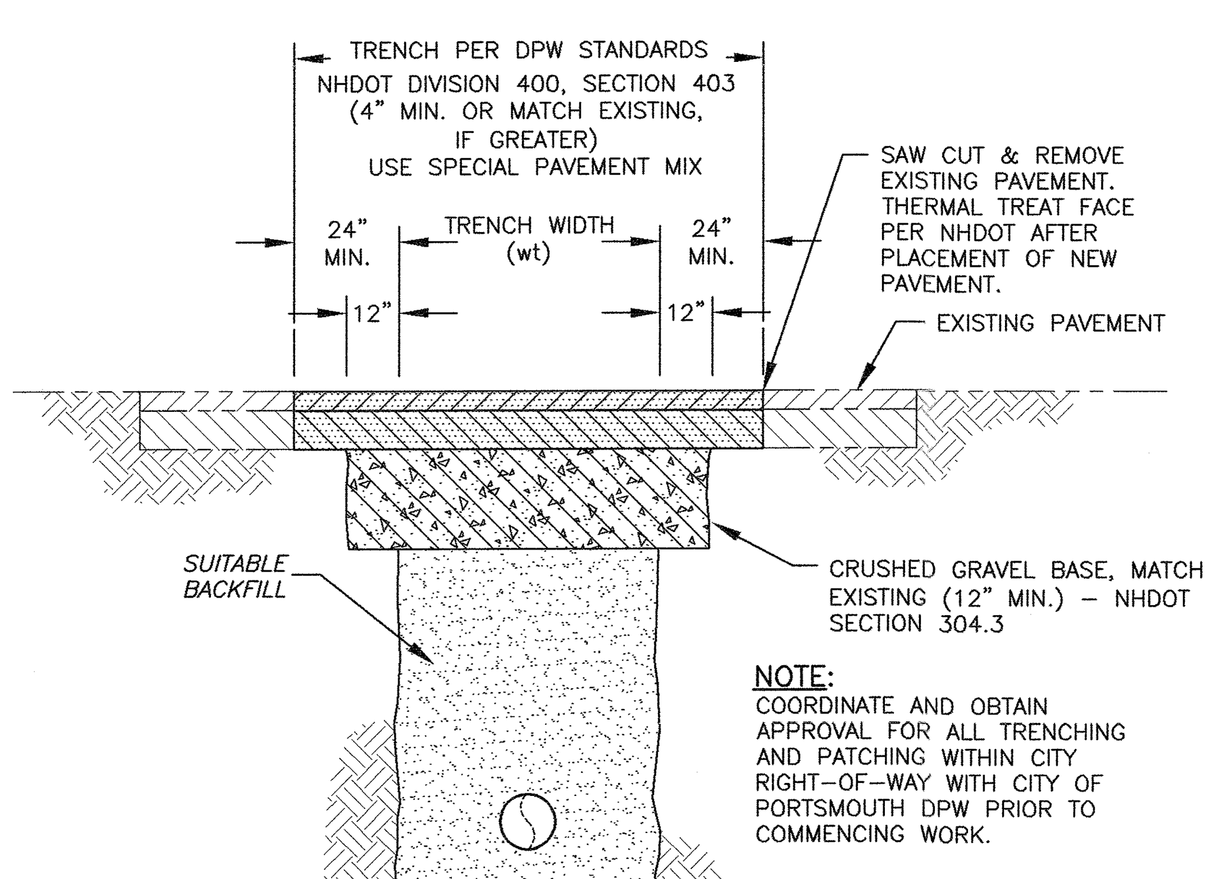
1. FLUSHING HYDRANTS SHALL BE POST TYPE HYDRANTS, 5' BURY (MIN.), WITH 1 CU. YD. OF CRUSHED STONE BENEATH HYDRANT TO ALLOW FREE DRAINAGE.
2) ALL WORKING PARTS SHALL BE BRASS. HYDRANT MAIN VALVE OPENING TO BE 2³⁄₁₆" (MIN.).
3) INLET CONNECTION SHALL BE 2" I.P. WITH ONE OUTLET BEING 2½" NATIONAL STANDARD HOSE THREAD.
4) ALL OPERATING PARTS SHALL BE REMOVABLE FROM ABOVE GROUND WITH NO SPECIAL TOOLS.
5) THE HYDRANT SHALL BE SELF-DRAINING, NONFREEZING.
6) THE HYDRANT SHALL HAVE A PENTAGON SOCKET OPERATOR AND BE SUPPLIED WITH AN APPROPRIATE WRENCH.
7) THE HYDRANT SHALL BE A MAINGUARD MODEL #77 BLOW-OFF HYDRANT W/ TAMPER PROOF OPTION AS MANUFACTURED BY KUPFERLE FOUNDRY, 2511 n. 9TH ST., ST. LOUIS, MISSOURI 63102 TEL. (800) 231-3990.





L / C3 TYPE II FLUSHING HYDRANT DETAIL

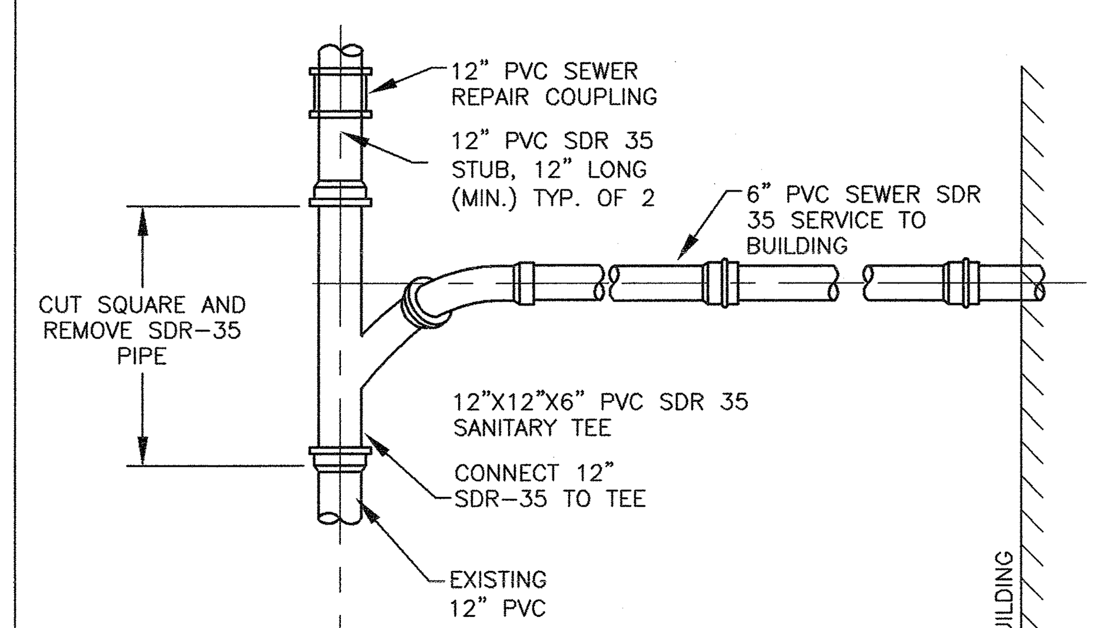
NTS



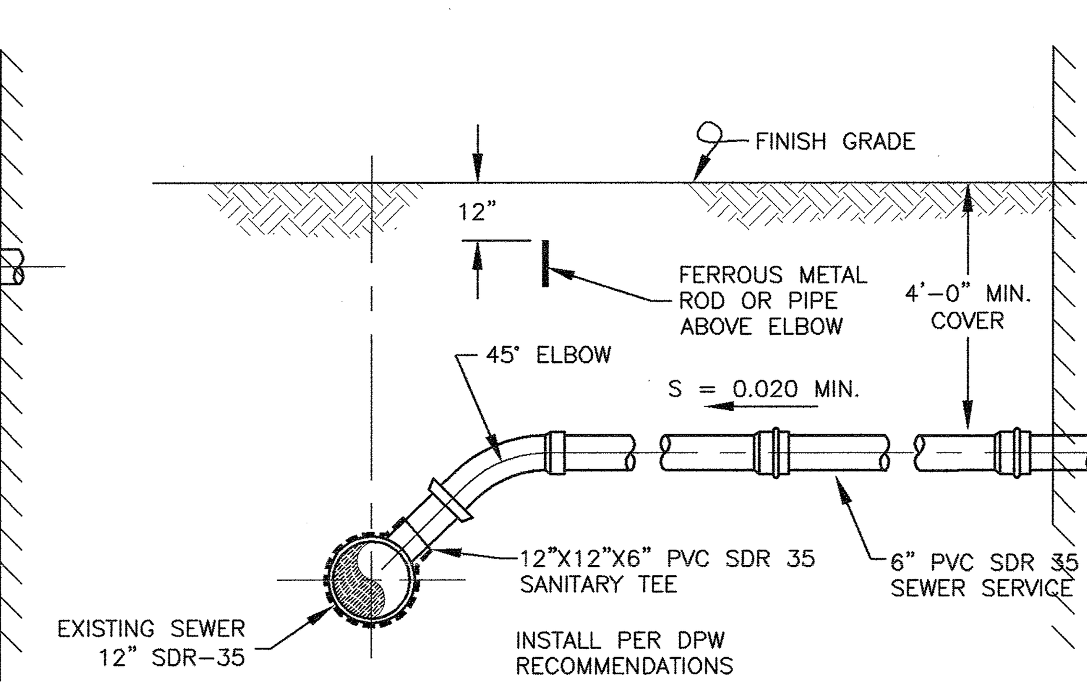
NOTE:
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT-OF-WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

H / C3 TRENCH – PAVEMENT REPLACEMENT

NTS



PLAN



ELEVATION

J / C3 TYPE "A" SEWER SERVICE CONNECTION

NTS

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) ALL WATER LINE INSTALLATION WORK SHALL BE TO CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS. DETAILS MAY OR MAY NOT BE UP-TO-DATE.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	1/21/20

REVISIONS

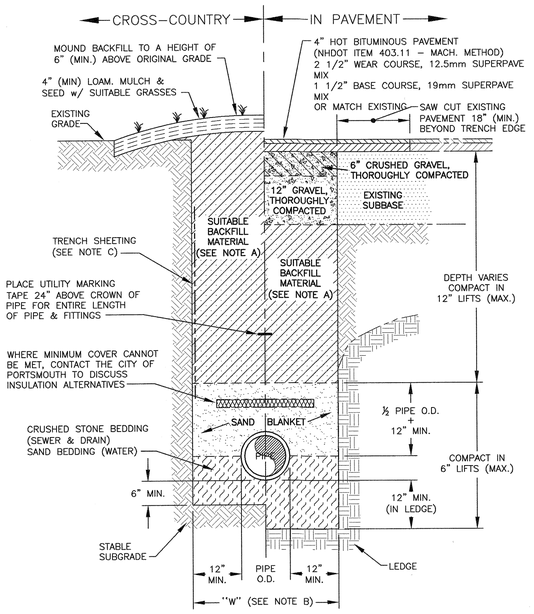
STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7251 LICENSED PROFESSIONAL ENGINEER

SCALE AS NOTED JANUARY 2020

DETAILS

D2

2258



M C3 TYPICAL PIPE TRENCH

NTS

TRENCH NOTES:

A) TRENCH BACKFILL:
– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

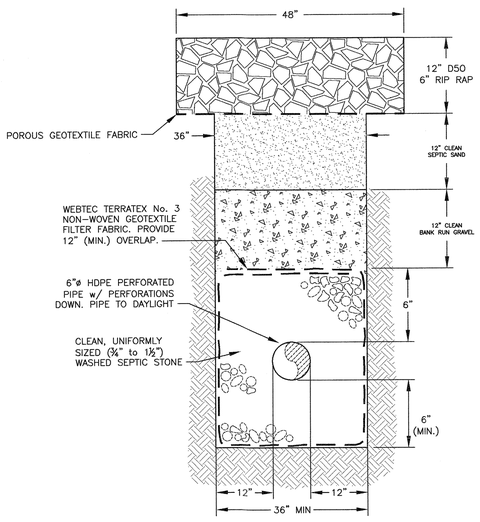
– IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

C) TRENCH SHEETING:
IF REQUIRED, WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 6' MINIMUM FOR SEWER (IN PAVEMENT)
- 4' MINIMUM FOR SEWER (CROSS COUNTRY)
- 3' MINIMUM FOR STORMWATER DRAINS
- 5' MINIMUM FOR WATER MAINS

E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.



N C2 INFILTRATION TRENCH DETAIL

NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

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PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	1/21/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7851
LICENSED
PROFESSIONAL ENGINEER

AS NOTED — JANUARY 2020

DETAILS — D3

2258

J:\J0823\JA2200s\JA2250s\JA2258\2019 Subdivision Lot 2\Plans & Specs\Site\2258 DETAILS 2019.dwg, D3 DETAILS, 1/21/2020 11:52:44 AM

DRAINAGE ANALYSIS

SUBDIVISION PLAN
201 KEARSARGE WAY
PORTSMOUTH, NH

JANUARY 14, 2020

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER
1/21/20

Ambit Engineering, Inc.

Civil Engineers and Land Surveyors
200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jlm@ambitengineering.com
(Ambit Job Number 2258)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed subdivision of a residential lot and associated future site improvements at 201 Kearsarge Way in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 218 as Lot 5. The project proposes to subdivide the existing single lot into three lots. The total size of all the lots together is 47,062 square-feet (1.0804 acres).

The subdivision will provide for the future construction of a single-family residential structure on each lot, with associated landscaping, utilities and driveways. The new buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in peak runoff from the site as a result of this project.

SUBDIVISION PLAN

201 KEARSARGE WAY

PORTSMOUTH, NH

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 218 as Lot 5. Bounding the site to north is an existing single family residential property and Mangrove Street. Bounding the site to east is Kearsarge Way and existing single family residential properties beyond. Bounding the site to south is Birch Street and an existing single family residential property beyond. Bounding the site to the west is forested land and beyond is the City of Portsmouth Spinnaker Point Recreation Center. The property is situated in the Single Residence B (SRB) District. A vicinity map is included in the Appendix to this report.

The proposed subdivision will demolish an existing single family residential structure and demolish other associated improvements such as an existing driveway. Once the land is subdivided, the new houses may not be built until a number of years in the future. Therefore this report makes some concept assumptions as to the future impervious coverage of the proposed lots; as requested by the City.

This report includes information about the existing site and the proposed subdivision necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, subcatchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management and treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. Further, these values have been increased by 15% as prescribed by the NHDES Alteration of Terrain Bureau when constructing within the Great Bay Region. These values have been used in this analysis.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.0 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year, 25-year and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Ambit Engineering and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of one soil type:

799 – Urban land – Canton Complex (3-15% slopes), well drained with a typical depth to restrictive feature of more than 80 inches. This soil has a Hydrologic Soil Group (HSG) classification of A, with a Low runoff class. The percolation rate used for the infiltration calculations was 4 inches per hour.

A copy of the custom soil survey for this project site is included in the Appendix to this report.

The physical characteristics of the site consist of flat (1-3%) to moderate (10-20%) grades that generally slope downward from the high point at the center of the lot to the north (rear) and southeast (front). Elevations on the site range from 62 to 74 feet above sea level. The existing

site is partially developed and includes an existing building located at the front of the lot, with an asphalt driveway. Vegetation around the developed portion of the lot consists of established grasses, shrubs and trees. The rear of the lot is mostly undeveloped, forested land.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0259E (effective date May 17, 2005), the project site is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as three watershed basins (ES1, ES2 and ES3) based on localized topography and discharge location. As mentioned earlier in this report, there is a high point in the middle of the site that bisects the lot. Runoff that drains to the south, towards Kearsarge Way is analyzed as watershed basin ES1. The majority of this basin consists of previously developed land and includes a portion of the existing house, lawn area and asphalt pavement. The discharge location is identified in this report as Design Point 1 (DP1). The runoff curve number (CN) for basin ES1 is calculated to be 57 with impervious coverage of 33.16%.

Runoff that drains to the northwest is analyzed as watershed basin ES2. The majority of this basin consists of undeveloped land and includes a portion of the existing house, lawn area and undeveloped forest land. The discharge location is identified in this report as Design Point 2 (DP2). The runoff curve number (CN) for basin ES1 is calculated to be 37 with impervious coverage of 7.23%.

Runoff that drains to the northeast is analyzed as watershed basin ES3. The majority of this basin consists of undeveloped land and includes lawn area and undeveloped forest land. The discharge location is identified in this report as Design Point 3 (DP3). The runoff curve number (CN) for basin ES1 is calculated to be 35 with impervious coverage of 0.00%.

There is no existing stormwater detention or treatment on the site (aside from the minimal treatment achieved from infiltration).

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
ES1	15,047	5.0	57	0.53	1.37	DP1

ES2	29,568	5.0	37	0.04	0.59	DP2
ES3	2,453	5.0	35	0.00	0.03	DP3

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as three major watershed basins, (PS1, PS2 and PS3 (PS2 has been broken down into two sub-watershed basins PS2a and PS2b based on future land use)). Since the design of the future houses is currently conceptual, some assumptions were made regarding the delineation of watershed basins and the determination of land usage. The delineation between Basins PS1 and PS2 correspond to approximately the same as the delineation between ES1 and ES2.

Similar to the pre-development condition, Basin PS1 consists of the area of the site that drains towards Kearsarge Way. The curve number for the concept design was applied to this basin. All runoff from the basin that does not infiltrate into the soil, is discharged to Design Point 1 (DP1). This allows for a direct review of Design Points to show the comparison of runoff from the site in the pre-development and post-development conditions.

The remainder of the site is analyzed as sub-watershed basins PS2a and PS2b. The rear of the lot is planned to be dedicated as a conservation area, free from future development and is modelled as sub-watershed basin PS2a. This basin consists entirely of undeveloped land and will be a mixture of forested and grassed areas. A natural depression area will be enhanced with the construction of a berm at the downstream end of the basin to provide a holding pond (1P) which will allow stormwater to pond and infiltrate into the soil. The runoff curve number (CN) for basin PS2a is calculated to be 33 with impervious coverage of 0%.

Basin PS2b is the portion of Basin PS2 that is outside of the proposed conservation area, and will include portions of the proposed houses. Similar to Basin PS1, the curve number for the current design was applied to this basin. Runoff from this basin will be combined with the runoff from PS2a and will be routed to the proposed pond for infiltration. This pond is analyzed as Design Point 2 (DP2).

Basin PS3 is similar to ES3 and is analyzed as Design Point 3 (DP3).

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
PS1	14,149	5.0	56	0.47	1.24	DP1
PS2a	19,379	5.0	33	0.01	0.16	DP2
PS2b	12,138	5.0	54	0.34	0.38	DP2
PS3	979	5.0	39	0.00	0.03	DP3

The overall impervious coverage of the area analyzed in this report for all basins **increases** from 7,126 square feet (15.1%) in the pre-development condition to 7,145 square feet (15.2%) in the post-development condition. Since the site represents an increase in impervious area, the project proposes the construction of berm at the downstream end of Basin PS2 to form a holding pond that uses the porous nature of the soil to provide treatment and infiltrate stormwater back into the soil. The design infiltration rate was determined from reviewing the NRCS Soil Conservation Service's published rates for the given soil conditions for the site. These rates were then reduced by half as prescribed by Alteration of Terrain Bureau permit guidance. This design infiltration rate is then 3.0 inches per hour.

Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for the design point. The comparison takes into account the reduced flows as a result of infiltration.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q25 (CFS)		Q50 (CFS)	
Design Point	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP 1	0.12	0.10	0.53	0.48	0.94	0.87	1.37	1.27
DP 2	0.00	0.00	0.04	0.00	0.20	0.00	0.59	0.00
DP3	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is low due to the existing vegetation. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will

be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Silt soxx located at the toe of disturbed slopes
- Stabilized construction entrances at all access points to the site
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping and surfacing the access drives and parking areas with either compacted gravel or asphalt paving.

CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the holding pond and the infiltration, the post-development runoff rates are reduced to be below the pre-development runoff rates and will provide a level of treatment. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

REFERENCES

1. City of Portsmouth, NH. Site Plan Review Regulations, amended December 18, 2014.

2. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).

3. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.

4. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.0*, dated 2007.

APPENDIX A

VICINITY (TAX) MAP


SITE
OSPREY DR
BLUE HERON DR
DUNLIN WAY
SPINNAKER WAY
OAK ST
BIRCH ST
HEARTHSIDE WAY
MAGNOLIA ST
ORANGE ST
WALNUT ST
HOLLY ST
SPRUCE ST
LOCUST ST
CENTRAL ST
FOREST ST
LAUREL CT
MARKET ST
MCGEE DR
I-95 SOUTH
I-95 NORTH
SIMS AVE
Partial Legend
See the cover sheet for the complete legend.
7-5A Lot or tel-unit number
2.56 ac Parcel area in acres (ac) or square feet (sf)
Address number
Parcel number from a neighboring map
Parcel line dimension
Street name
Parcel/Parcel boundary
Parcel/ROW boundary
Water boundary
Structure (1994 data)
Parcel covered by this map
Parcel from a neighboring map (see other map for current status)
0 50 100 200 300 Feet
0 20 40 80 Meters
This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.
Nearby Tax Maps
239 215 214 238 216 213 217 237 219 218 212 236 210 211 220 209
Map Location
Portsmouth, New Hampshire
2015
Tax Map 218

APPENDIX B

TABLES, CHARTS, ETC.

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.77	3.55	4.67	5.87	**25yr**	4.13	5.64	6.61	7.75	8.64	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.16	**50yr**	1.52	2.12	2.35	3.09	3.95	5.27	6.77	**50yr**	4.66	6.51	7.67	8.99	9.97	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.47	**100yr**	1.73	2.41	2.62	3.44	4.38	5.91	7.82	**100yr**	5.23	7.52	8.91	10.43	11.50	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.81	4.83	6.61	9.02	**200yr**	5.85	8.67	10.34	12.13	13.28	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.29	3.40	4.36	5.51	7.66	10.89	**500yr**	6.78	10.47	12.58	14.82	16.06	**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**	0.77	1.06	1.25	1.74	2.21	2.98	3.15	**1yr**	2.64	3.03	3.57	4.37	5.03	**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	5.62	**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	4.32	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	5.32	6.18	**10yr**	4.71	5.94	6.79	7.81	8.72	**10yr**
25yr	0.57	0.87	1.08	1.55	2.03	2.55	**25yr**	1.75	2.50	2.94	4.06	5.13	7.79	8.31	**25yr**	6.89	7.99	9.10	10.29	11.37	**25yr**
50yr	0.67	1.01	1.26	1.81	2.44	3.10	**50yr**	2.11	3.04	3.58	4.98	6.28	9.76	10.41	**50yr**	8.64	10.01	11.37	12.67	13.91	**50yr**
100yr	0.78	1.18	1.48	2.14	2.93	3.78	**100yr**	2.53	3.69	4.35	6.13	7.70	12.22	13.05	**100yr**	10.81	12.55	14.22	15.62	17.03	**100yr**
200yr	0.91	1.37	1.74	2.52	3.52	4.61	**200yr**	3.03	4.50	5.31	7.54	9.45	15.34	16.37	**200yr**	13.57	15.74	17.80	19.26	20.85	**200yr**
500yr	1.13	1.68	2.16	3.15	4.47	5.97	**500yr**	3.86	5.84	6.89	9.95	12.41	20.74	22.11	**500yr**	18.36	21.26	23.96	25.39	27.26	**500yr**

Powered by ACIS
Northeast Regional Climate Center

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	70.776 degrees West
Latitude	43.086 degrees North
Elevation	0 feet
Date/Time	Tue, 14 Jan 2020 16:14:06 -0500

Q2 = 3.20 in. X 1.15 = 3.68 in.

Q10 = 4.85 in. X 1.15 = 5.58 in.

Q25 = 6.15 in. X 1.15 = 7.07 in.

Q50 = 7.36 in. X 1.15 = 8.46 in.

Q100 = 8.82 in. X 1.15 = 10.14 in.

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	2.02	2.65	2.91	**1yr**	2.35	2.80	3.21	3.93	4.53	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.51	1.93	2.48	3.20	3.56	**2yr**	2.83	3.42	3.92	4.66	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	4.05	4.56	**5yr**	3.59	4.39	5.02	5.91	6.68	**5yr**
10yr	0.41	0.65	0.82	1.11	1.44	1.88	**10yr**	1.25	1.72	2.22	2.88	3.73	4.85	5.51	**10yr**	4.29	5.30	6.06	7.08	7.95	**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	6.15	7.07	**25yr**	5.44	6.80	7.76	8.98	10.01	**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	7.36	8.55	**50yr**	6.51	8.22	9.37	10.76	11.93	**50yr**
100yr	0.60	0.97	1.25	1.76	2.40	3.22	**100yr**	2.07	2.96	3.86	5.11	6.72	8.82	10.34	**100yr**	7.80	9.94	11.31	12.89	14.22	**100yr**
200yr	0.67	1.09	1.41	2.03	2.80	3.80	**200yr**	2.41	3.49	4.58	6.09	8.03	10.56	12.50	**200yr**	9.35	12.02	13.66	15.46	16.95	**200yr**
500yr	0.79	1.30	1.69	2.46	3.44	4.72	**500yr**	2.97	4.34	5.71	7.64	10.16	13.42	16.08	**500yr**	11.88	15.46	17.53	19.66	21.41	**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	0.88	**1yr**	0.63	0.87	0.92	1.32	1.67	2.21	2.48	**1yr**	1.96	2.39	2.85	3.16	3.86	**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	3.44	**2yr**	2.70	3.31	3.81	4.53	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	4.17	**5yr**	3.34	4.01	4.70	5.51	6.22	**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	4.36	4.84	**10yr**	3.86	4.66	5.41	6.38	7.16	**10yr**

SCS METHODS

Technical Release - 55 Urban Hydrology for Small Watersheds

TR-55 presents simplified procedures to calculate storm runoff volume, peak rate of discharge, partial hydrographs and storage volumes for water control structures. The procedures are applicable to small watersheds, especially urbanizing watersheds with time of concentration between 0.1 hours and 10.0 hours. TR-55 is an approximation of the more detailed TR-20 method and does not have TR-20's capability to flood route. The user should examine the sensitivity of the analysis being conducted to ensure that the degree of error is tolerable. TR-55 contains two methods, the Tabular Hydrograph method and the Graphical Peak Discharge method. The accuracy of both methods is comparable; they differ only in their output. Both methods are based on open and unconfined flow over land and in channels.

The TR-55 Tabular Method can develop partial composite flood hydrographs at any point in a watershed by dividing the watershed into homogeneous subareas. By doing this, the method can estimate runoff from a larger nonhomogeneous watershed. The method is especially applicable for estimating the effects of land use change in a portion of a watershed. It can also be used to estimate the effects of proposed structures. The TR-55 Graphical Peak Discharge method calculates peak discharge using an assumed unit hydrograph and a thorough, but rapid, evaluation of the soils, slope, and surface cover characteristics of the watershed. This method is recommended for use in the design of all erosion and sediment control measures and simple stormwater management practices. When more detail and accuracy are required or when an accurate simulation of natural conditions is required, one of the other appropriate methods should be used. The TR-55 Graphical Peak Discharge method is the method that is discussed in this manual.

SCS TR-55 Graphical Peak Discharge Method

The peak discharge equation used in this method is:

$$q_p = q_u A_m Q F_p$$

where:

q_p is the peak discharge in cubic feet per second (cfs).

q_u is the unit peak discharge in cubic feet per second per square mile per inch of runoff (csm/in).

A_m is the drainage area in square miles.

Q is the runoff from the watershed in inches.

F_p is a pond and swamp adjustment factor that can be applied for ponds or swamps that are spread throughout the watershed and not in the time of concentration flow path.

Technical Release-20 Computer Program for Project Formulation Hydrology

The TR-20 computer program assists the engineer in hydrologic evaluation of flood events for use in analysis of water resource projects. The program is a single event model which computes direct runoff resulting from any natural or synthetic rainstorm. It develops flood hydrographs from runoff and routes the flow through stream channels and reservoirs. It combines the routed hydrograph with those from tributaries and computes the peak discharges, their times of occurrence and the water surface elevations at any desired cross section or structure. The program provides for the analysis of up to nine different rainstorm distributions over a watershed under various combinations of land treatment. The analysis can be performed on as many as 200 reaches and 99 structures in any one continuous run. The procedure should probably not be used for subarea drainage areas less than 5 acres nor more than 20 square miles.

Input Data Required

The following information is required to use TR-20:

Drainage Area - The drainage area of each subwatershed in square miles.

Runoff Curve Number - A factor that relates mass rainfall to mass runoff. It is based on soil characteristics, cover type, and land treatment. Tables 6-4.1 - 6-4.3 provides runoff curve numbers for urban areas and agricultural areas.

Time of Concentration - The time which would be required for the surface runoff from the hydraulically most remote part of the drainage area to reach the point being evaluated. A more detailed discussion of time of concentration is found later in this chapter.

Reach Length - The length of the stream or valley in feet selected for generally constant hydraulic characteristics for use in the study. A watershed may have several reaches in the flow path.

Cross Section Information - This information consists of either surveyed valley and channel sections with appropriate Manning's "n" values or "x" and "m" discharge coefficient values obtained from nomographs in the TR-20 documentation for the valley and channel reach.

Rainfall Data - The average depth, in inches, of rainfall occurring over a watershed or subwatershed for a given design frequency and duration storm event.

Structural Data - Information on any culverts, bridges, or reservoirs in the watershed that includes elevations, discharges, and storage behind the structures.

Output Data

The type and amount of output can be controlled by options within the program. In general the output data will provide estimates of peak flow, hydrographs, peak times, runoff volumes, and water surface elevations at any location within the watershed.

ESTIMATING RUNOFF FACTORS

The major factors that must be taken into consideration when estimating runoff from a given watershed include soils, rainfall, and the land use characteristics.

Soils

Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are divided into four hydrologic soil groups: A, B, C, and D, according to their minimum infiltration rate:

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (greater than 0.3 in/hr). Soil textures in this group include: sands, loamy sands, or sandy loams.

Group B soils have moderate infiltration rates and consist chiefly of moderately well to well drained soils with moderately fine to moderately coarse textures. The soils have a moderate rate of water transmission (0.15 - 0.30 in/hr). Soil textures in this group include: silt loams and loams.

Group C soils have low infiltration rates and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05 - 0.15 in/hr). Soil textures in this group are the sandy clay loams.

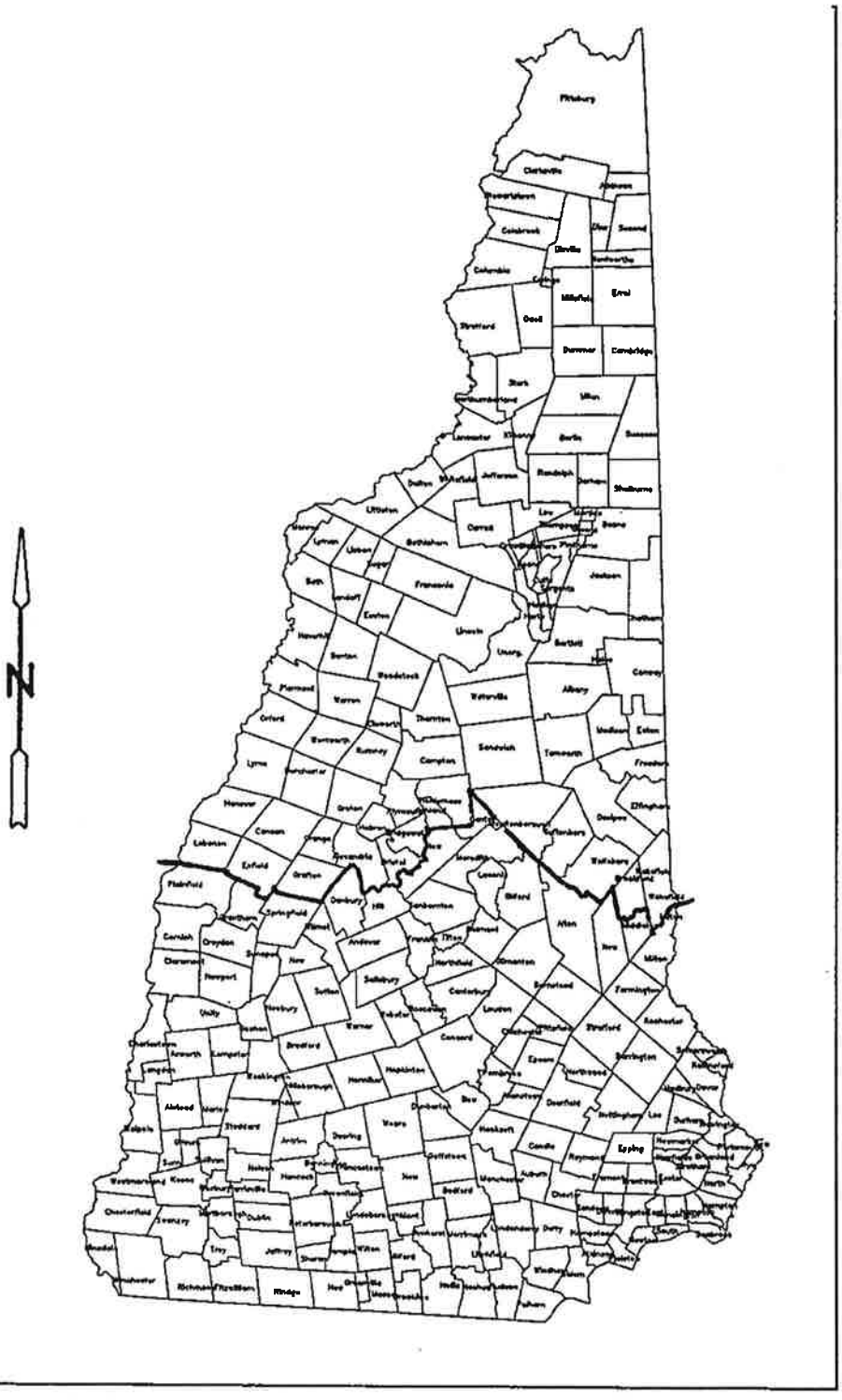
Group D soils have high runoff potential. They have very low infiltration rates and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (0 - 0.05 in/hr). Soil textures in this group include: clay loams, silty clay loams, sandy clays, silty clays and clays.

Hydrologic soil groups for various soils are identified in soil surveys published by the Soil Conservation Service which are available at the local County Conservation District office. Two lists, "Hydrologic Soil Groups for Determining Runoff in New Hampshire" by group type and by soil series, are located at the end of this chapter.

Rainfall

The highest peak discharges from small watersheds are usually caused by intense brief rainfalls that may occur as distinct events or a part of a longer storm. The intensity of the rainfall varies considerably during a storm as well as over geographic regions. SCS developed four synthetic 24-hour rainfall distributions for TR-55. Figure 6-5 shows the distribution boundary found in New Hampshire. Type II is the most intense short duration rainfall and type III represents the area of New Hampshire where tropical storms bring large 24-hour rainfall amounts.

Figures 6-6 through 6-11 provide rainfall maps for New Hampshire for the 2-, 5-, 10-, 25-, 50-, and 100-year frequency 24-hour duration storm events.



Source: USDA Soil Conservation Service

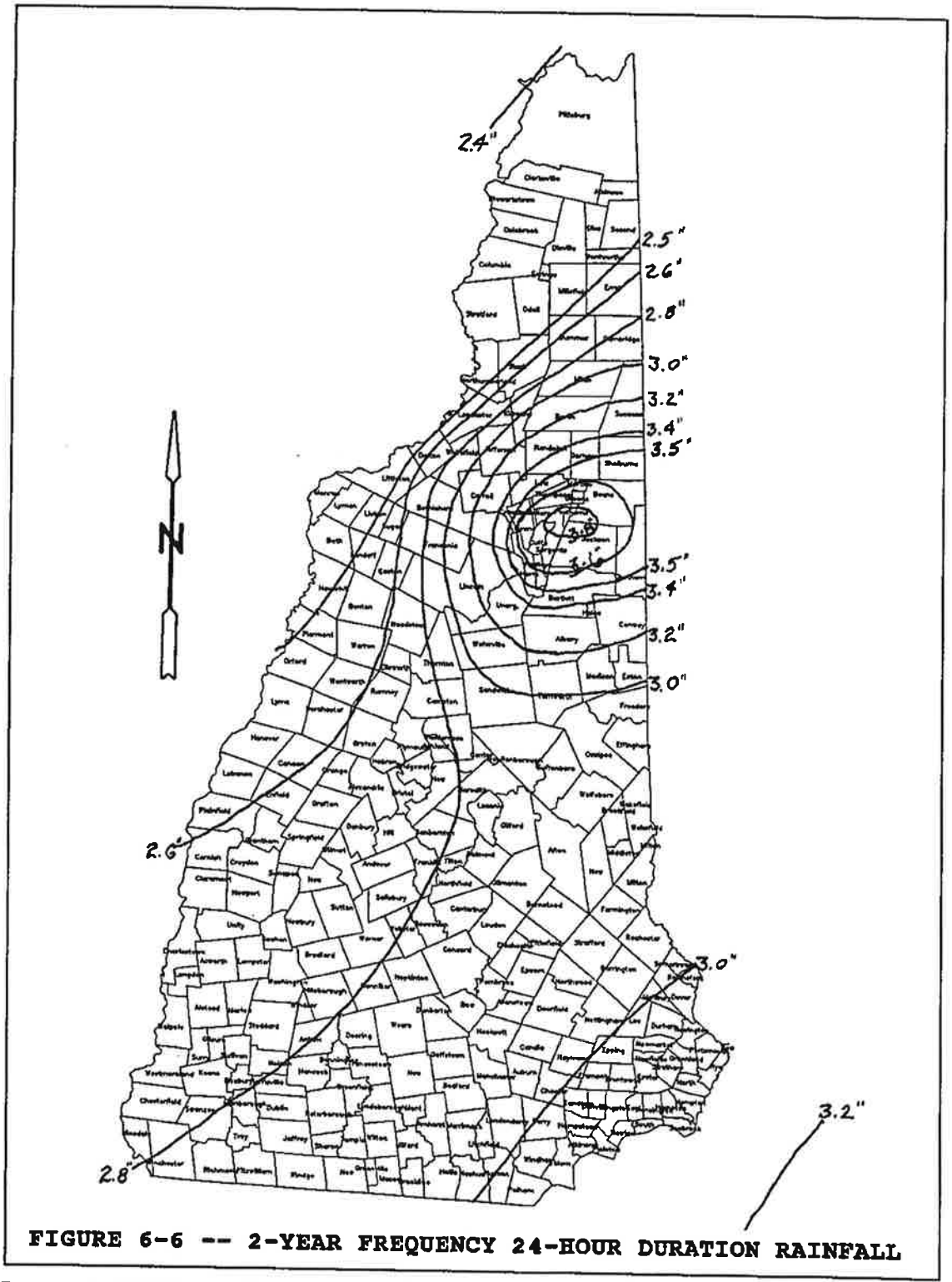


FIGURE 6-6 -- 2-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

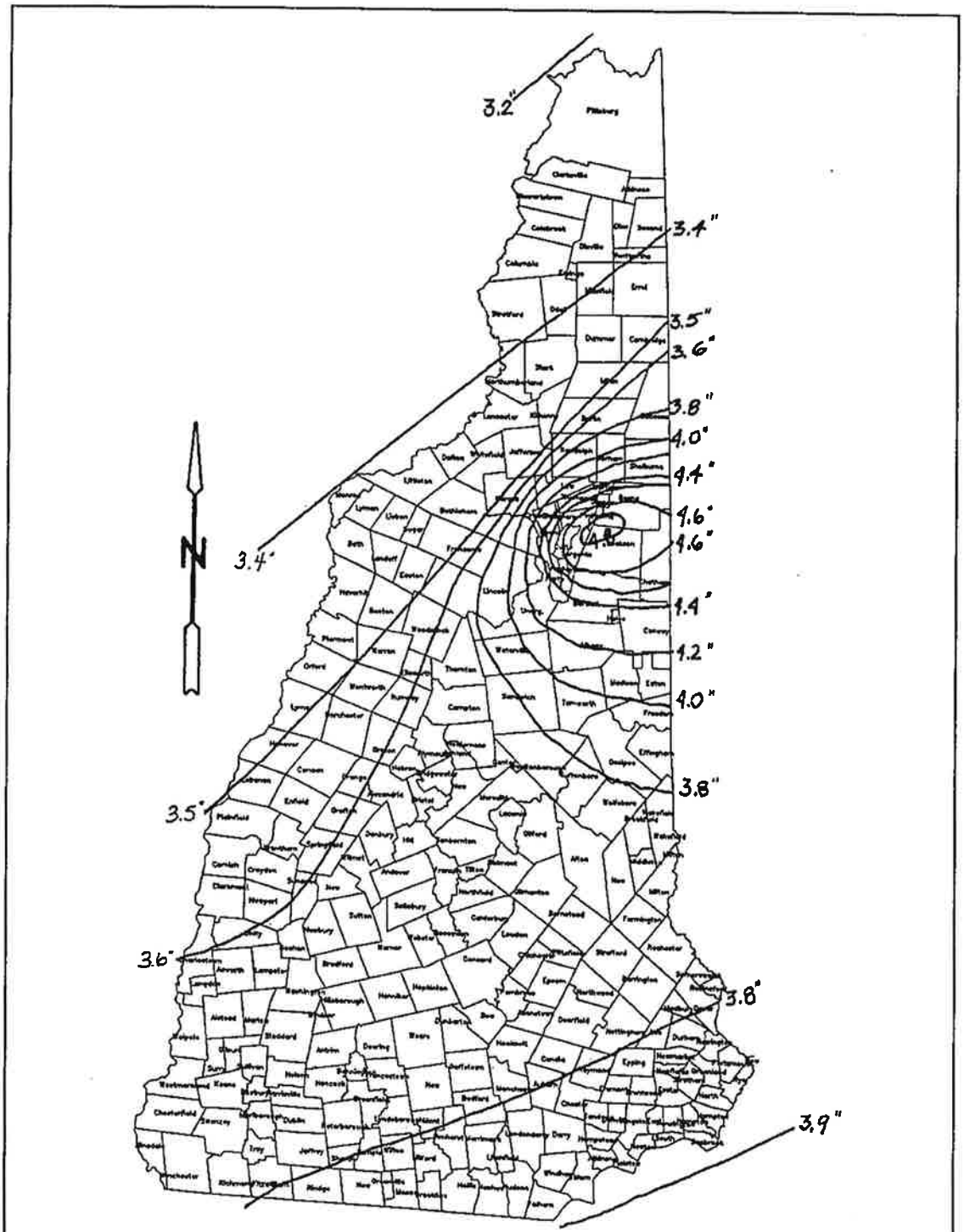


FIGURE 6-7 -- 5-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

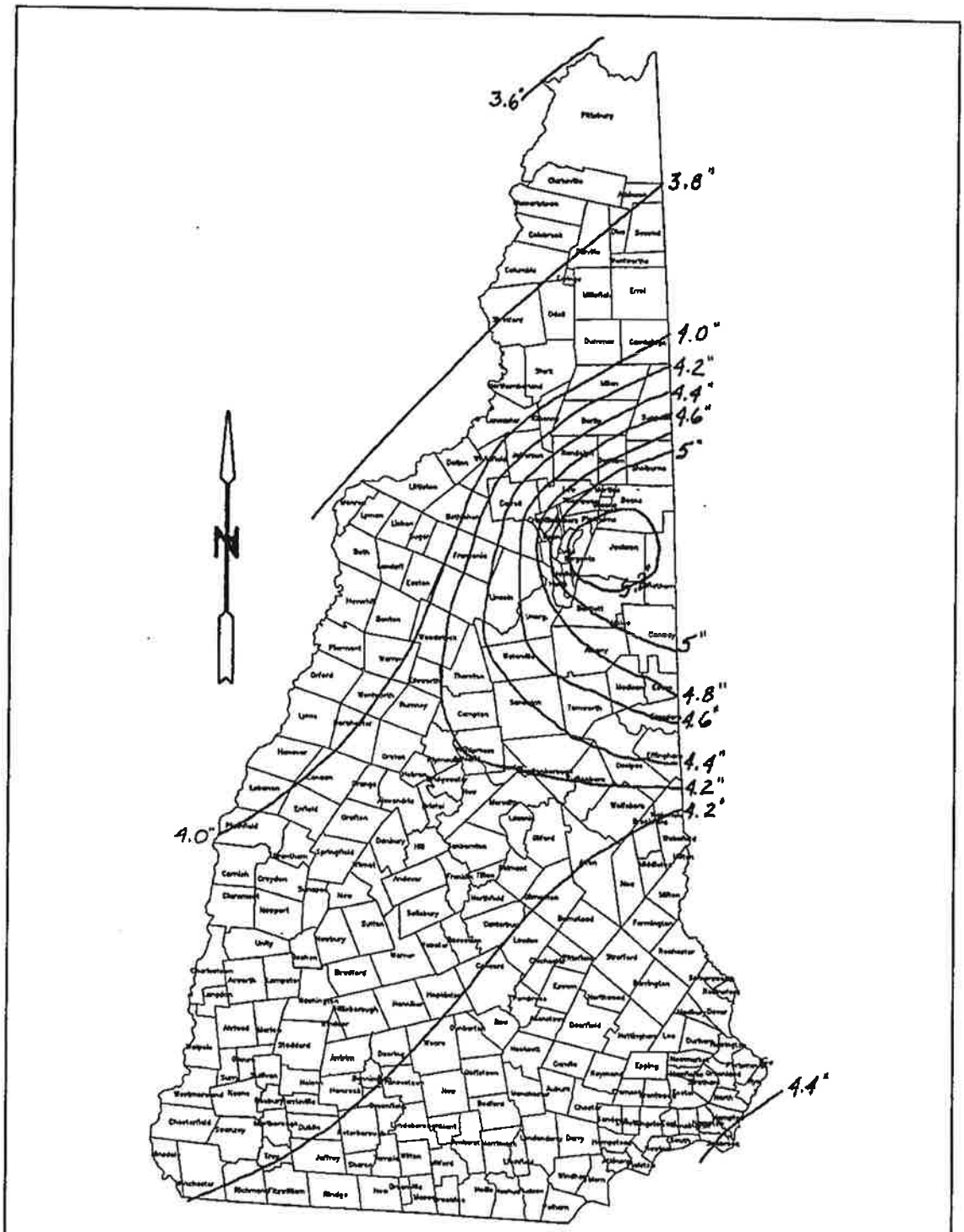


FIGURE 6-8 -- 10-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

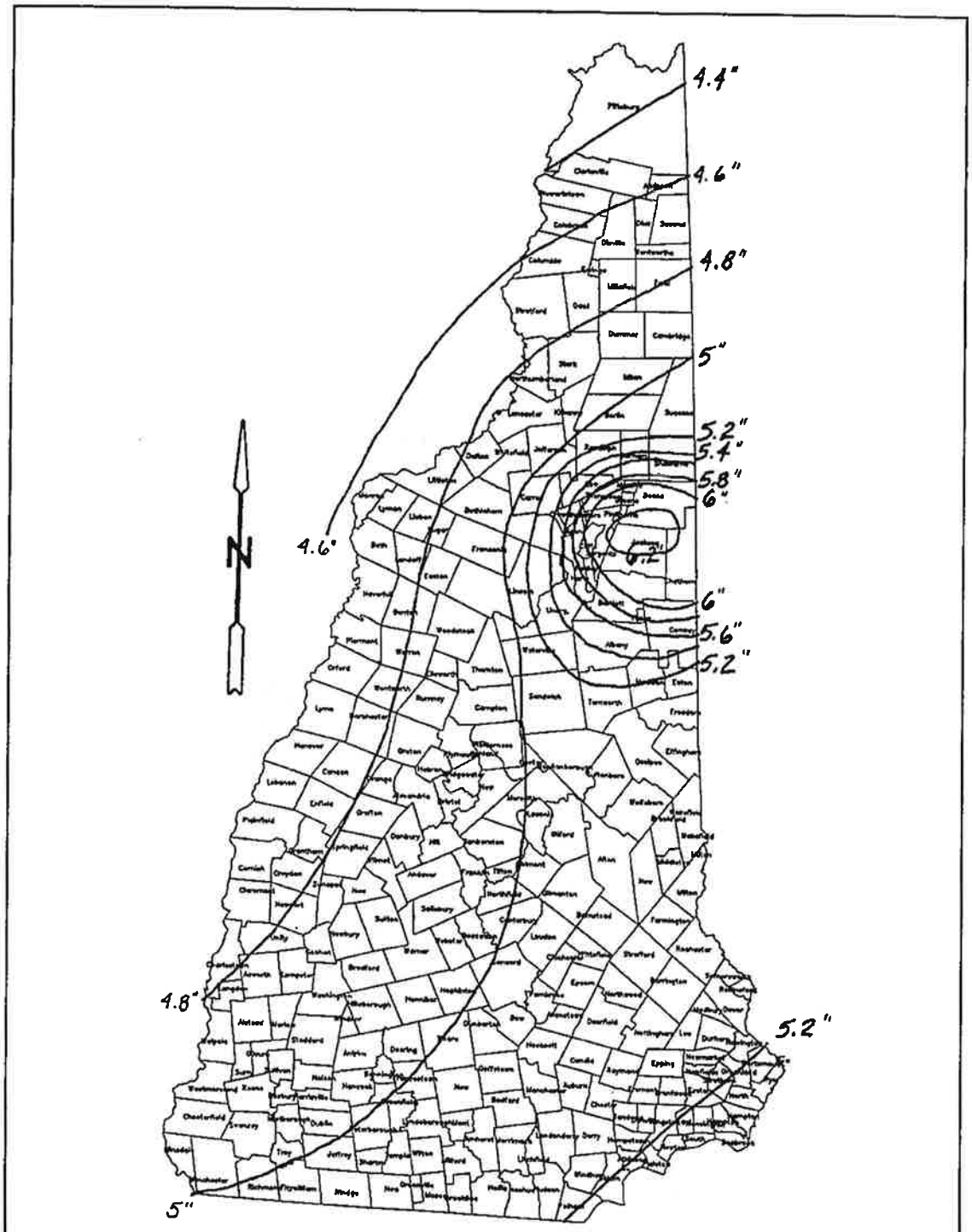


FIGURE 6-9 -- 25-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

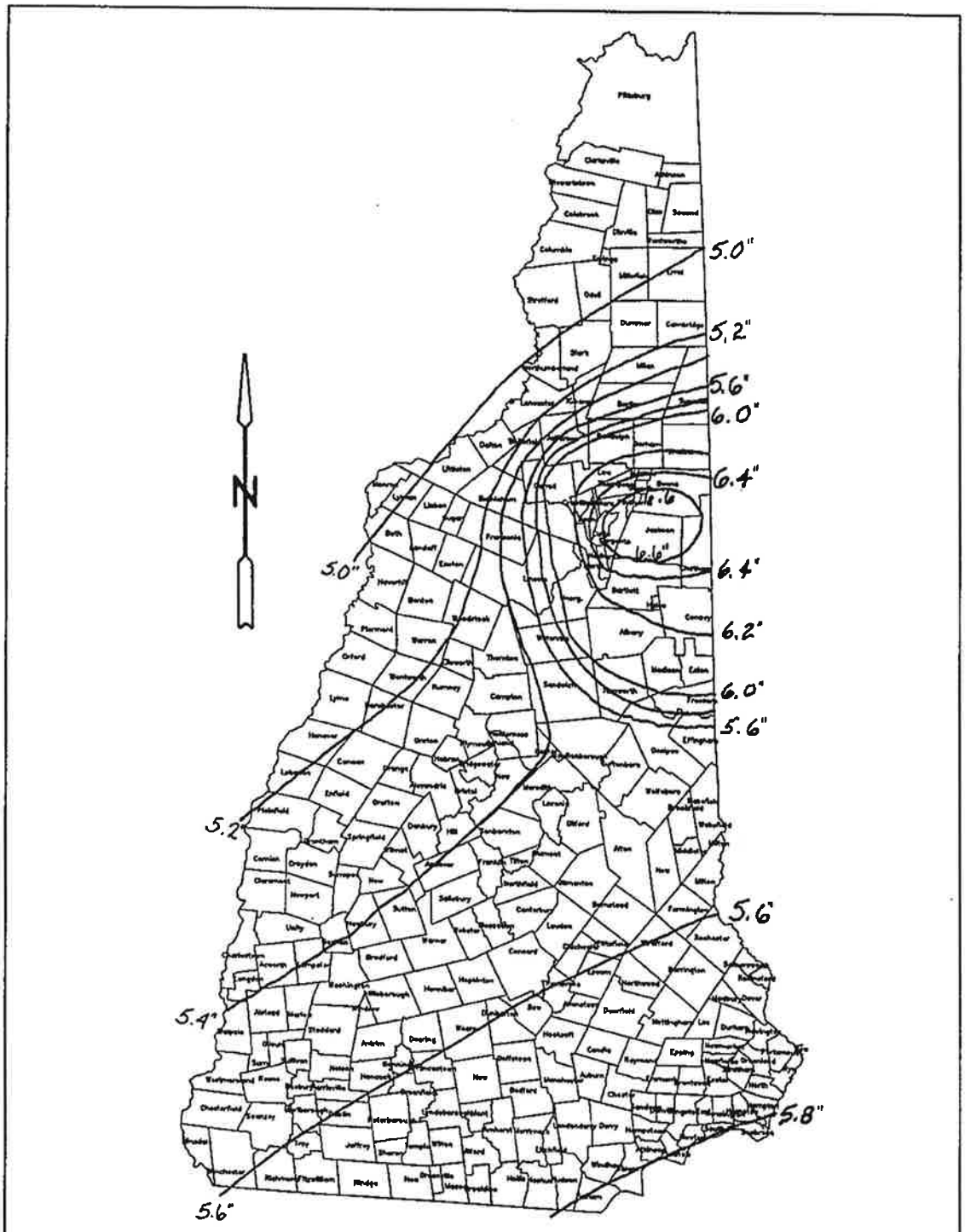


FIGURE 6-10 -- 50-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

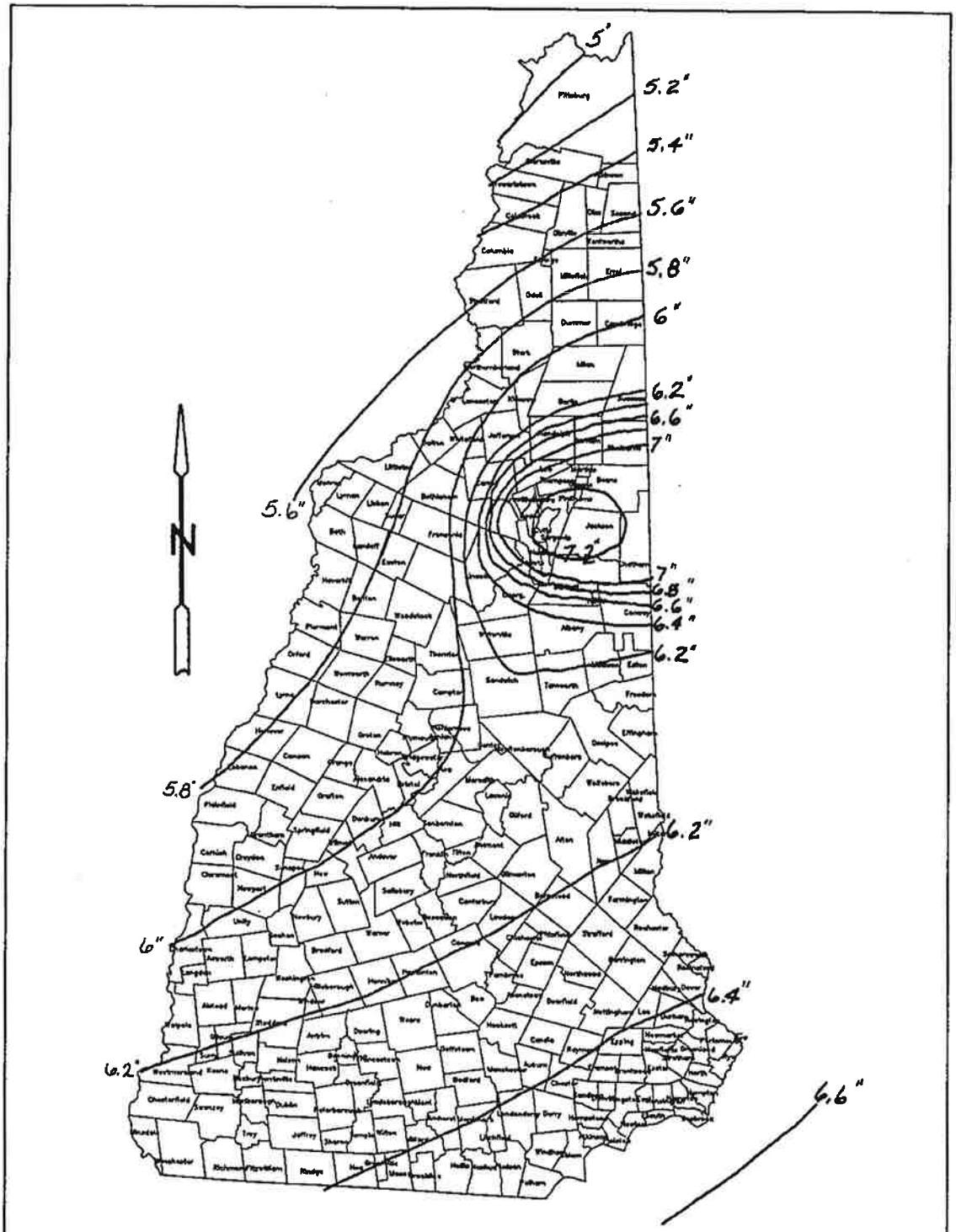


FIGURE 6-11 -- 100-YEAR FREQUENCY 24-HOUR DURATION RAINFALL

Source: USDA Soil Conservation Service

Runoff Curve Number (RCN)

The runoff curve number is a factor that relates mass rainfall to mass runoff. It is based on soil characteristics, cover type, hydrologic condition, and land treatment. Tables 6-4.1 through 6-4.3 provide runoff curve numbers for urban areas, cultivated agricultural areas, and other agricultural areas for various hydrologic conditions

Cover type relates to the kind of cover found on the soil such as vegetation, bare soil, and impervious surfaces such as parking areas, roofs, streets, and roads.

Hydrologic condition indicates the effects of cover type and treatment on infiltration and runoff rates. It is generally estimated from the density of plant and crop residue on the area. Good hydrologic condition indicates that the soil usually has low runoff potential for that specific hydrologic soil group, cover type and treatment. Some factors to consider in estimating the effect of cover on infiltration and runoff are: canopy or density of leaves, amount of year-round cover, amount of grass or close-seeded legumes in a rotation, percent of residue cover, and the degree of surface roughness.

Treatment is a cover type modifier used to describe the management of cultivated agricultural lands. It includes mechanical practices such as contouring and terracing, and management practices, such as crop rotations and reduced or no tillage.

TABLE 6-4.1 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION Cover type and hydrologic condition	Average percent impervious area[2]	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP A	B	C	D
FULLY DEVELOPED URBAN AREAS[1] (Vegetation Established)					
Lawns, open spaces, parks, golf courses, cemeteries, etc.					
good condition; grass cover on 75% or more of the area		39	61	74	80
fair condition; grass cover on 50% to 75% of the area		49	69	79	84
poor condition; grass cover on 50% or less of the area		68	79	86	89
Paved parking lots, roofs, driveways, etc.		98	98	98	98
Streets and roads;					
paved with curbs and storm sewers		98	98	98	98
gravel		76	85	89	91
dirt		72	82	87	89
paved with open ditches		83	89	92	93
Commercial and business areas	85	89	92	94	95
Industrial districts	72	81	88	91	93
Row houses, town houses, and residential					
with lot sizes 1/8 acre or less	65	77	85	90	92
Residential					
Average lot size					
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acre	12	46	65	77	82
DEVELOPING URBAN AREAS[3] (No vegetation Established)					
Newly graded area		77	86	91	94

1. For land uses with impervious areas, curve numbers are computed assuming that 100% of runoff from impervious areas is directly connected to the drainage system. Pervious areas (lawn) are considered to be equivalent to lawns in good condition and the impervious areas have an RCN of 98.

2. Includes paved streets.

3. Use for the design of temporary measures during grading and construction. Impervious area percent for urban areas under development vary considerably. The user will determine the percent impervious. Then using the newly graded area RCN and Table 6-4, the composite RCN can be computed for any degree of development.

Source: USDA Soil Conservation Service

TABLE 6-4.2 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION			CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP			
Cover type and hydrologic condition		Hydrologic condition[4]	A	B	C	D
CULTIVATED AGRICULTURAL LAND						
Fallow	Bare soil		77	86	91	94
	Crop residue cover (CR)	poor	76	85	90	93
	CR	good	74	83	88	90
Row crops	Straight row (SR)	poor	72	81	88	91
	SR	good	67	78	85	89
	SR & CR	poor	71	80	87	90
	SR & CR	good	64	75	82	85
	Contoured (C)	poor	70	79	84	88
	C	good	65	75	82	86
	C & CR	poor	69	78	83	87
	C & CR	good	64	74	81	85
	Contoured & Terraces (C&T)	poor	66	74	80	82
	C&T	good	62	71	78	81
	C&T & CR	poor	65	73	79	81
	C&T & CR	good	61	70	77	80
Small grain	SR	poor	65	76	84	88
	SR	good	63	75	83	87
	SR & CR	poor	64	75	83	86
	SR & CR	good	60	72	80	84
	C	poor	63	74	82	85
	C	good	61	73	81	84
	C & CR	poor	62	73	81	84
	C & CR	good	60	72	80	83
	C&T	poor	61	72	79	82
	C&T	good	59	70	78	81
	C&T & CR	poor	60	71	78	81
	C&T & CR	good	58	69	77	80
Close-seeded Legumes or Rotation Meadow[5]	SR	poor	66	77	85	89
	SR	good	58	72	81	85
	C	poor	64	75	83	85
	C	good	55	69	78	83
	C&T	poor	63	73	80	83
	C&T	good	51	67	76	80

4. For conservation tillage poor hydrologic condition, 5 to 20 percent of the surface is covered with residue (less than 750 #/acre row crops or 300#/acre small grain).
   For conservation tillage good hydrologic condition, more than 20 percent of the surface is covered with residue (greater than 750 #/acre row crops or 300 #/acre small grain).
5. Close-drilled or broadcast.

Source: USDA Soil Conservation Service

TABLE 6-4.3 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION Cover type and hydrologic condition	Hydrologic condition[6]	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP A	B	C	D
NON-CULTIVATED AGRICULTURAL LAND					
Pasture, grassland, or range - continuous forage for grazing	poor	68	79	86	89
	fair	49	69	79	84
	good	39	61	74	80
Meadow - continuous grass, protected from grazing and generally mowed for hay	---	30	58	71	78
Woods-grass combination (orchard or tree farm)	poor	57	73	82	86
	fair	43	65	76	82
	good	32	58	72	79
Brush - brush-weed-grass mixture with brush the major element	poor	48	67	77	83
	fair	35	56	70	77
	good	30	48	65	73
Woods	poor	45	66	77	83
	fair	36	60	73	79
	good	30	55	70	77
Farmsteads - buildings, lanes, driveways, and surrounding lots	---	59	74	82	86

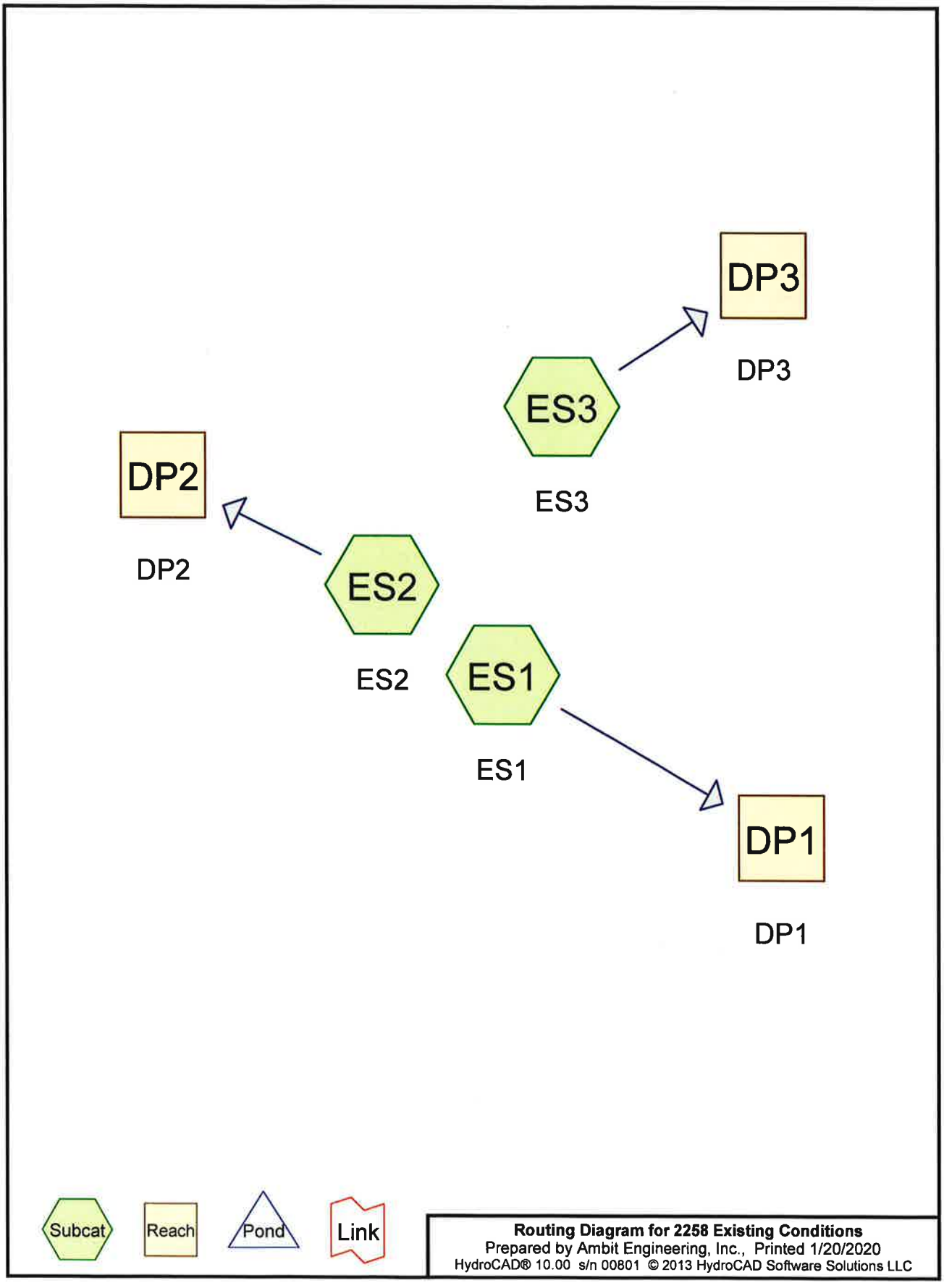
6. Poor hydrologic condition has less than 50 percent ground cover density.
Fair hydrologic condition has between 50 and 75 percent ground cover density.
Good hydrologic condition has more than 75 percent ground cover density.

Source: USDA Soil Conservation Service

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 2258 Existing Conditions
Prepared by Ambit Engineering, Inc., Printed 1/20/2020
HydroCAD® 10.00 s/n 00801 © 2013 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,182	39	>75% Grass cover, Good, HSG A (ES1, ES2, ES3)
3,062	98	Paved parking, HSG A (ES1, ES2)
4,066	98	Roofs, HSG A (ES1, ES2)
25,758	30	Woods, Good, HSG A (ES1, ES2, ES3)
47,068	**43**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
47,068	HSG A	ES1, ES2, ES3
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
47,068		**TOTAL AREA**

Ground Covers (selected 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 Num
14,182	0	0	0	0	14,182	>75% Grass cover, Good	
3,062	0	0	0	0	3,062	Paved parking	
4,066	0	0	0	0	4,066	Roofs	
25,758	0	0	0	0	25,758	Woods, Good	
47,068	**0**	**0**	**0**	**0**	**47,068**	**TOTAL AREA**	

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

Subcatchment ES1: ES1 Runoff Area=15,047 sf 33.16% Impervious Runoff Depth=0.49"
Tc=5.0 min CN=57 Runoff=0.12 cfs 608 cf

Subcatchment ES2: ES2 Runoff Area=29,568 sf 7.23% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=37 Runoff=0.00 cfs 11 cf

Subcatchment ES3: ES3 Runoff Area=2,453 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=35 Runoff=0.00 cfs 0 cf

Reach DP1: DP1 Inflow=0.12 cfs 608 cf
Outflow=0.12 cfs 608 cf

Reach DP2: DP2 Inflow=0.00 cfs 11 cf
Outflow=0.00 cfs 11 cf

Reach DP3: DP3 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 47,068 sf Runoff Volume = 619 cf Average Runoff Depth = 0.16"
84.86% Pervious = 39,940 sf 15.14% Impervious = 7,128 sf

Summary for Subcatchment ES1: ES1

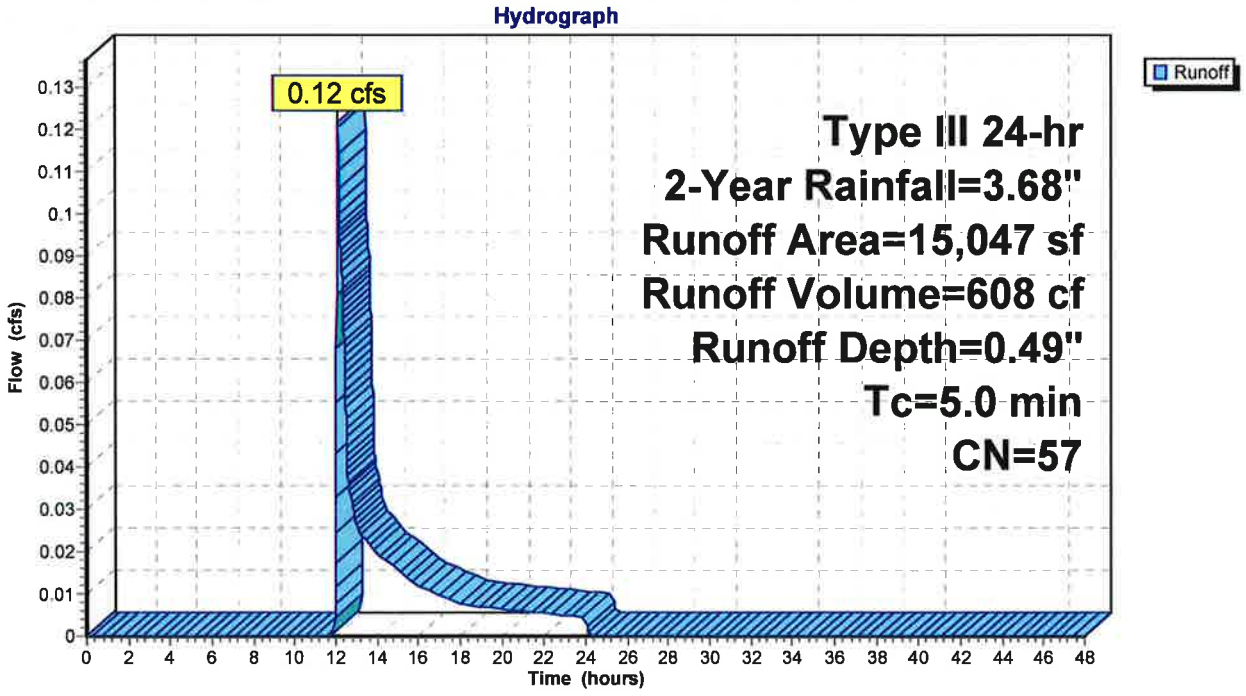
Runoff = 0.12 cfs @ 12.11 hrs, Volume= 608 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
2,014	98	Roofs, HSG A
2,975	98	Paved parking, HSG A
3,007	30	Woods, Good, HSG A
7,051	39	>75% Grass cover, Good, HSG A
15,047	57	Weighted Average
10,058		66.84% Pervious Area
4,989		33.16% Impervious Area

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

Subcatchment ES1: ES1



Summary for Subcatchment ES2: ES2

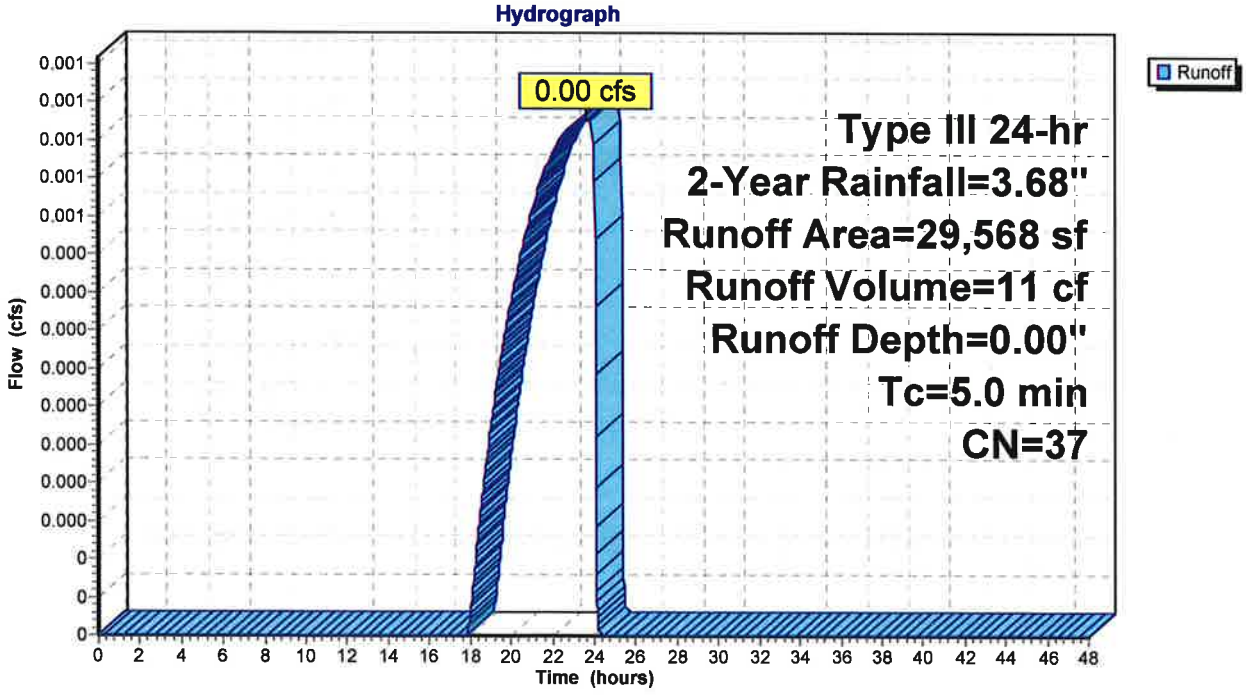
Runoff = 0.00 cfs @ 23.65 hrs, Volume= 11 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
2,052	98	Roofs, HSG A
87	98	Paved parking, HSG A
21,660	30	Woods, Good, HSG A
5,769	39	>75% Grass cover, Good, HSG A
29,568	37	Weighted Average
27,429		92.77% Pervious Area
2,139		7.23% Impervious Area

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

Subcatchment ES2: ES2



Summary for Subcatchment ES3: ES3

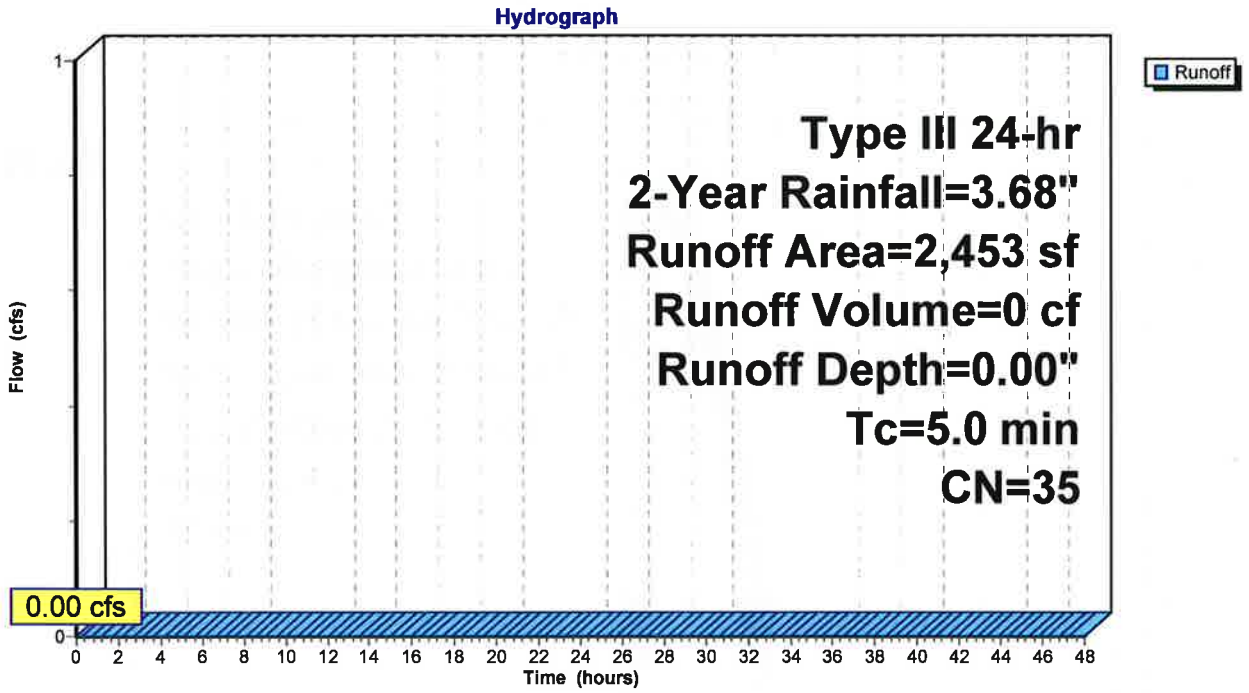
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
1,091	30	Woods, Good, HSG A
1,362	39	>75% Grass cover, Good, HSG A
2,453	35	Weighted Average
2,453		100.00% Pervious Area

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

Subcatchment ES3: ES3

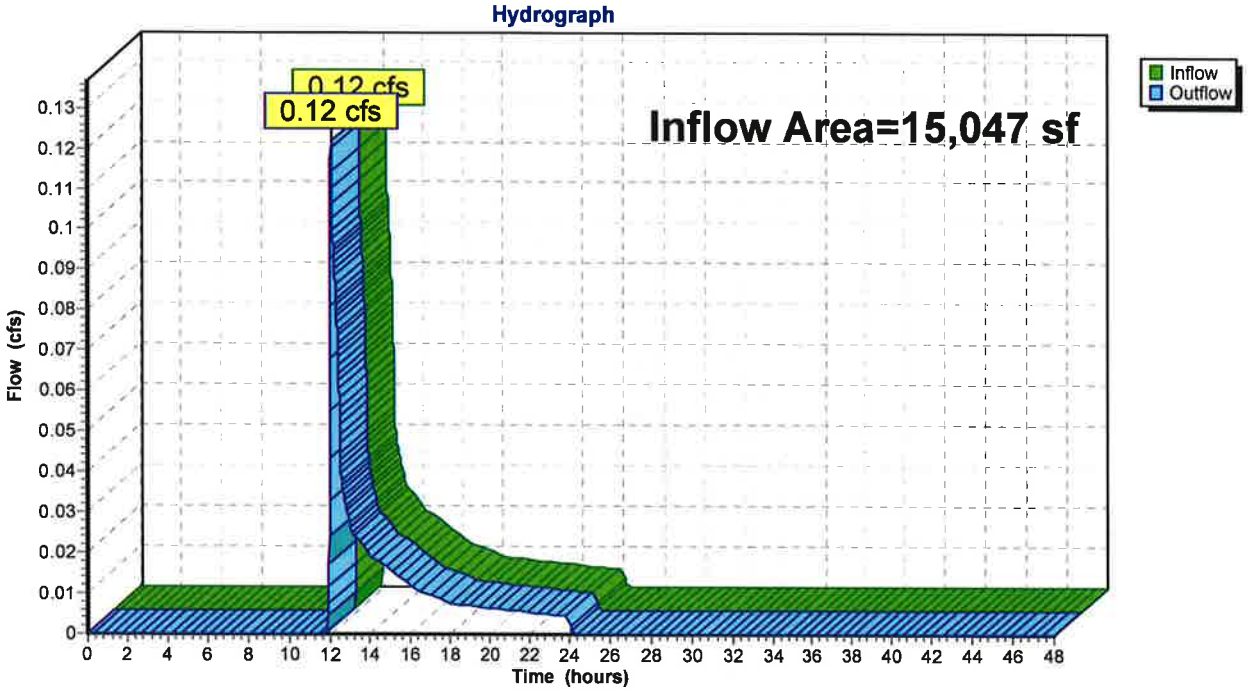


Summary for Reach DP1: DP1

Inflow Area = 15,047 sf, 33.16% Impervious, Inflow Depth = 0.49" for 2-Year event
Inflow = 0.12 cfs @ 12.11 hrs, Volume= 608 cf
Outflow = 0.12 cfs @ 12.11 hrs, Volume= 608 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

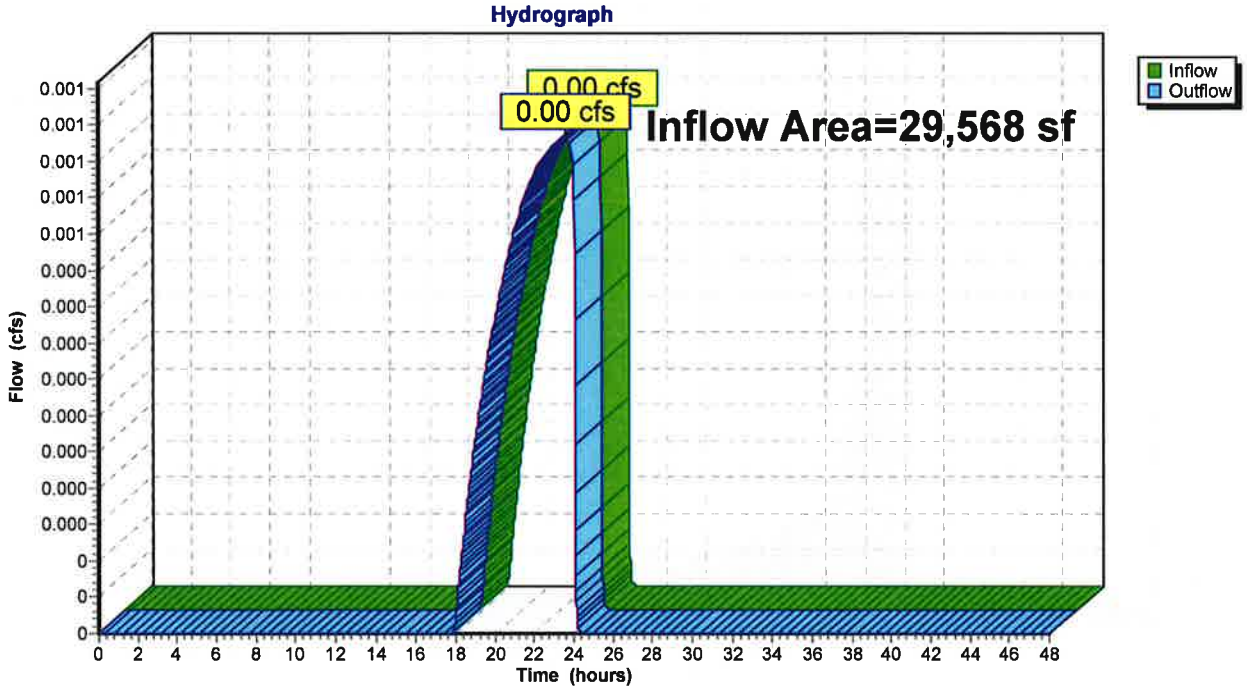


Summary for Reach DP2: DP2

Inflow Area = 29,568 sf, 7.23% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 23.65 hrs, Volume= 11 cf
Outflow = 0.00 cfs @ 23.65 hrs, Volume= 11 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

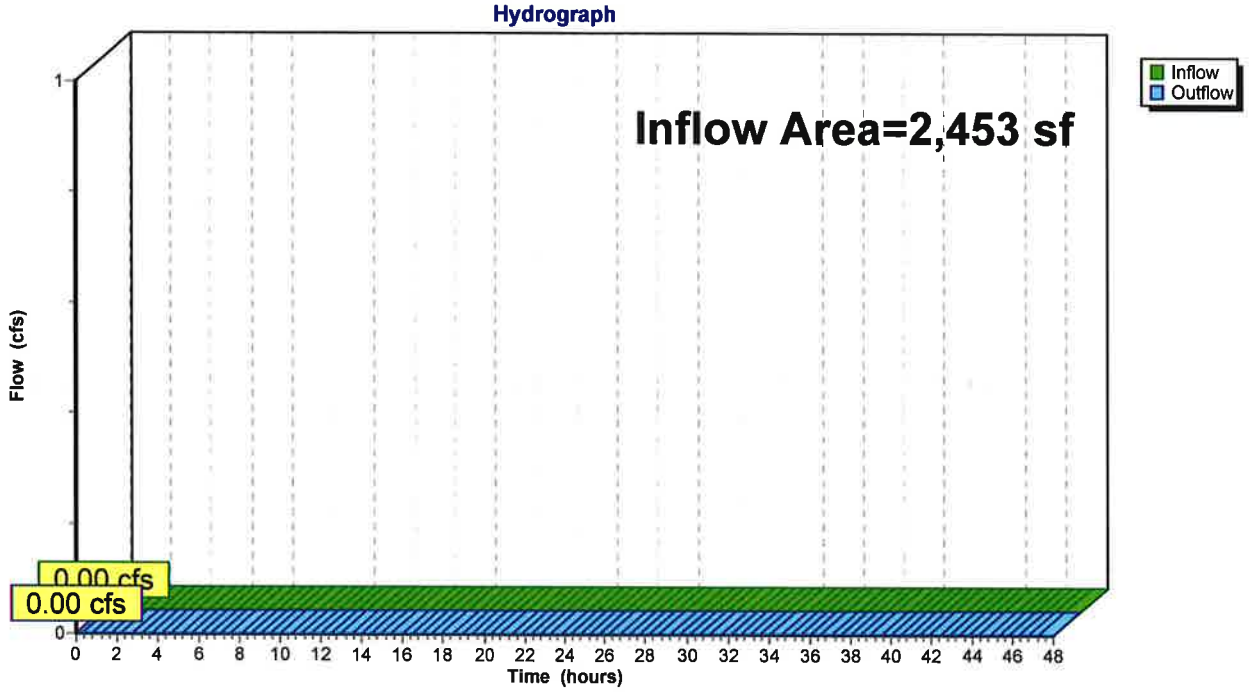


Summary for Reach DP3: DP3

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



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

Subcatchment ES1: ES1 Runoff Area=15,047 sf 33.16% Impervious Runoff Depth=1.43"
Tc=5.0 min CN=57 Runoff=0.53 cfs 1,789 cf

Subcatchment ES2: ES2 Runoff Area=29,568 sf 7.23% Impervious Runoff Depth=0.25"
Tc=5.0 min CN=37 Runoff=0.04 cfs 607 cf

Subcatchment ES3: ES3 Runoff Area=2,453 sf 0.00% Impervious Runoff Depth=0.17"
Tc=5.0 min CN=35 Runoff=0.00 cfs 35 cf

Reach DP1: DP1 Inflow=0.53 cfs 1,789 cf
Outflow=0.53 cfs 1,789 cf

Reach DP2: DP2 Inflow=0.04 cfs 607 cf
Outflow=0.04 cfs 607 cf

Reach DP3: DP3 Inflow=0.00 cfs 35 cf
Outflow=0.00 cfs 35 cf

Total Runoff Area = 47,068 sf Runoff Volume = 2,431 cf Average Runoff Depth = 0.62"
84.86% Pervious = 39,940 sf 15.14% Impervious = 7,128 sf

Summary for Subcatchment ES1: ES1

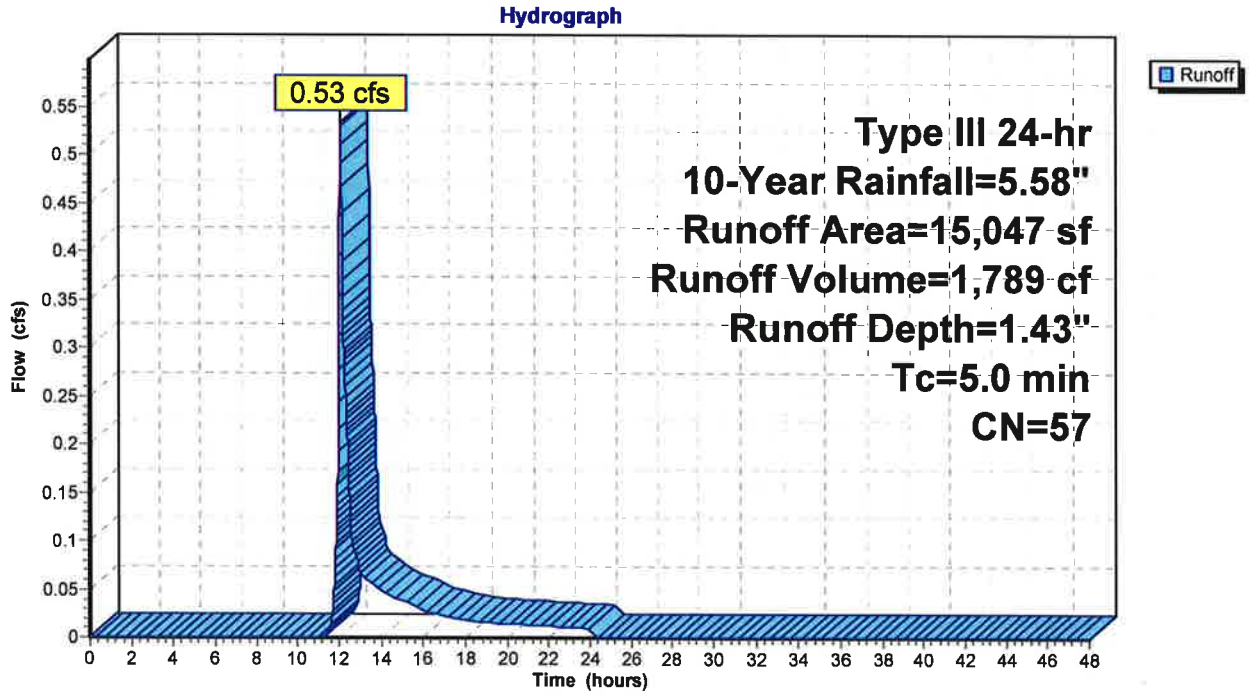
Runoff = 0.53 cfs @ 12.09 hrs, Volume= 1,789 cf, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
2,014	98	Roofs, HSG A
2,975	98	Paved parking, HSG A
3,007	30	Woods, Good, HSG A
7,051	39	>75% Grass cover, Good, HSG A
15,047	57	Weighted Average
10,058		66.84% Pervious Area
4,989		33.16% Impervious Area

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

Subcatchment ES1: ES1



Summary for Subcatchment ES2: ES2

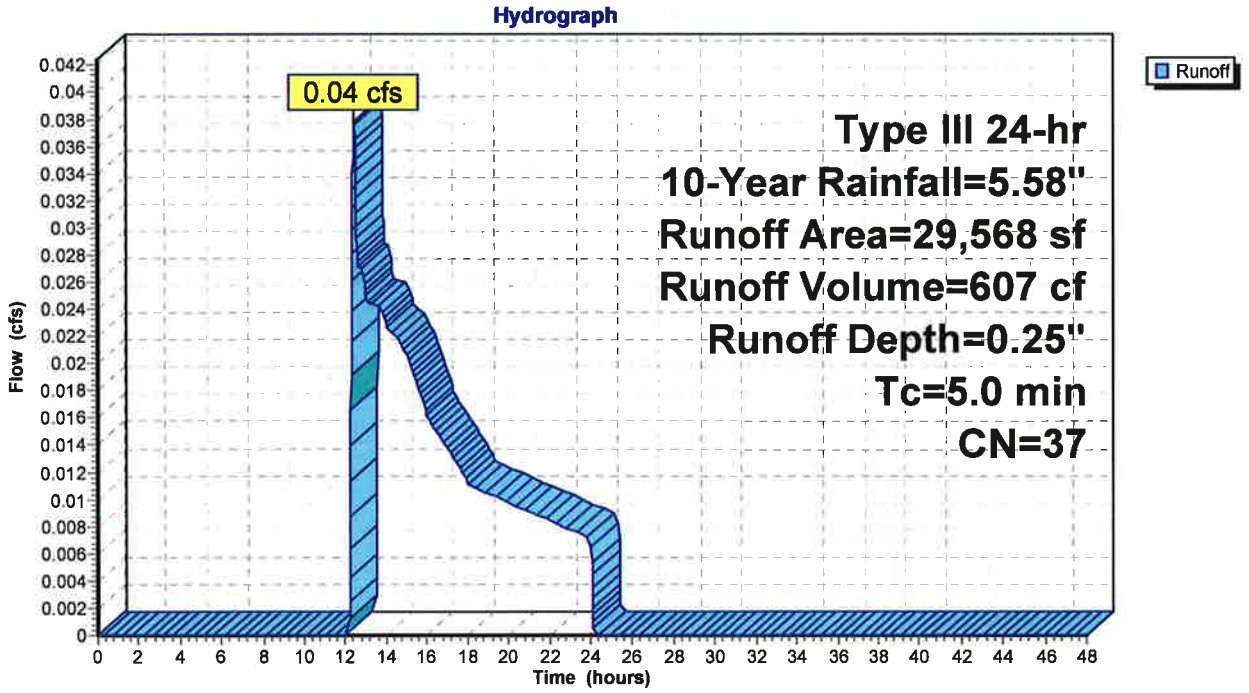
Runoff = 0.04 cfs @ 12.44 hrs, Volume= 607 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
2,052	98	Roofs, HSG A
87	98	Paved parking, HSG A
21,660	30	Woods, Good, HSG A
5,769	39	>75% Grass cover, Good, HSG A
29,568	37	Weighted Average
27,429		92.77% Pervious Area
2,139		7.23% Impervious Area

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

Subcatchment ES2: ES2



Summary for Subcatchment ES3: ES3

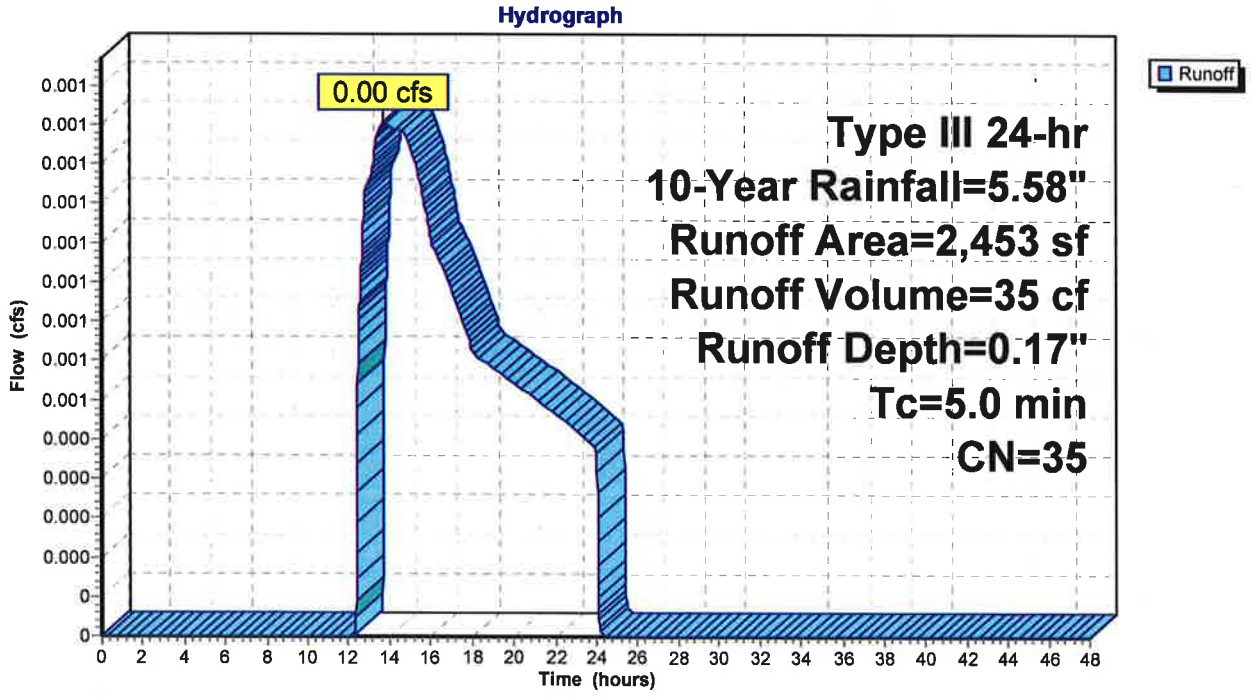
Runoff = 0.00 cfs @ 13.75 hrs, Volume= 35 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
1,091	30	Woods, Good, HSG A
1,362	39	>75% Grass cover, Good, HSG A
2,453	35	Weighted Average
2,453		100.00% Pervious Area

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

Subcatchment ES3: ES3

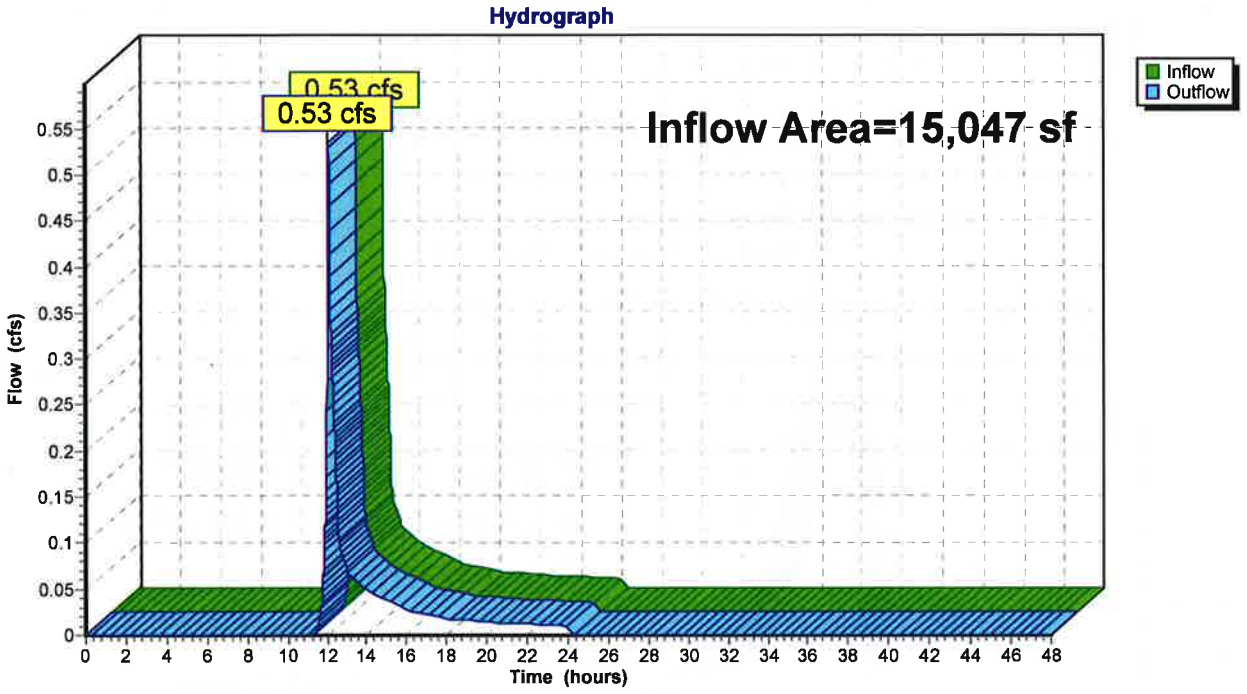


Summary for Reach DP1: DP1

Inflow Area = 15,047 sf, 33.16% Impervious, Inflow Depth = 1.43" for 10-Year event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 1,789 cf
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 1,789 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

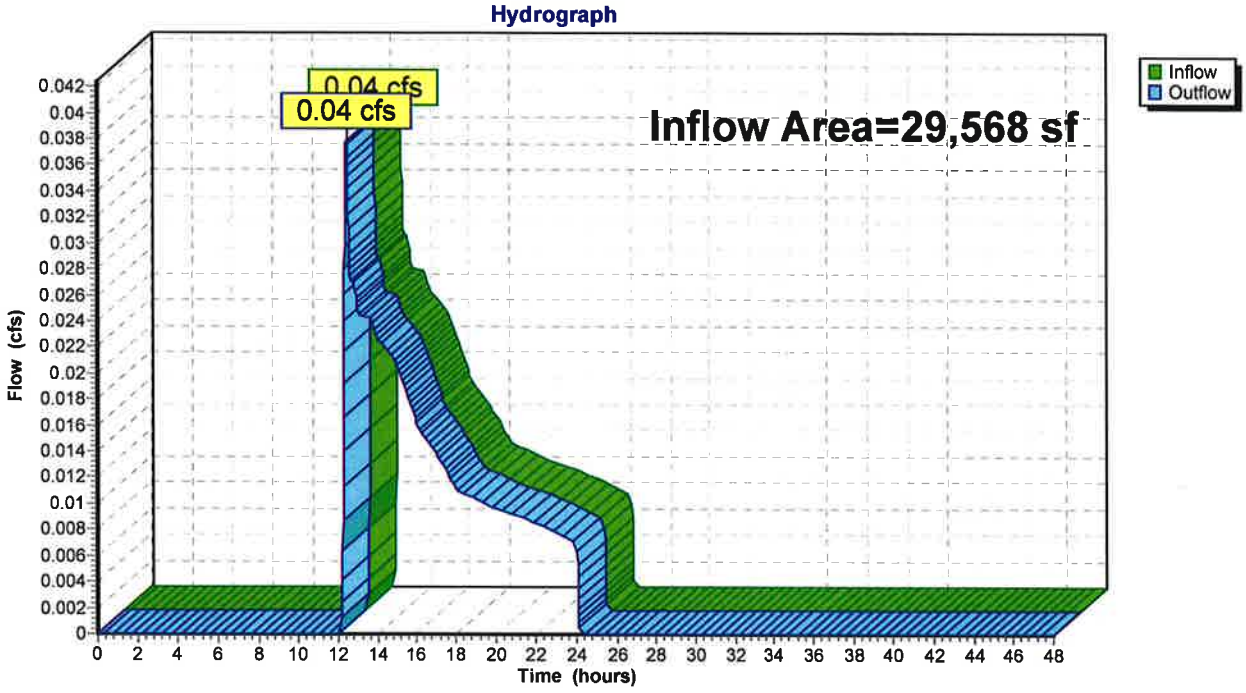


Summary for Reach DP2: DP2

Inflow Area = 29,568 sf, 7.23% Impervious, Inflow Depth = 0.25" for 10-Year event
Inflow = 0.04 cfs @ 12.44 hrs, Volume= 607 cf
Outflow = 0.04 cfs @ 12.44 hrs, Volume= 607 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

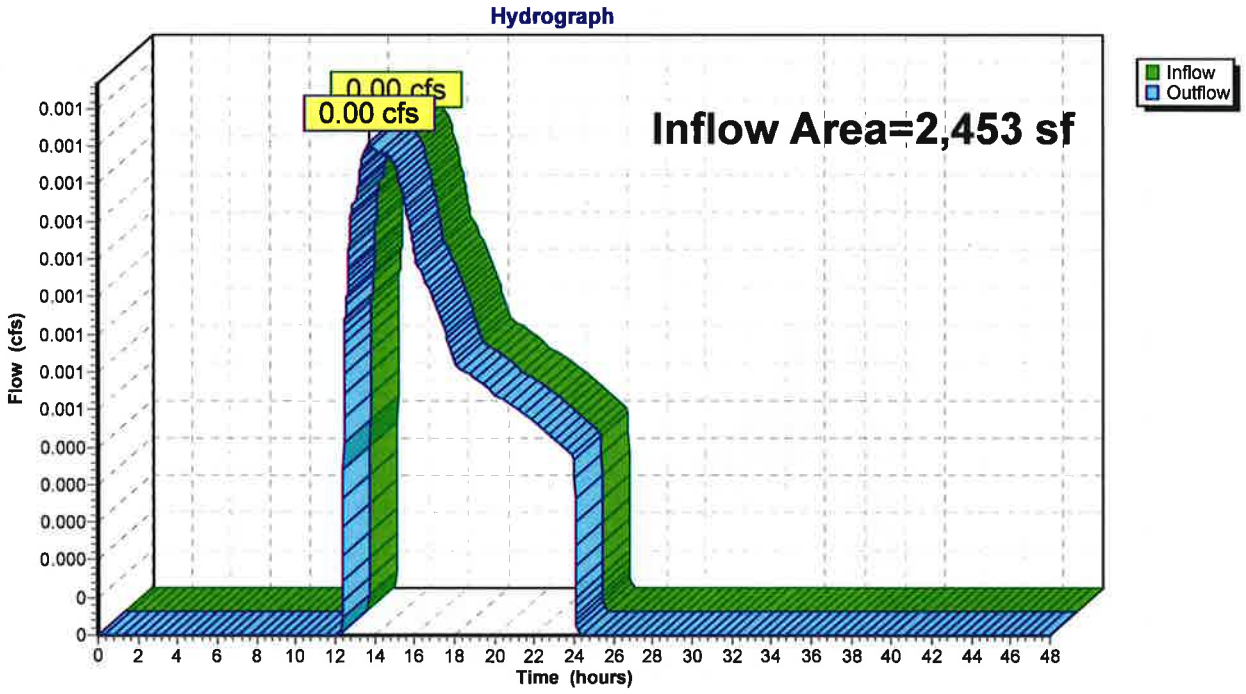


Summary for Reach DP3: DP3

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 0.17" for 10-Year event
Inflow = 0.00 cfs @ 13.75 hrs, Volume= 35 cf
Outflow = 0.00 cfs @ 13.75 hrs, Volume= 35 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



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

Subcatchment ES1: ES1 Runoff Area=15,047 sf 33.16% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=57 Runoff=0.94 cfs 2,959 cf

Subcatchment ES2: ES2 Runoff Area=29,568 sf 7.23% Impervious Runoff Depth=0.65"
Tc=5.0 min CN=37 Runoff=0.20 cfs 1,599 cf

Subcatchment ES3: ES3 Runoff Area=2,453 sf 0.00% Impervious Runoff Depth=0.51"
Tc=5.0 min CN=35 Runoff=0.01 cfs 105 cf

Reach DP1: DP1 Inflow=0.94 cfs 2,959 cf
Outflow=0.94 cfs 2,959 cf

Reach DP2: DP2 Inflow=0.20 cfs 1,599 cf
Outflow=0.20 cfs 1,599 cf

Reach DP3: DP3 Inflow=0.01 cfs 105 cf
Outflow=0.01 cfs 105 cf

Total Runoff Area = 47,068 sf Runoff Volume = 4,663 cf Average Runoff Depth = 1.19"
84.86% Pervious = 39,940 sf 15.14% Impervious = 7,128 sf

Summary for Subcatchment ES1: ES1

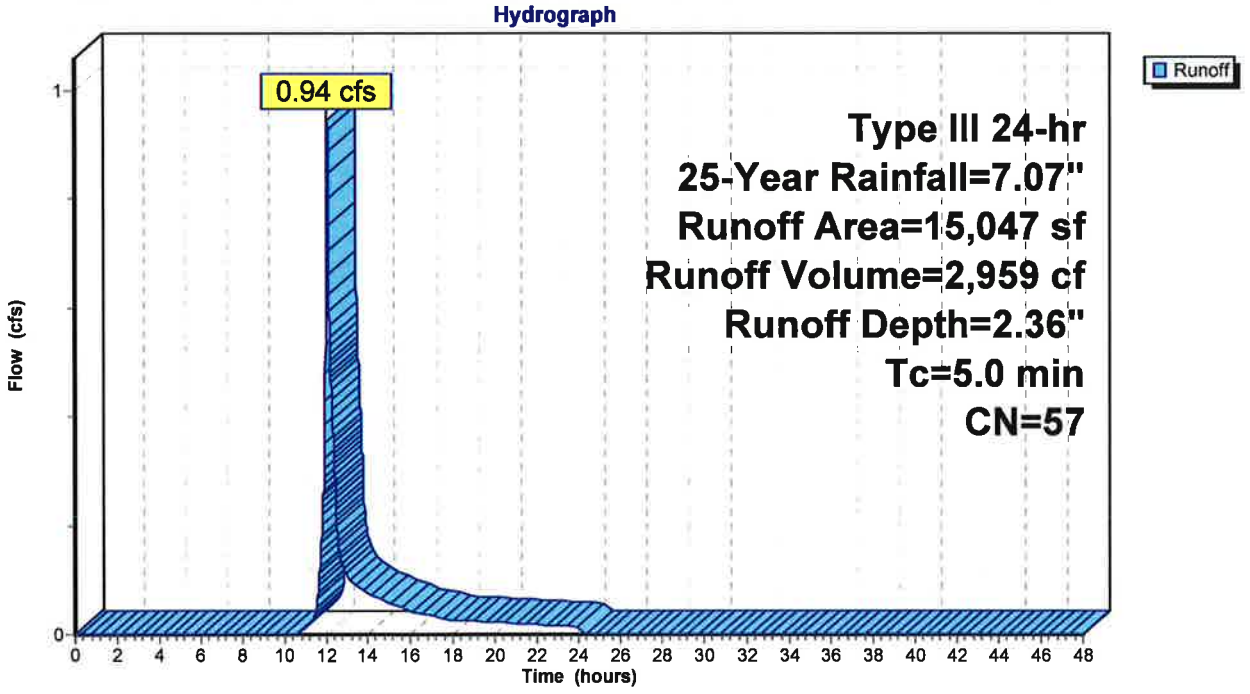
Runoff = 0.94 cfs @ 12.08 hrs, Volume= 2,959 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,014	98	Roofs, HSG A
2,975	98	Paved parking, HSG A
3,007	30	Woods, Good, HSG A
7,051	39	>75% Grass cover, Good, HSG A
15,047	57	Weighted Average
10,058		66.84% Pervious Area
4,989		33.16% Impervious Area

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

Subcatchment ES1: ES1



Summary for Subcatchment ES2: ES2

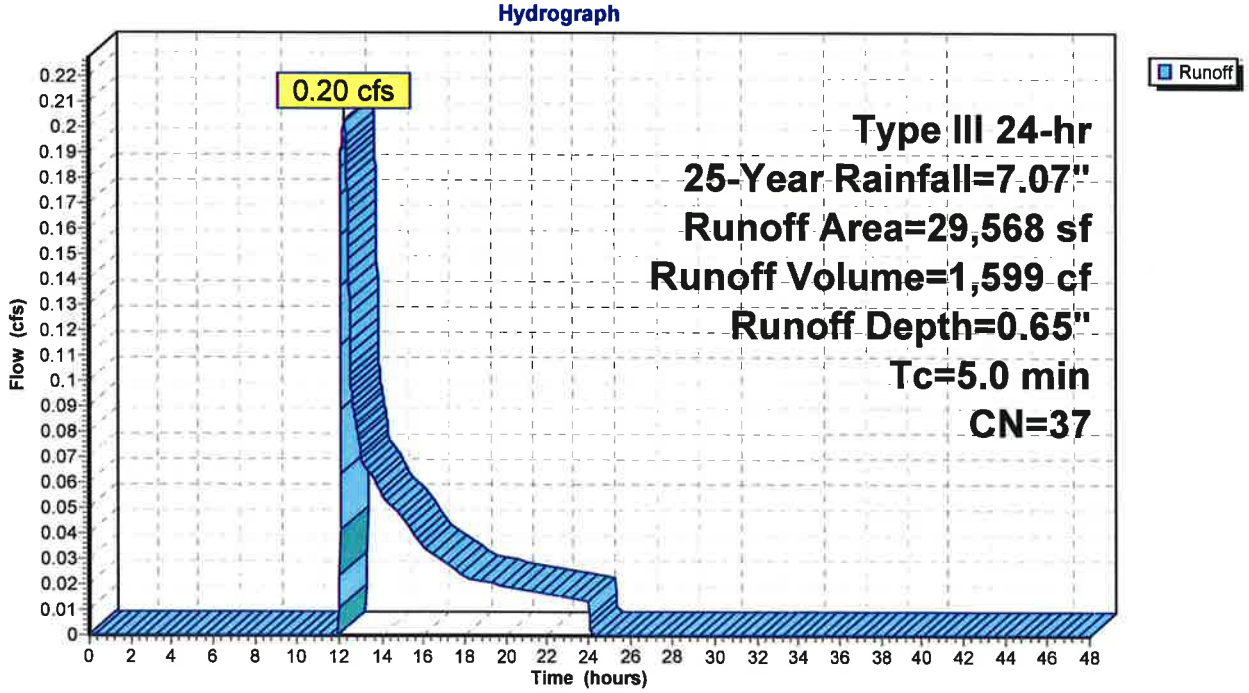
Runoff = 0.20 cfs @ 12.28 hrs, Volume= 1,599 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,052	98	Roofs, HSG A
87	98	Paved parking, HSG A
21,660	30	Woods, Good, HSG A
5,769	39	>75% Grass cover, Good, HSG A
29,568	37	Weighted Average
27,429		92.77% Pervious Area
2,139		7.23% Impervious Area

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

Subcatchment ES2: ES2



Summary for Subcatchment ES3: ES3

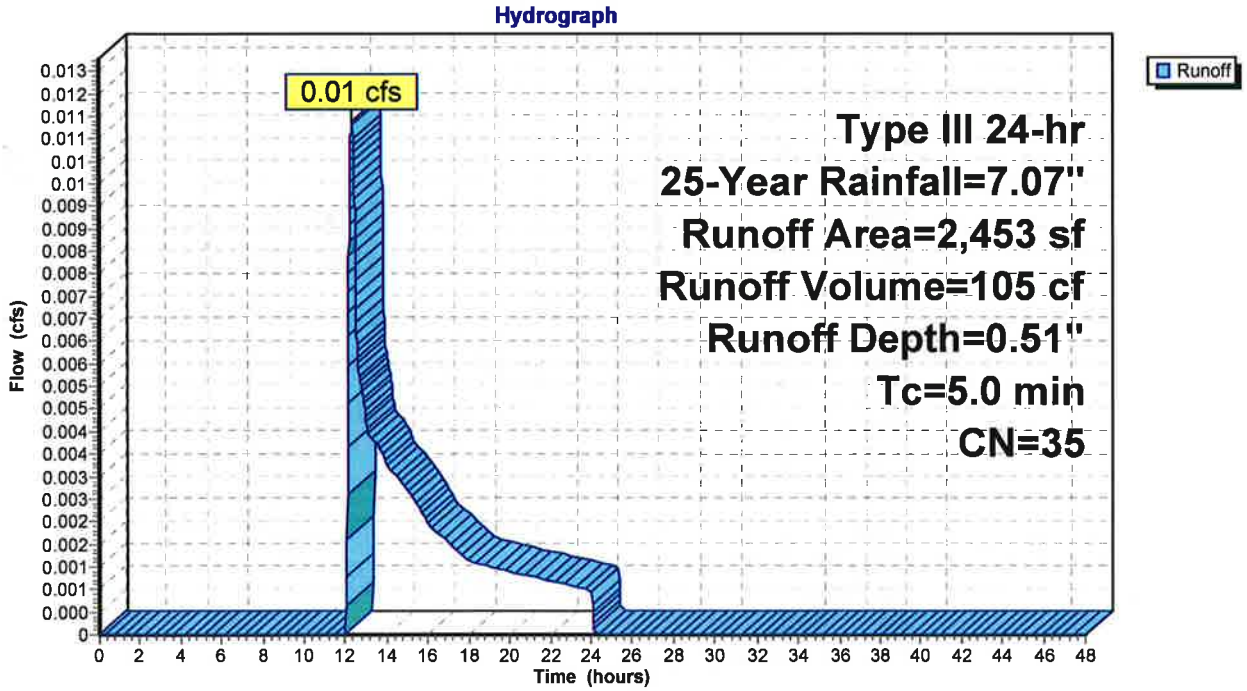
Runoff = 0.01 cfs @ 12.33 hrs, Volume= 105 cf, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
1,091	30	Woods, Good, HSG A
1,362	39	>75% Grass cover, Good, HSG A
2,453	35	Weighted Average
2,453		100.00% Pervious Area

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

Subcatchment ES3: ES3

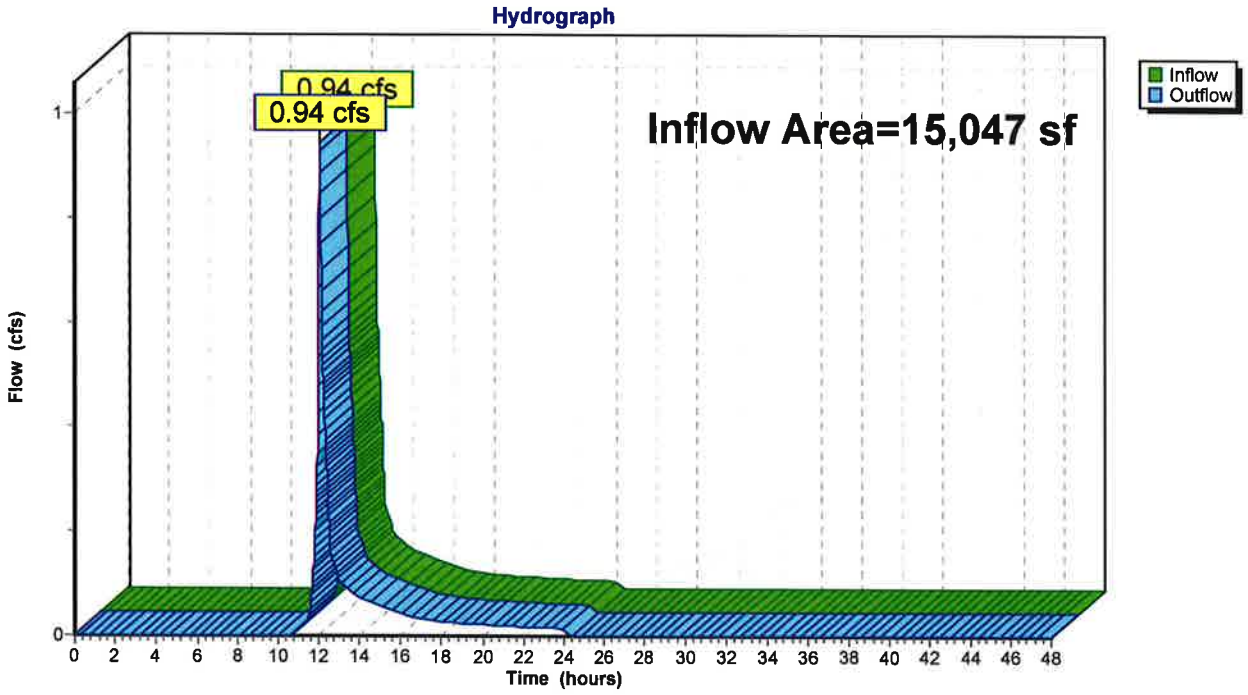


Summary for Reach DP1: DP1

Inflow Area = 15,047 sf, 33.16% Impervious, Inflow Depth = 2.36" for 25-Year event
Inflow = 0.94 cfs @ 12.08 hrs, Volume= 2,959 cf
Outflow = 0.94 cfs @ 12.08 hrs, Volume= 2,959 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

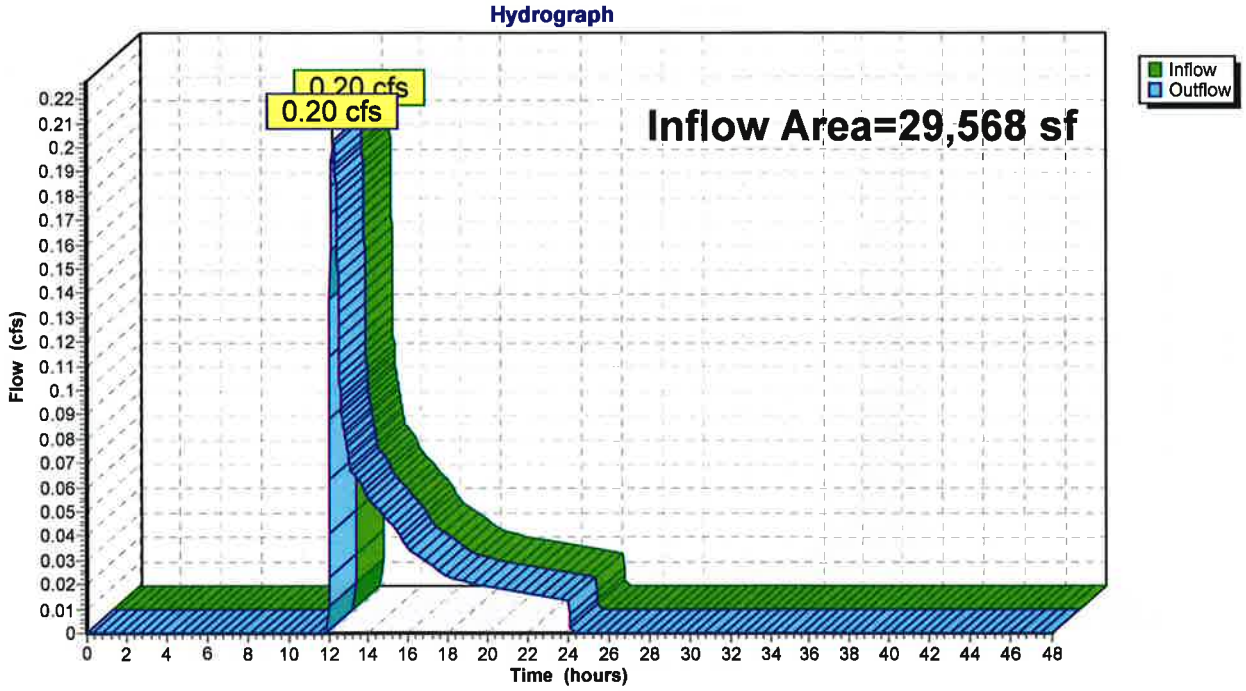


Summary for Reach DP2: DP2

Inflow Area = 29,568 sf, 7.23% Impervious, Inflow Depth = 0.65" for 25-Year event
Inflow = 0.20 cfs @ 12.28 hrs, Volume= 1,599 cf
Outflow = 0.20 cfs @ 12.28 hrs, Volume= 1,599 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

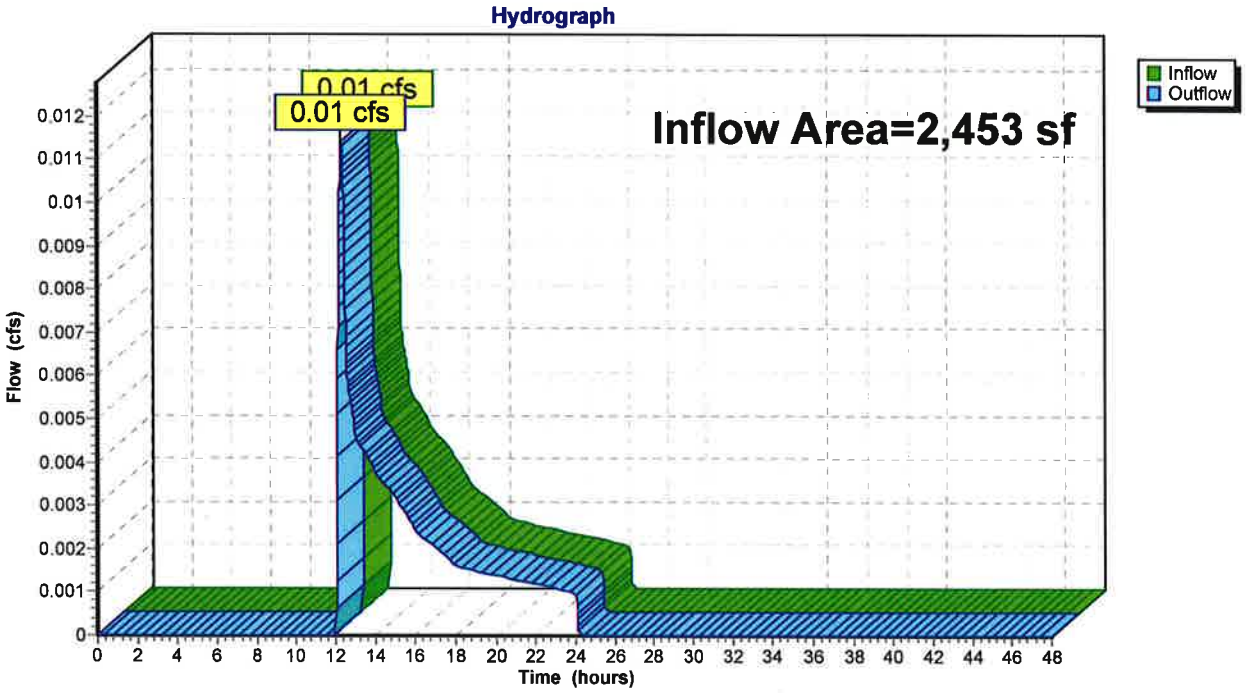


Summary for Reach DP3: DP3

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 0.51" for 25-Year event
Inflow = 0.01 cfs @ 12.33 hrs, Volume= 105 cf
Outflow = 0.01 cfs @ 12.33 hrs, Volume= 105 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



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

Subcatchment ES1: ES1 Runoff Area=15,047 sf 33.16% Impervious Runoff Depth=3.33"
Tc=5.0 min CN=57 Runoff=1.37 cfs 4,180 cf

Subcatchment ES2: ES2 Runoff Area=29,568 sf 7.23% Impervious Runoff Depth=1.16"
Tc=5.0 min CN=37 Runoff=0.59 cfs 2,851 cf

Subcatchment ES3: ES3 Runoff Area=2,453 sf 0.00% Impervious Runoff Depth=0.97"
Tc=5.0 min CN=35 Runoff=0.03 cfs 197 cf

Reach DP1: DP1 Inflow=1.37 cfs 4,180 cf
Outflow=1.37 cfs 4,180 cf

Reach DP2: DP2 Inflow=0.59 cfs 2,851 cf
Outflow=0.59 cfs 2,851 cf

Reach DP3: DP3 Inflow=0.03 cfs 197 cf
Outflow=0.03 cfs 197 cf

Total Runoff Area = 47,068 sf Runoff Volume = 7,228 cf Average Runoff Depth = 1.84"
84.86% Pervious = 39,940 sf 15.14% Impervious = 7,128 sf

Summary for Subcatchment ES1: ES1

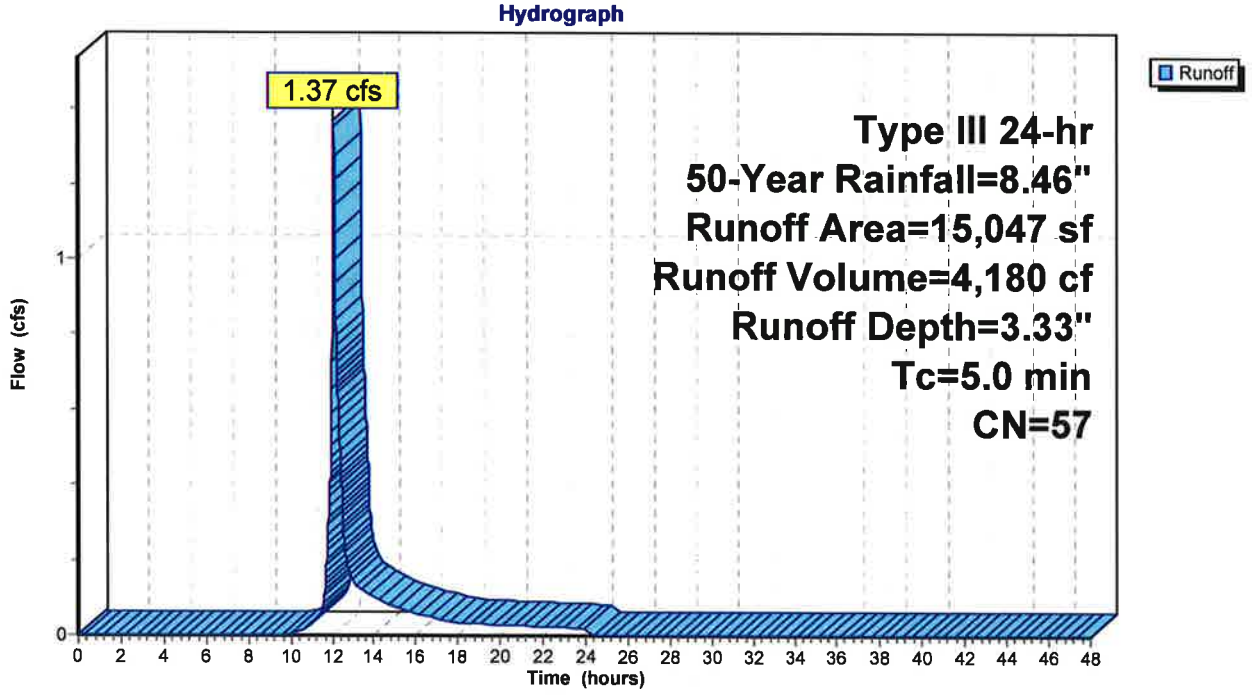
Runoff = 1.37 cfs @ 12.08 hrs, Volume= 4,180 cf, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
2,014	98	Roofs, HSG A
2,975	98	Paved parking, HSG A
3,007	30	Woods, Good, HSG A
7,051	39	>75% Grass cover, Good, HSG A
15,047	57	Weighted Average
10,058		66.84% Pervious Area
4,989		33.16% Impervious Area

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

Subcatchment ES1: ES1



Summary for Subcatchment ES2: ES2

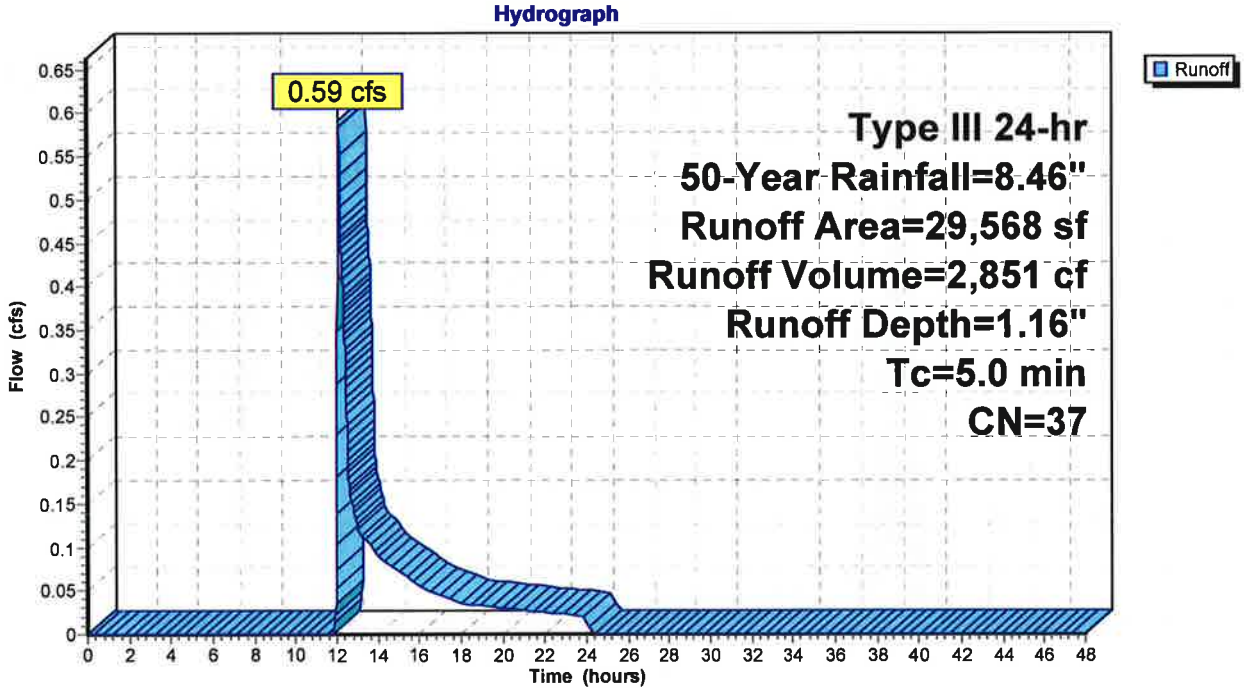
Runoff = 0.59 cfs @ 12.11 hrs, Volume= 2,851 cf, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
2,052	98	Roofs, HSG A
87	98	Paved parking, HSG A
21,660	30	Woods, Good, HSG A
5,769	39	>75% Grass cover, Good, HSG A
29,568	37	Weighted Average
27,429		92.77% Pervious Area
2,139		7.23% Impervious Area

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

Subcatchment ES2: ES2



Summary for Subcatchment ES3: ES3

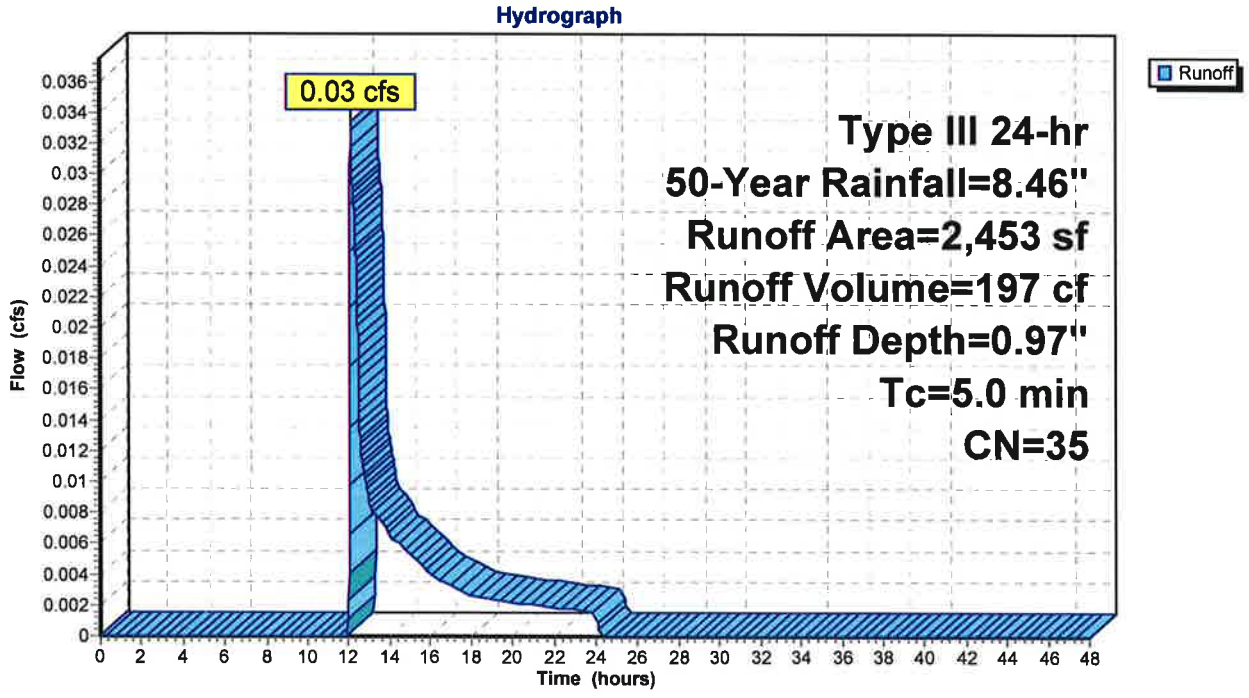
Runoff = 0.03 cfs @ 12.12 hrs, Volume= 197 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
1,091	30	Woods, Good, HSG A
1,362	39	>75% Grass cover, Good, HSG A
2,453	35	Weighted Average
2,453		100.00% Pervious Area

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

Subcatchment ES3: ES3

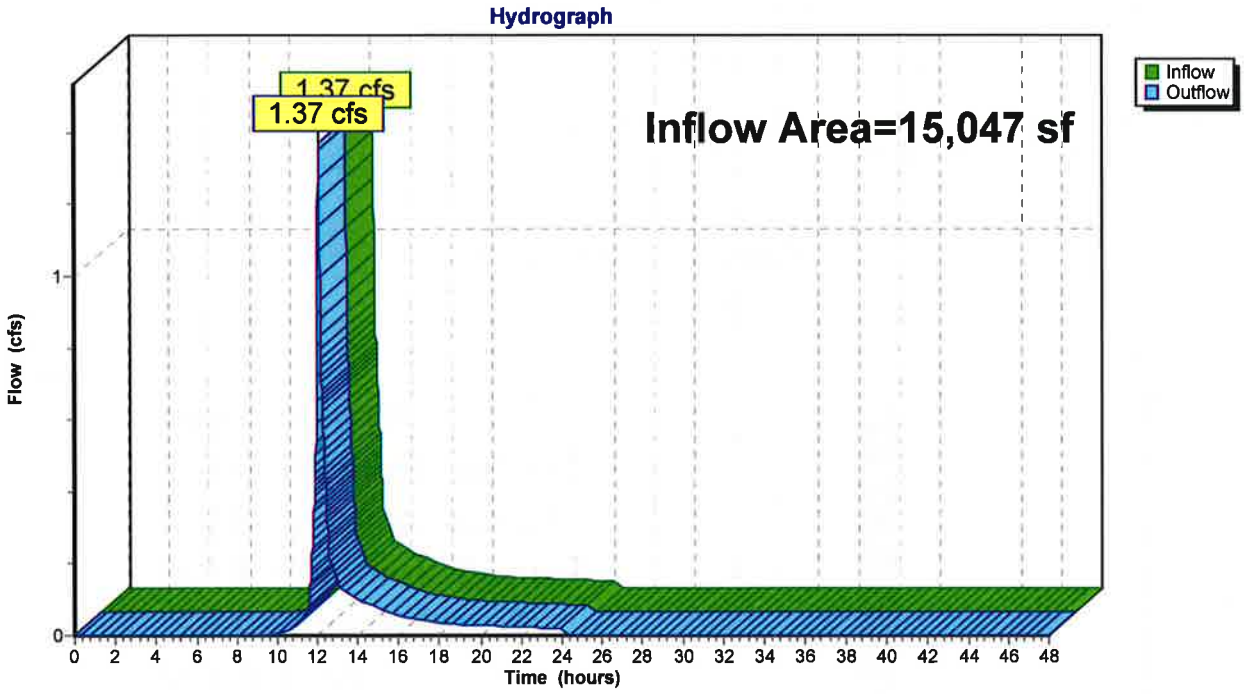


Summary for Reach DP1: DP1

Inflow Area = 15,047 sf, 33.16% Impervious, Inflow Depth = 3.33" for 50-Year event
Inflow = 1.37 cfs @ 12.08 hrs, Volume= 4,180 cf
Outflow = 1.37 cfs @ 12.08 hrs, Volume= 4,180 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

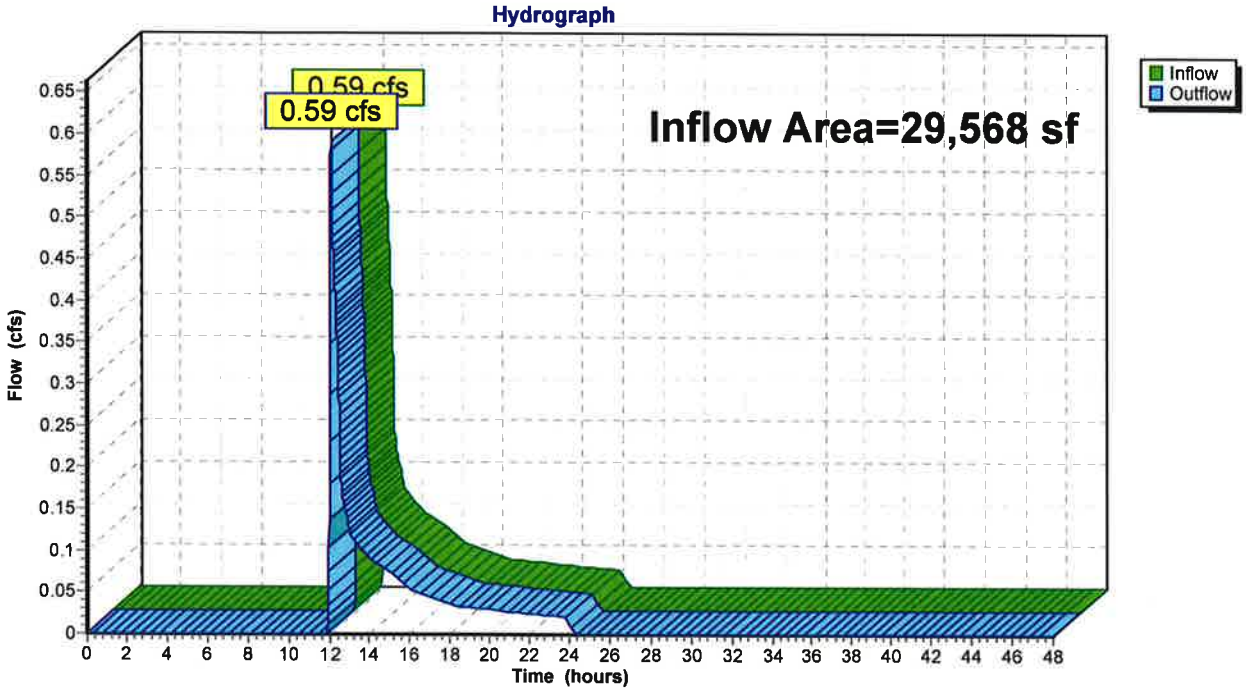


Summary for Reach DP2: DP2

Inflow Area = 29,568 sf, 7.23% Impervious, Inflow Depth = 1.16" for 50-Year event
Inflow = 0.59 cfs @ 12.11 hrs, Volume= 2,851 cf
Outflow = 0.59 cfs @ 12.11 hrs, Volume= 2,851 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

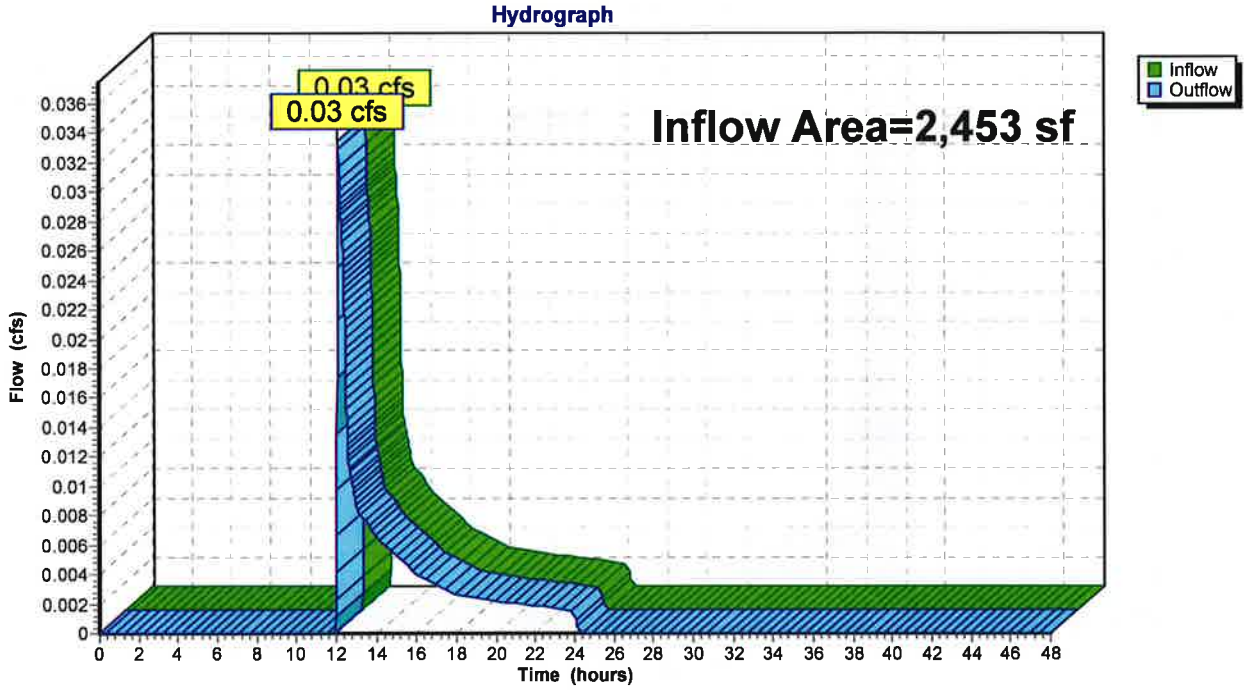


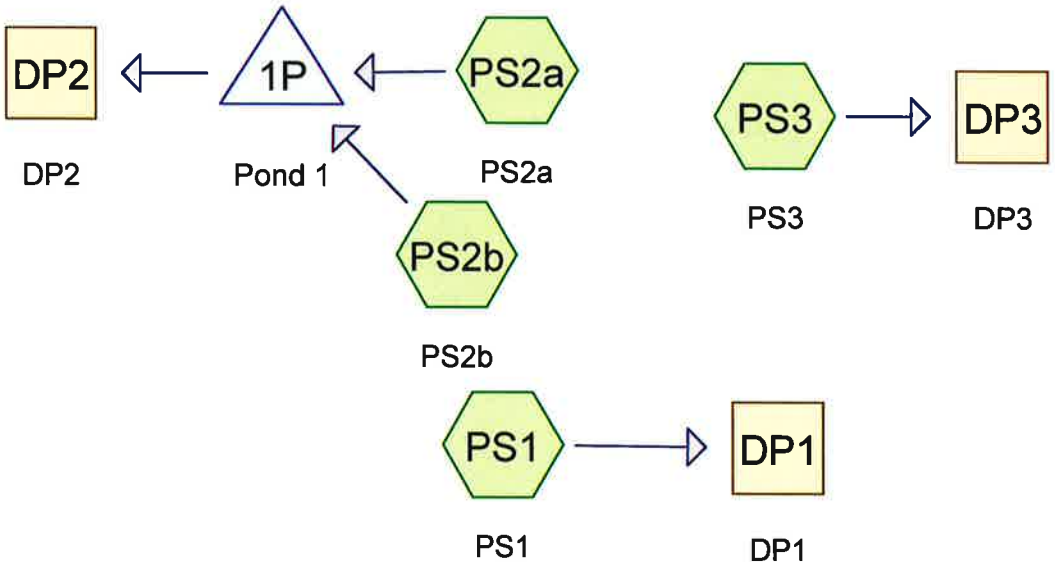
Summary for Reach DP3: DP3

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 0.97" for 50-Year event
Inflow = 0.03 cfs @ 12.12 hrs, Volume= 197 cf
Outflow = 0.03 cfs @ 12.12 hrs, Volume= 197 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3





Subcat Reach Pond Link

Routing Diagram for 2258 Proposed Conditions
Prepared by Ambit Engineering, Inc., Printed 1/20/2020

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
12,138	54	1/2 acre lots, 25% imp, HSG A (PS2b)
16,974	39	>75% Grass cover, Good, HSG A (PS1, PS2a, PS3)
4,109	98	Paved parking, HSG A (PS1)
13,847	30	Woods, Good, HSG A (PS2a)
47,068	**45**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
47,068	HSG A	PS1, PS2a, PS2b, PS3
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
47,068		**TOTAL AREA**

Ground Covers (selected 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 Num
12,138	0	0	0	0	12,138	1/2 acre lots, 25% imp	
16,974	0	0	0	0	16,974	>75% Grass cover, Good	
4,109	0	0	0	0	4,109	Paved parking	
13,847	0	0	0	0	13,847	Woods, Good	
47,068	**0**	**0**	**0**	**0**	**47,068**	**TOTAL AREA**	

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

Subcatchment PS1: PS1 Runoff Area=14,572 sf 28.20% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=56 Runoff=0.10 cfs 542 cf

Subcatchment PS2a: PS2a Runoff Area=19,379 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=33 Runoff=0.00 cfs 0 cf

Subcatchment PS2b: PS2b Runoff Area=12,138 sf 25.00% Impervious Runoff Depth=0.37"
Tc=5.0 min CN=54 Runoff=0.05 cfs 376 cf

Subcatchment PS3: PS3 Runoff Area=979 sf 0.00% Impervious Runoff Depth=0.02"
Tc=5.0 min CN=39 Runoff=0.00 cfs 2 cf

Reach DP1: DP1 Inflow=0.10 cfs 542 cf
Outflow=0.10 cfs 542 cf

Reach DP2: DP2 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DP3: DP3 Inflow=0.00 cfs 2 cf
Outflow=0.00 cfs 2 cf

Pond 1P: Pond 1 Peak Elev=62.00' Storage=11 cf Inflow=0.05 cfs 376 cf
Discarded=0.05 cfs 376 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 376 cf

Total Runoff Area = 47,068 sf Runoff Volume = 920 cf Average Runoff Depth = 0.23"
84.82% Pervious = 39,925 sf 15.18% Impervious = 7,144 sf

Summary for Subcatchment PS1: PS1

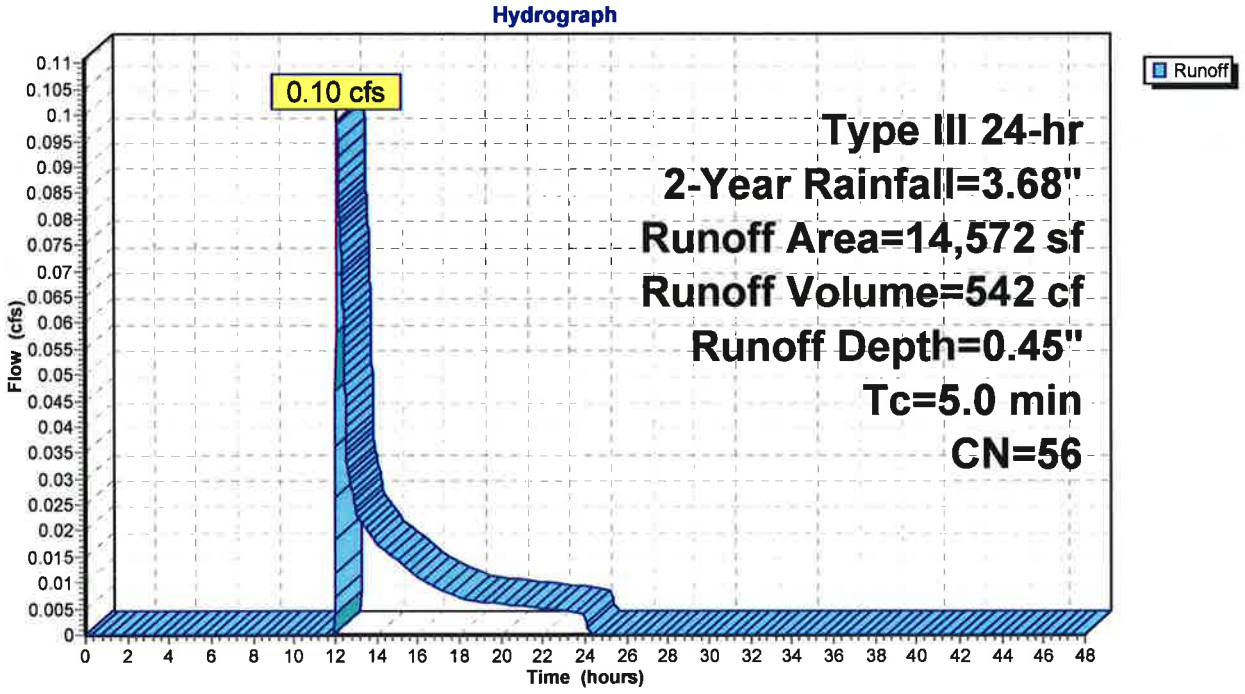
Runoff = 0.10 cfs @ 12.12 hrs, Volume= 542 cf, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
10,463	39	>75% Grass cover, Good, HSG A
4,109	98	Paved parking, HSG A
14,572	56	Weighted Average
10,463		71.80% Pervious Area
4,109		28.20% Impervious Area

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

Subcatchment PS1: PS1



Summary for Subcatchment PS2a: PS2a

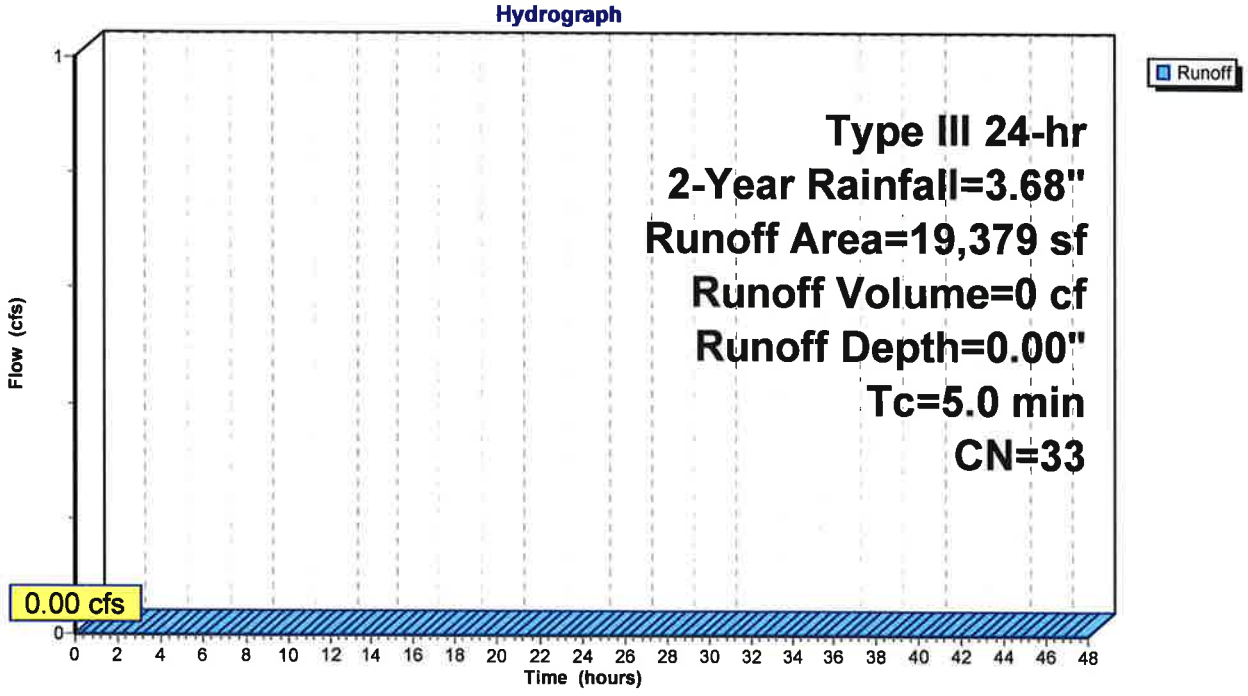
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
13,847	30	Woods, Good, HSG A
5,532	39	>75% Grass cover, Good, HSG A
19,379	33	Weighted Average
19,379		100.00% Pervious Area

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

Subcatchment PS2a: PS2a



Summary for Subcatchment PS2b: PS2b

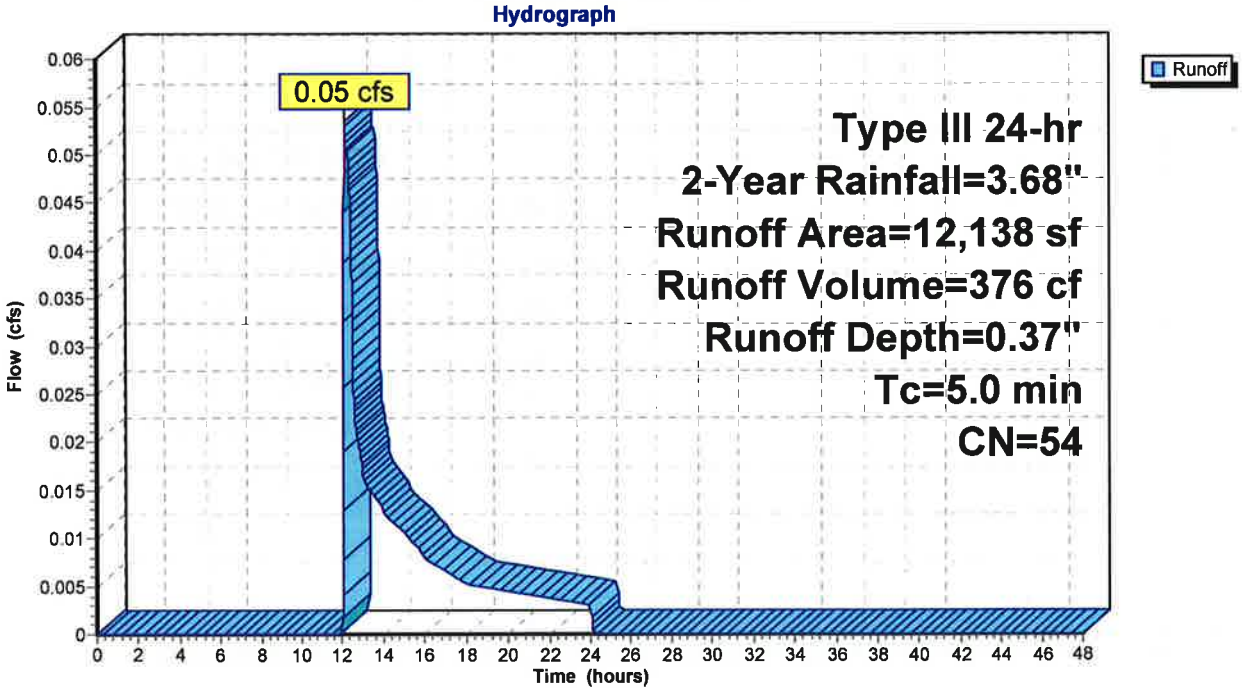
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 376 cf, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
12,138	54	1/2 acre lots, 25% imp, HSG A
9,104		75.00% Pervious Area
3,035		25.00% Impervious Area

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

Subcatchment PS2b: PS2b



Summary for Subcatchment PS3: PS3

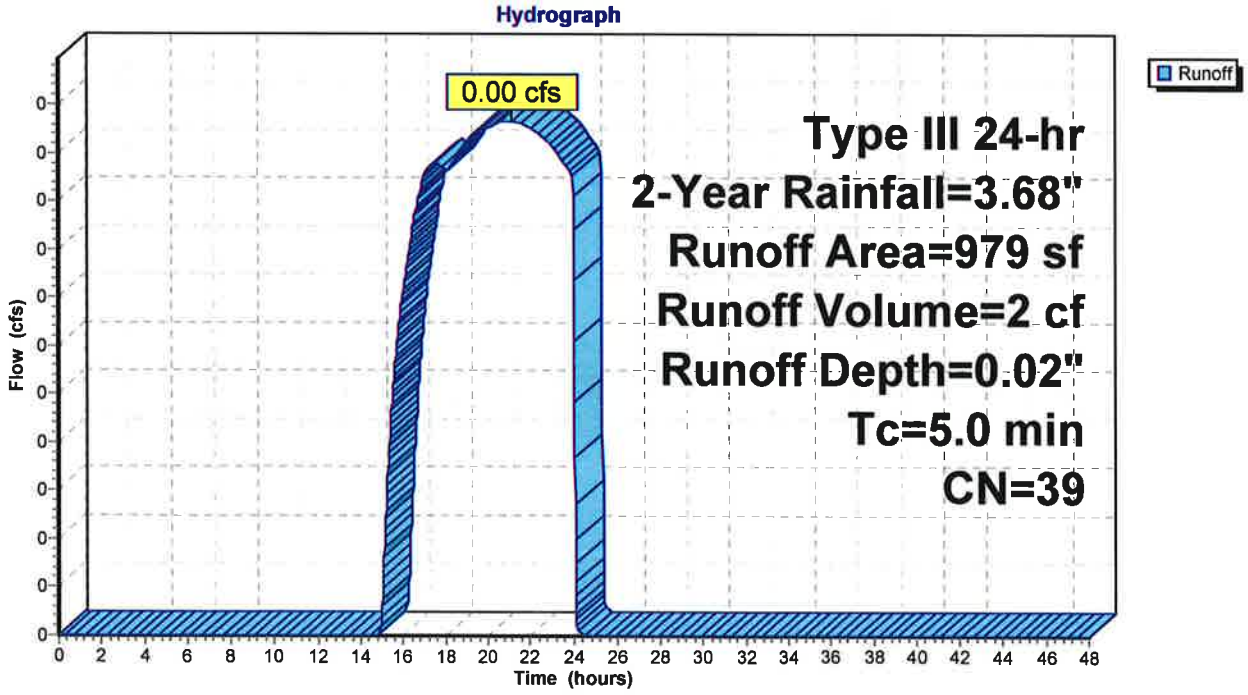
Runoff = 0.00 cfs @ 21.15 hrs, Volume= 2 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
979	39	>75% Grass cover, Good, HSG A
979		100.00% Pervious Area

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

Subcatchment PS3: PS3

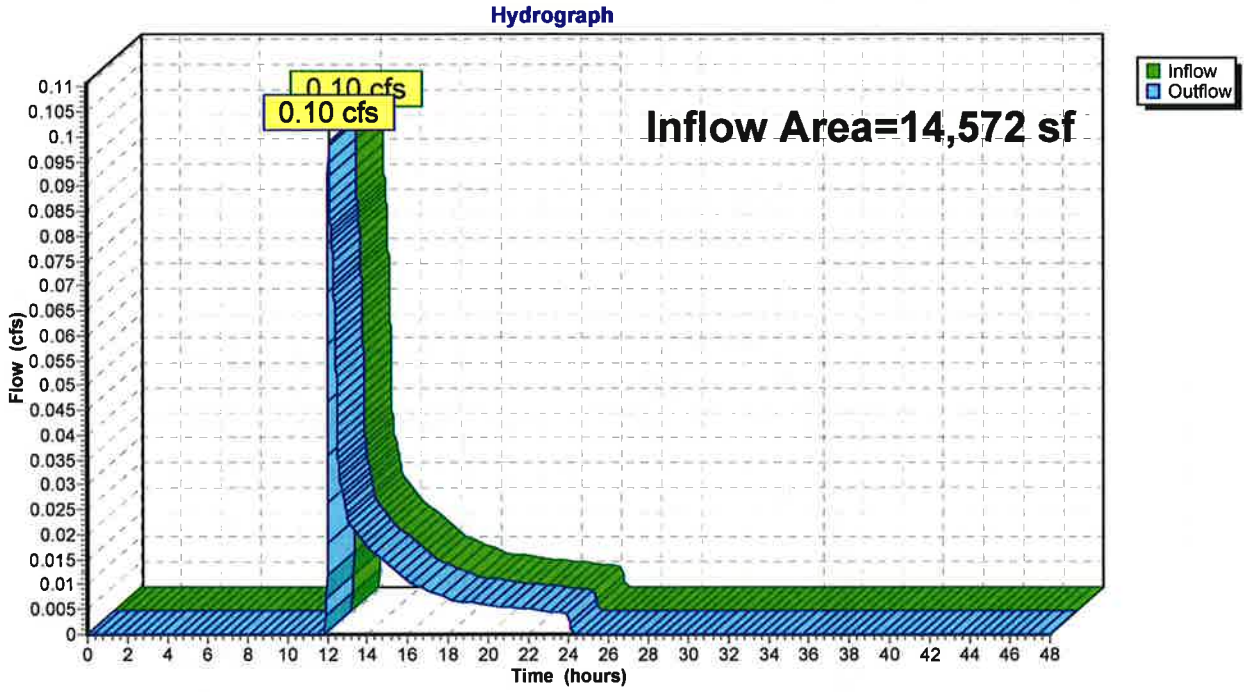


Summary for Reach DP1: DP1

Inflow Area = 14,572 sf, 28.20% Impervious, Inflow Depth = 0.45" for 2-Year event
Inflow = 0.10 cfs @ 12.12 hrs, Volume= 542 cf
Outflow = 0.10 cfs @ 12.12 hrs, Volume= 542 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

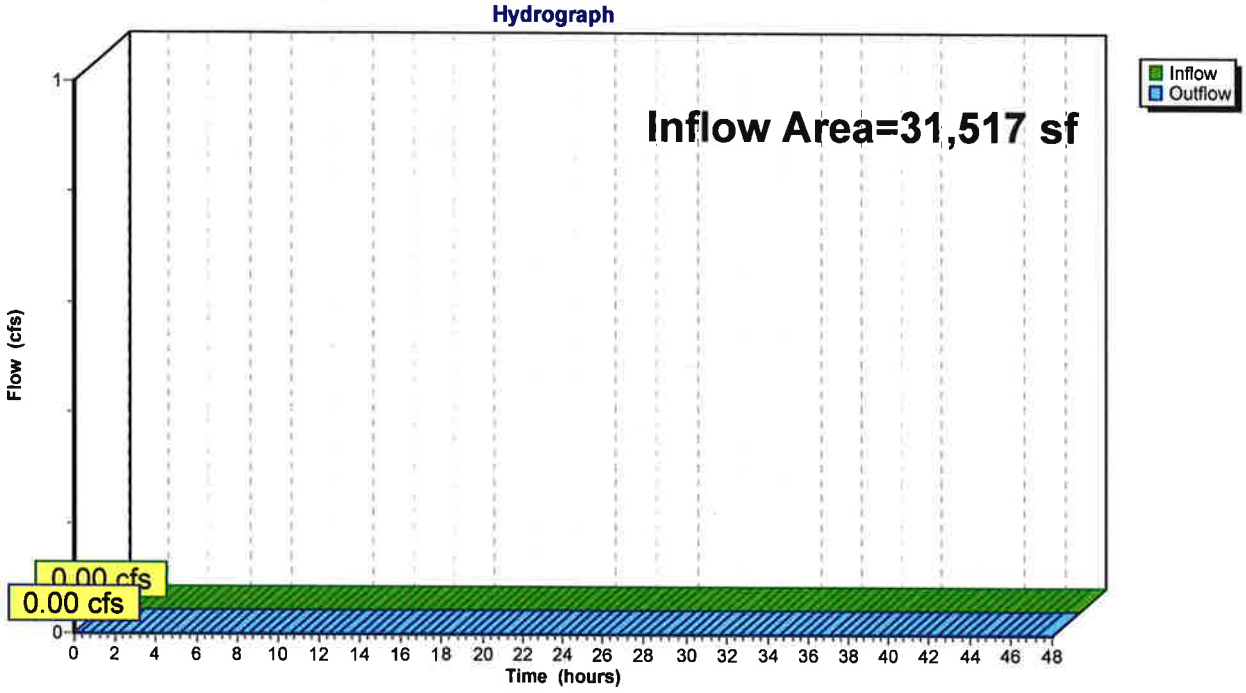


Summary for Reach DP2: DP2

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

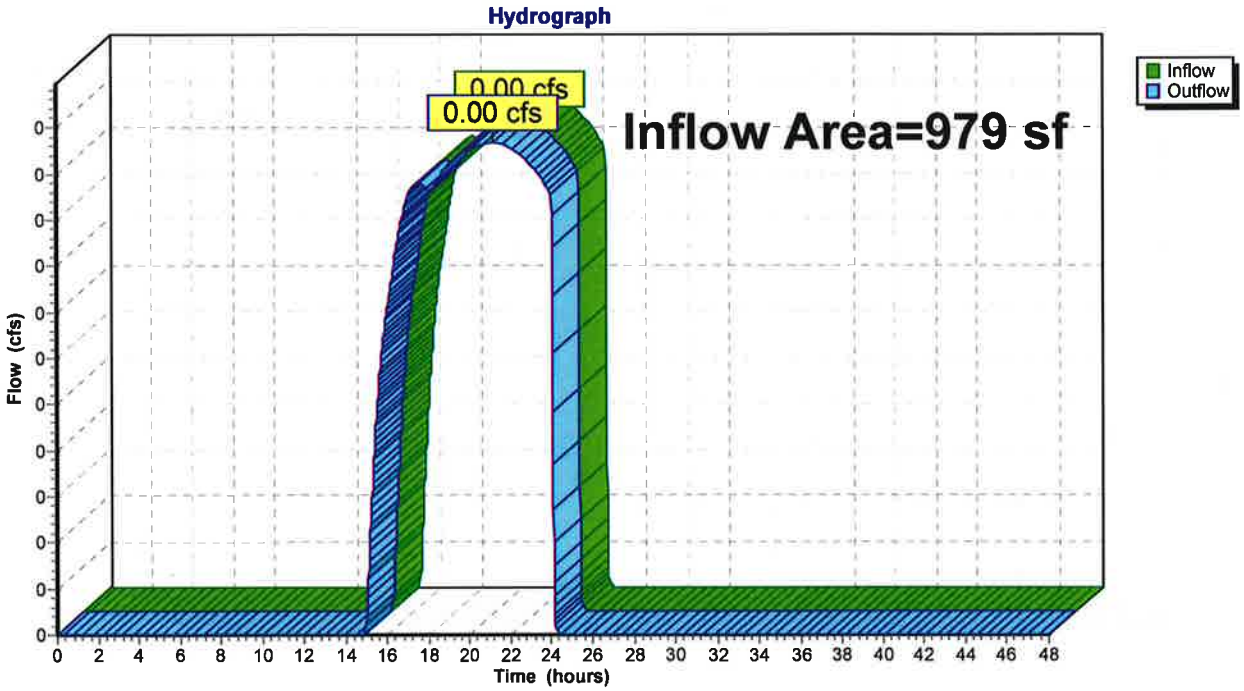


Summary for Reach DP3: DP3

Inflow Area = 979 sf, 0.00% Impervious, Inflow Depth = 0.02" for 2-Year event
Inflow = 0.00 cfs @ 21.15 hrs, Volume= 2 cf
Outflow = 0.00 cfs @ 21.15 hrs, Volume= 2 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



Summary for Pond 1P: Pond 1

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.14" for 2-Year event
Inflow = 0.05 cfs @ 12.13 hrs, Volume= 376 cf
Outflow = 0.05 cfs @ 12.31 hrs, Volume= 376 cf, Atten= 8%, Lag= 10.5 min
Discarded = 0.05 cfs @ 12.31 hrs, Volume= 376 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 62.00' @ 12.31 hrs Surf.Area= 3,234 sf Storage= 11 cf

Plug-Flow detention time= 3.6 min calculated for 376 cf (100% of inflow)
Center-of-Mass det. time= 3.6 min (939.2 - 935.6)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	6,589 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

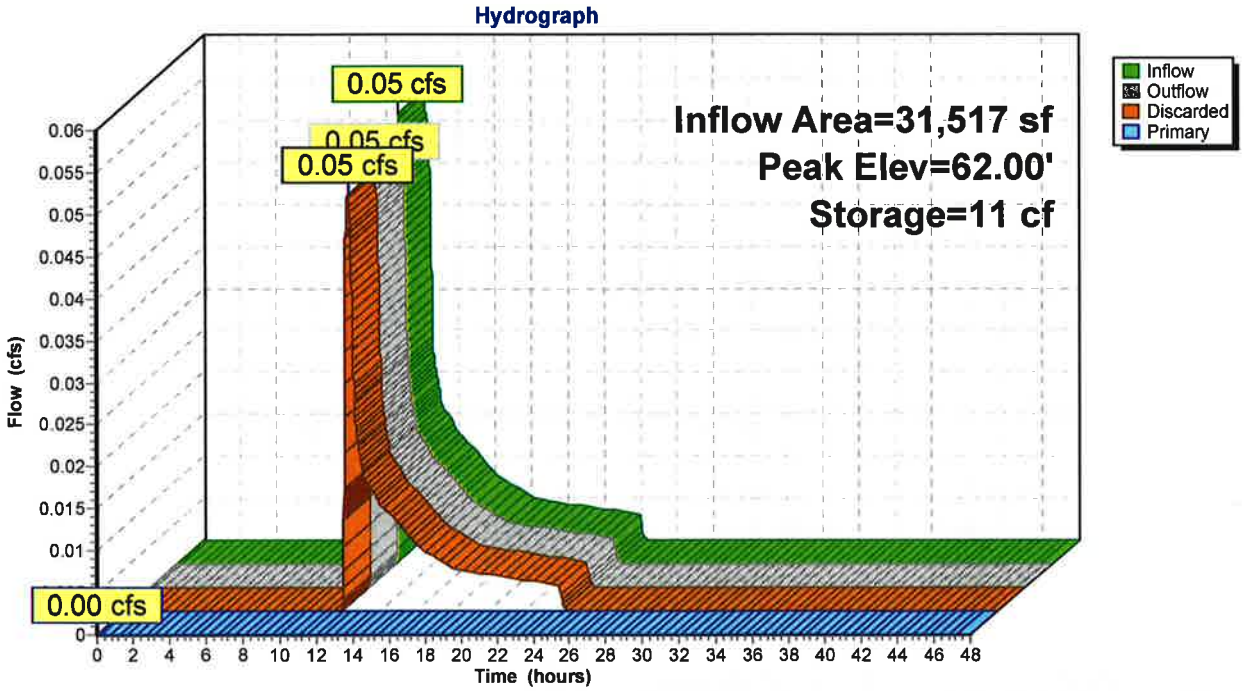
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	3,229	0	0
63.00	4,788	4,009	4,009
63.50	5,532	2,580	6,589

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	62.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.22 cfs @ 12.31 hrs HW=62.00' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



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

Subcatchment PS1: PS1 Runoff Area=14,572 sf 28.20% Impervious Runoff Depth=1.35"
Tc=5.0 min CN=56 Runoff=0.48 cfs 1,644 cf

Subcatchment PS2a: PS2a Runoff Area=19,379 sf 0.00% Impervious Runoff Depth=0.11"
Tc=5.0 min CN=33 Runoff=0.01 cfs 171 cf

Subcatchment PS2b: PS2b Runoff Area=12,138 sf 25.00% Impervious Runoff Depth=1.21"
Tc=5.0 min CN=54 Runoff=0.34 cfs 1,226 cf

Subcatchment PS3: PS3 Runoff Area=979 sf 0.00% Impervious Runoff Depth=0.33"
Tc=5.0 min CN=39 Runoff=0.00 cfs 27 cf

Reach DP1: DP1 Inflow=0.48 cfs 1,644 cf
Outflow=0.48 cfs 1,644 cf

Reach DP2: DP2 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DP3: DP3 Inflow=0.00 cfs 27 cf
Outflow=0.00 cfs 27 cf

Pond 1P: Pond 1 Peak Elev=62.02' Storage=78 cf Inflow=0.34 cfs 1,397 cf
Discarded=0.23 cfs 1,397 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 1,397 cf

Total Runoff Area = 47,068 sf Runoff Volume = 3,069 cf Average Runoff Depth = 0.78"
84.82% Pervious = 39,925 sf 15.18% Impervious = 7,144 sf

Summary for Subcatchment PS1: PS1

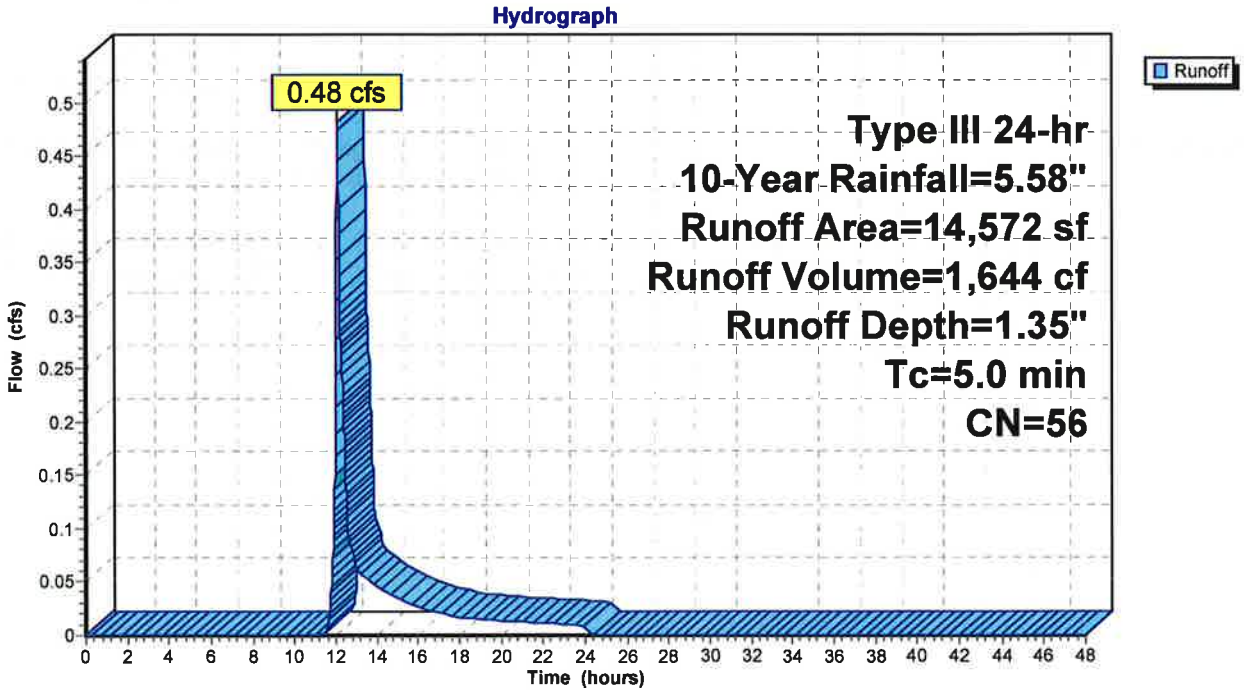
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,644 cf, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
10,463	39	>75% Grass cover, Good, HSG A
4,109	98	Paved parking, HSG A
14,572	56	Weighted Average
10,463		71.80% Pervious Area
4,109		28.20% Impervious Area

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

Subcatchment PS1: PS1



Summary for Subcatchment PS2a: PS2a

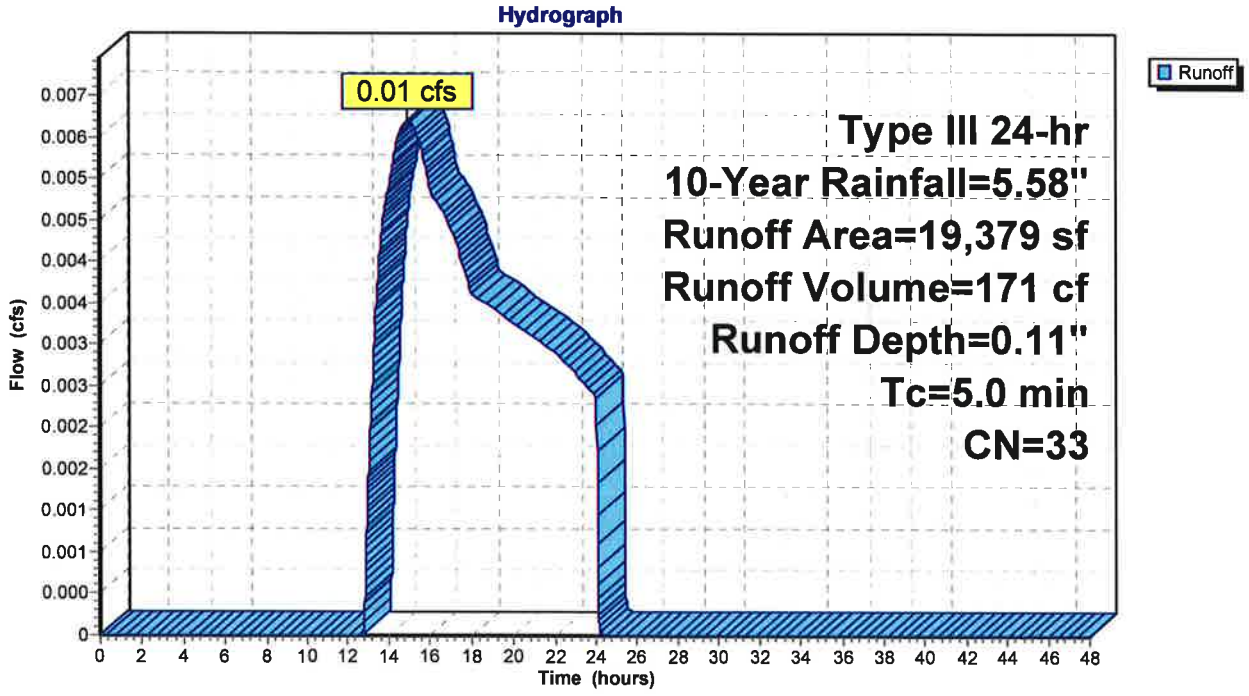
Runoff = 0.01 cfs @ 14.97 hrs, Volume= 171 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
13,847	30	Woods, Good, HSG A
5,532	39	>75% Grass cover, Good, HSG A
19,379	33	Weighted Average
19,379		100.00% Pervious Area

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

Subcatchment PS2a: PS2a



Summary for Subcatchment PS2b: PS2b

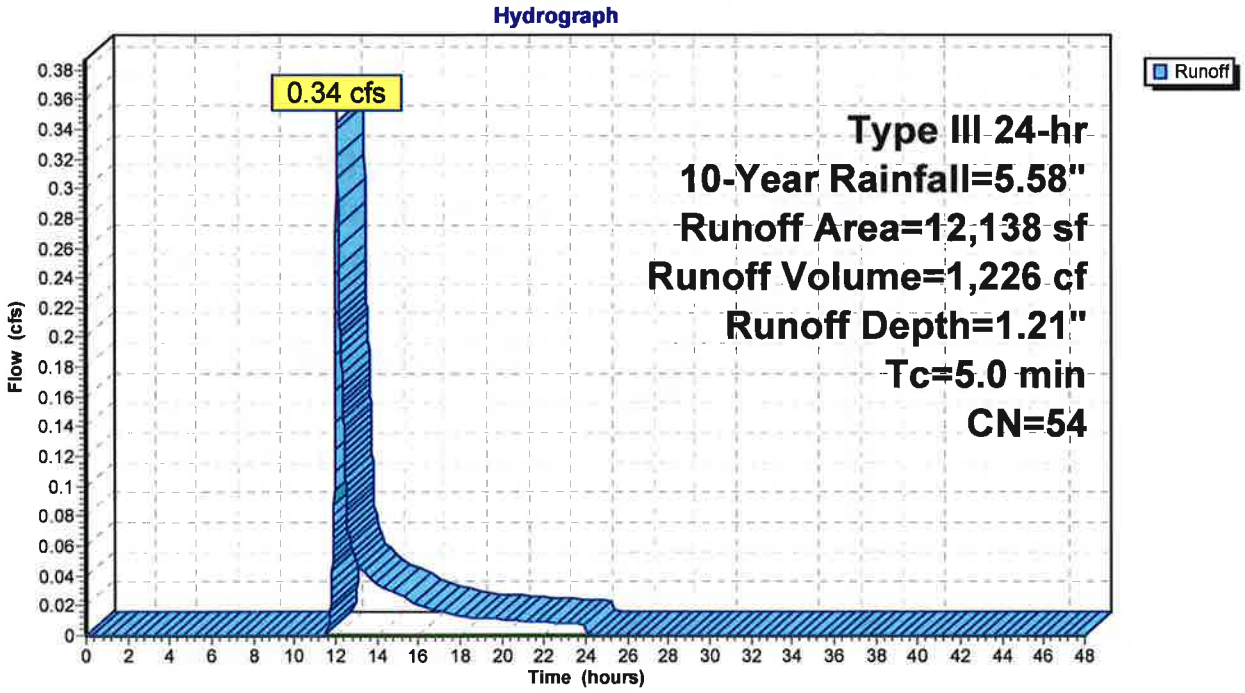
Runoff = 0.34 cfs @ 12.09 hrs, Volume= 1,226 cf, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
12,138	54	1/2 acre lots, 25% imp, HSG A
9,104		75.00% Pervious Area
3,035		25.00% Impervious Area

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

Subcatchment PS2b: PS2b



Summary for Subcatchment PS3: PS3

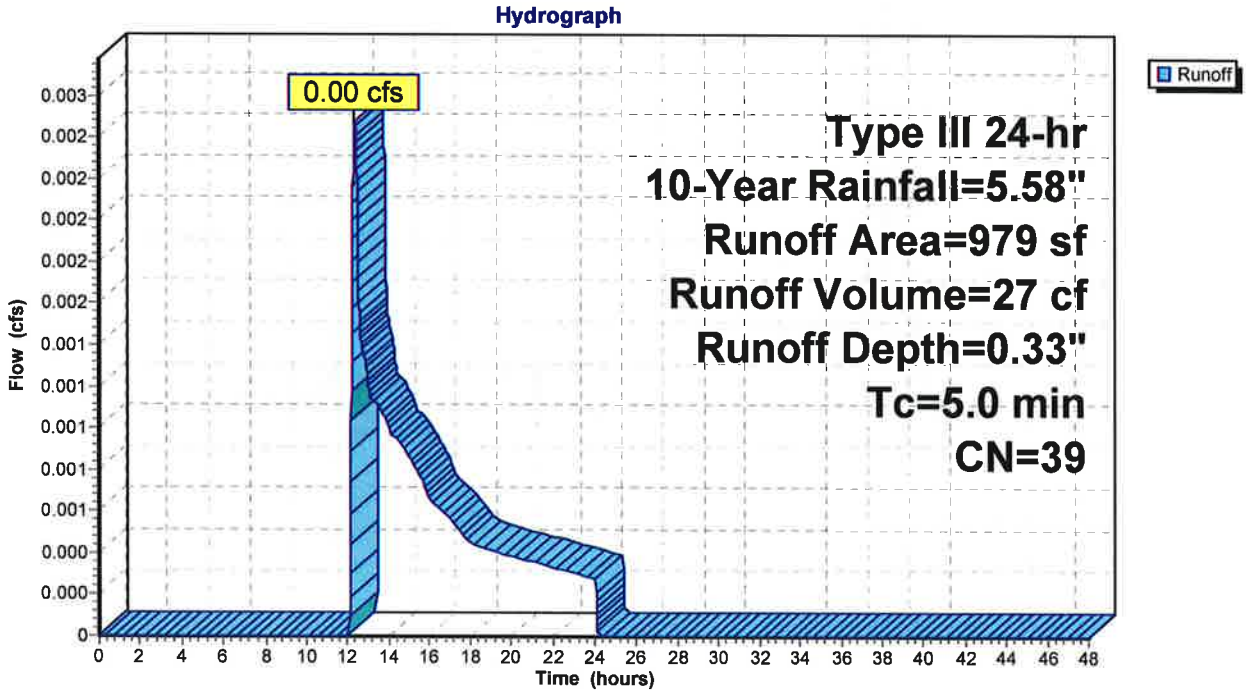
Runoff = 0.00 cfs @ 12.37 hrs, Volume= 27 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
979	39	>75% Grass cover, Good, HSG A
979		100.00% Pervious Area

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

Subcatchment PS3: PS3

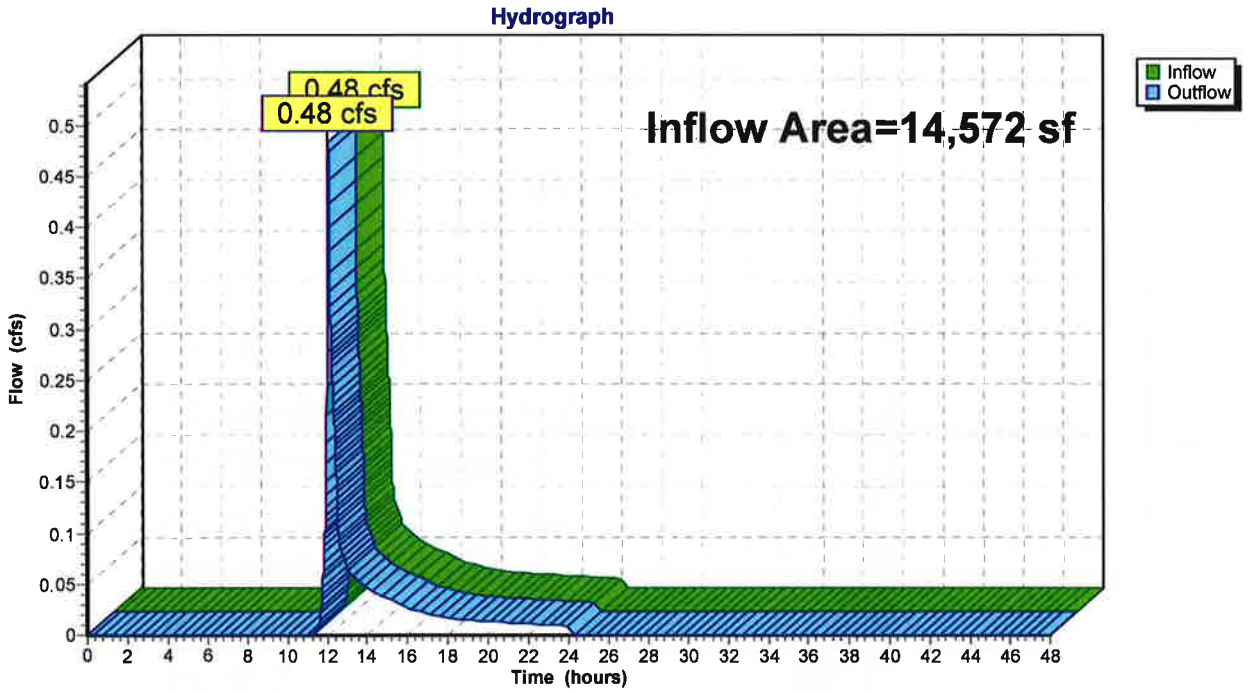


Summary for Reach DP1: DP1

Inflow Area = 14,572 sf, 28.20% Impervious, Inflow Depth = 1.35" for 10-Year event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 1,644 cf
Outflow = 0.48 cfs @ 12.09 hrs, Volume= 1,644 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

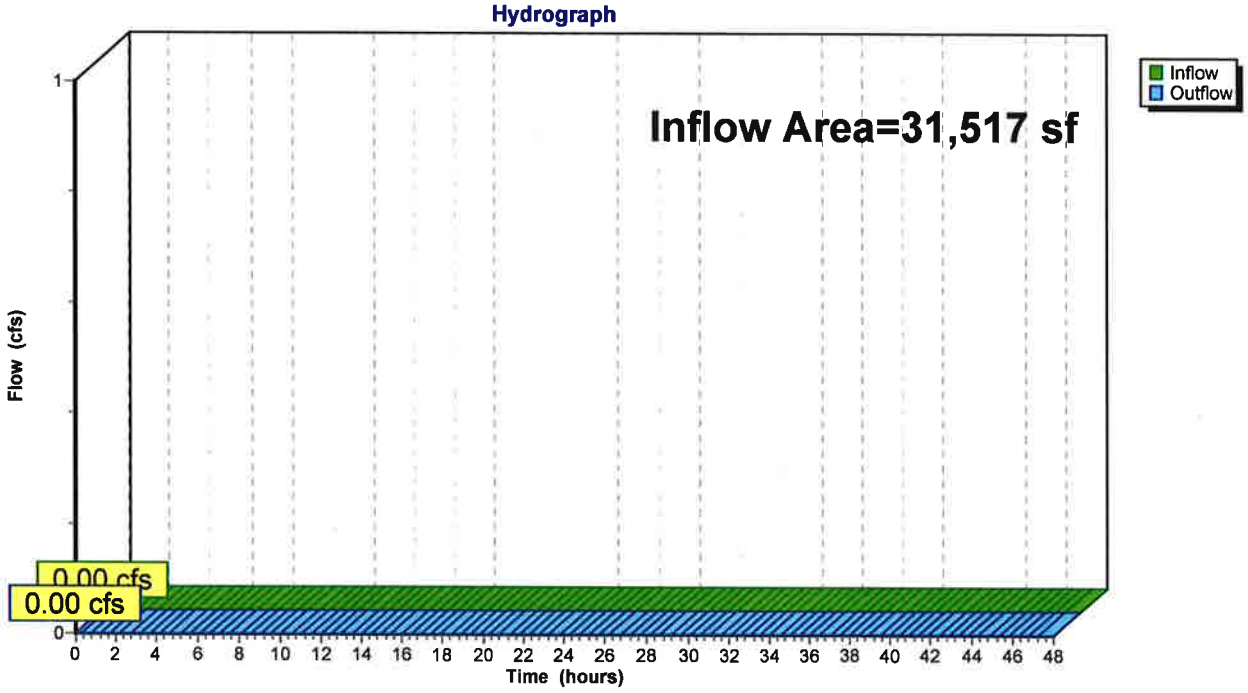


Summary for Reach DP2: DP2

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

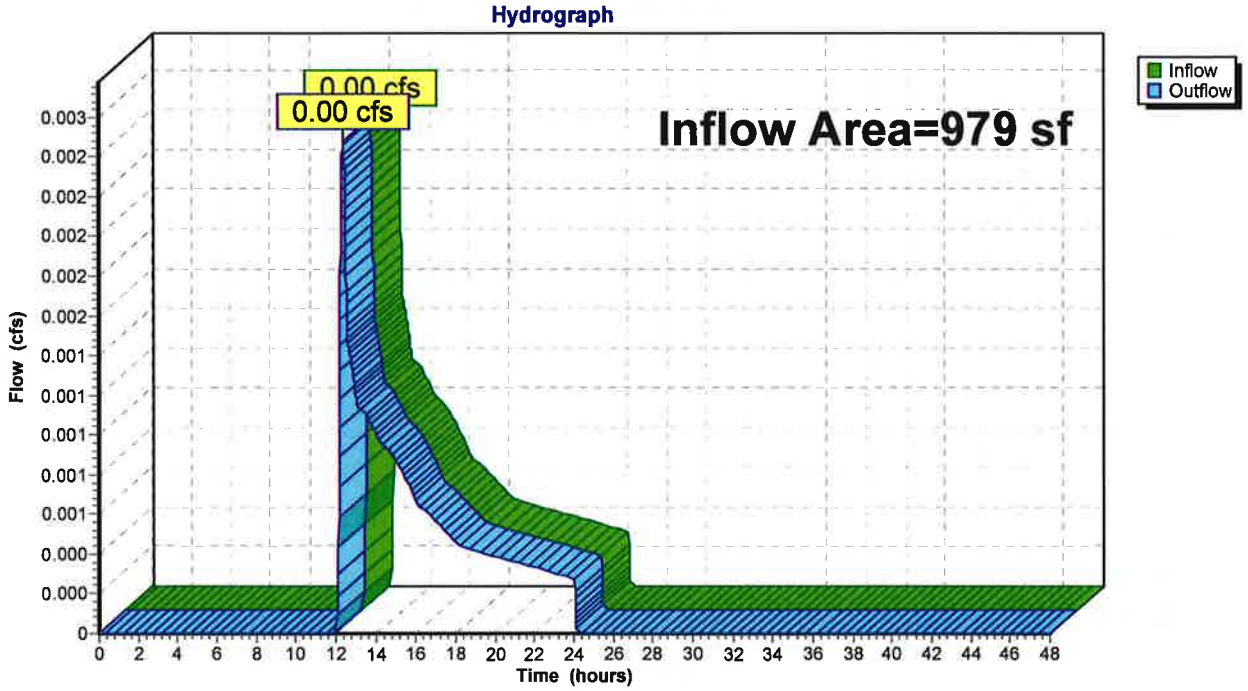


Summary for Reach DP3: DP3

Inflow Area = 979 sf, 0.00% Impervious, Inflow Depth = 0.33" for 10-Year event
Inflow = 0.00 cfs @ 12.37 hrs, Volume= 27 cf
Outflow = 0.00 cfs @ 12.37 hrs, Volume= 27 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



Summary for Pond 1P: Pond 1

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.53" for 10-Year event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 1,397 cf
Outflow = 0.23 cfs @ 12.19 hrs, Volume= 1,397 cf, Atten= 34%, Lag= 6.2 min
Discarded = 0.23 cfs @ 12.19 hrs, Volume= 1,397 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 62.02' @ 12.19 hrs Surf.Area= 3,266 sf Storage= 78 cf

Plug-Flow detention time= 3.8 min calculated for 1,397 cf (100% of inflow)
Center-of-Mass det. time= 3.9 min (912.6 - 908.8)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	6,589 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

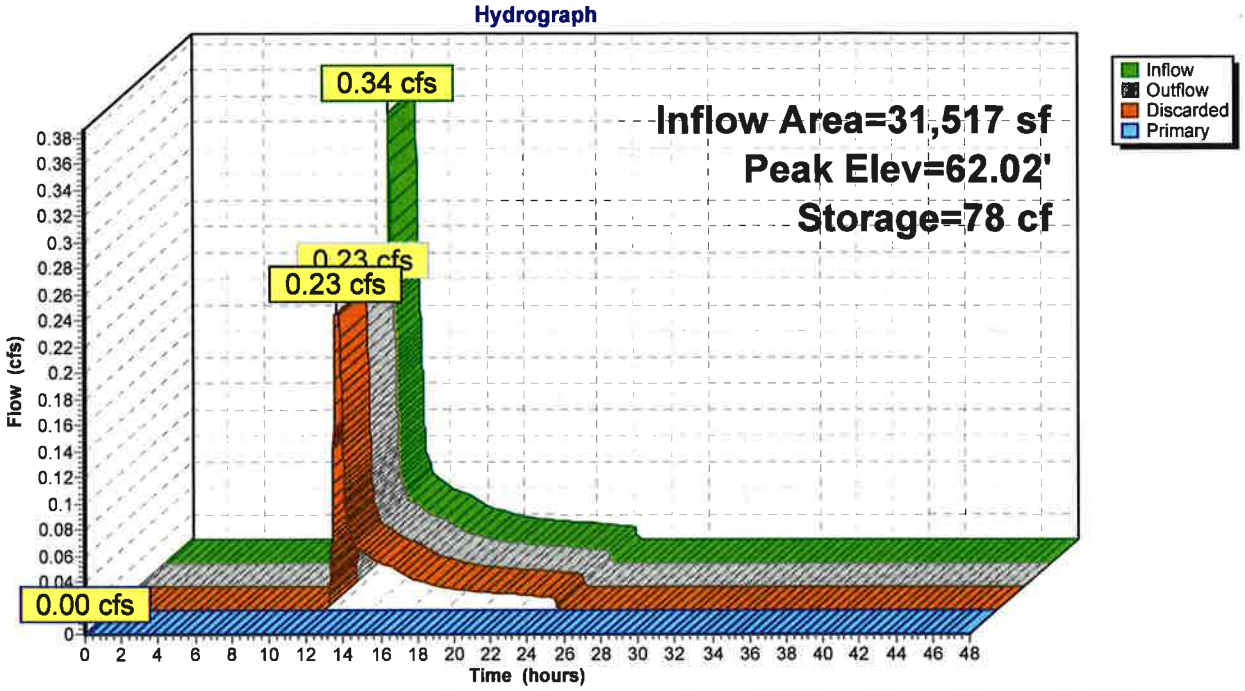
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	3,229	0	0
63.00	4,788	4,009	4,009
63.50	5,532	2,580	6,589

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	62.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 12.19 hrs HW=62.02' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



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

Subcatchment PS1: PS1 Runoff Area=14,572 sf 28.20% Impervious Runoff Depth=2.26"
Tc=5.0 min CN=56 Runoff=0.87 cfs 2,749 cf

Subcatchment PS2a: PS2a Runoff Area=19,379 sf 0.00% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=33 Runoff=0.05 cfs 627 cf

Subcatchment PS2b: PS2b Runoff Area=12,138 sf 25.00% Impervious Runoff Depth=2.07"
Tc=5.0 min CN=54 Runoff=0.65 cfs 2,098 cf

Subcatchment PS3: PS3 Runoff Area=979 sf 0.00% Impervious Runoff Depth=0.79"
Tc=5.0 min CN=39 Runoff=0.01 cfs 65 cf

Reach DP1: DP1 Inflow=0.87 cfs 2,749 cf
Outflow=0.87 cfs 2,749 cf

Reach DP2: DP2 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DP3: DP3 Inflow=0.01 cfs 65 cf
Outflow=0.01 cfs 65 cf

Pond 1P: Pond 1 Peak Elev=62.11' Storage=363 cf Inflow=0.65 cfs 2,725 cf
Discarded=0.24 cfs 2,725 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 2,725 cf

Total Runoff Area = 47,068 sf Runoff Volume = 5,539 cf Average Runoff Depth = 1.41"
84.82% Pervious = 39,925 sf 15.18% Impervious = 7,144 sf

Summary for Subcatchment PS1: PS1

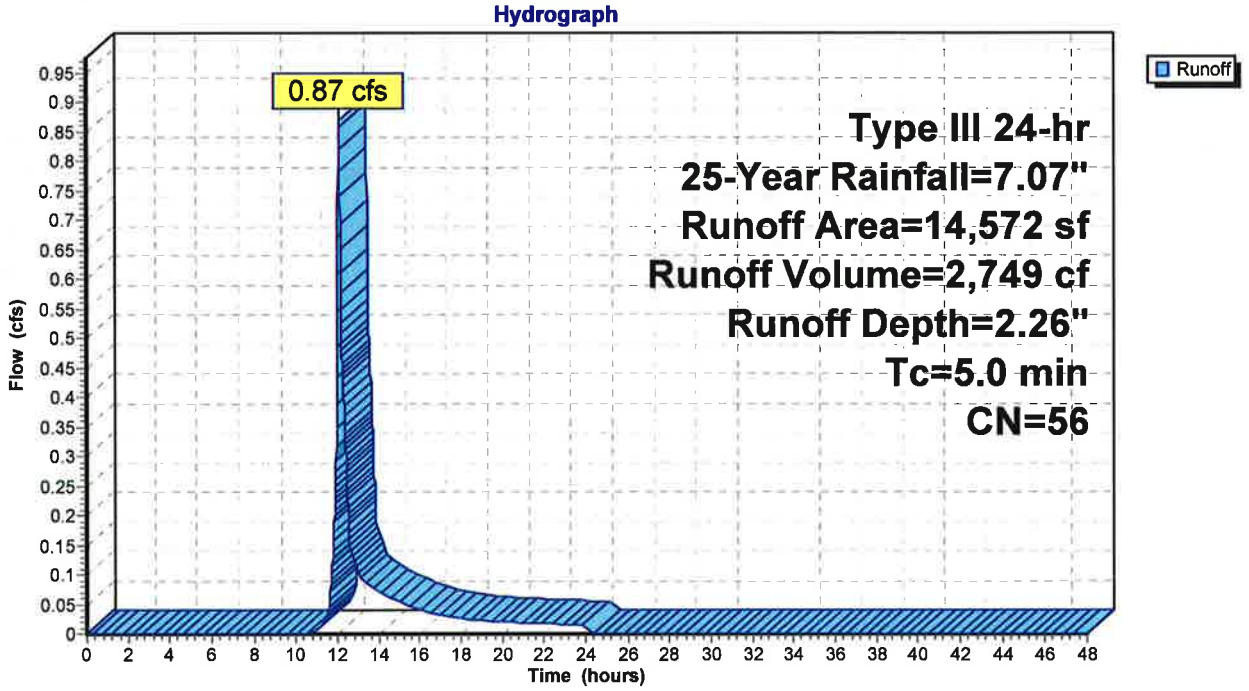
Runoff = 0.87 cfs @ 12.08 hrs, Volume= 2,749 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
10,463	39	>75% Grass cover, Good, HSG A
4,109	98	Paved parking, HSG A
14,572	56	Weighted Average
10,463		71.80% Pervious Area
4,109		28.20% Impervious Area

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

Subcatchment PS1: PS1



Summary for Subcatchment PS2a: PS2a

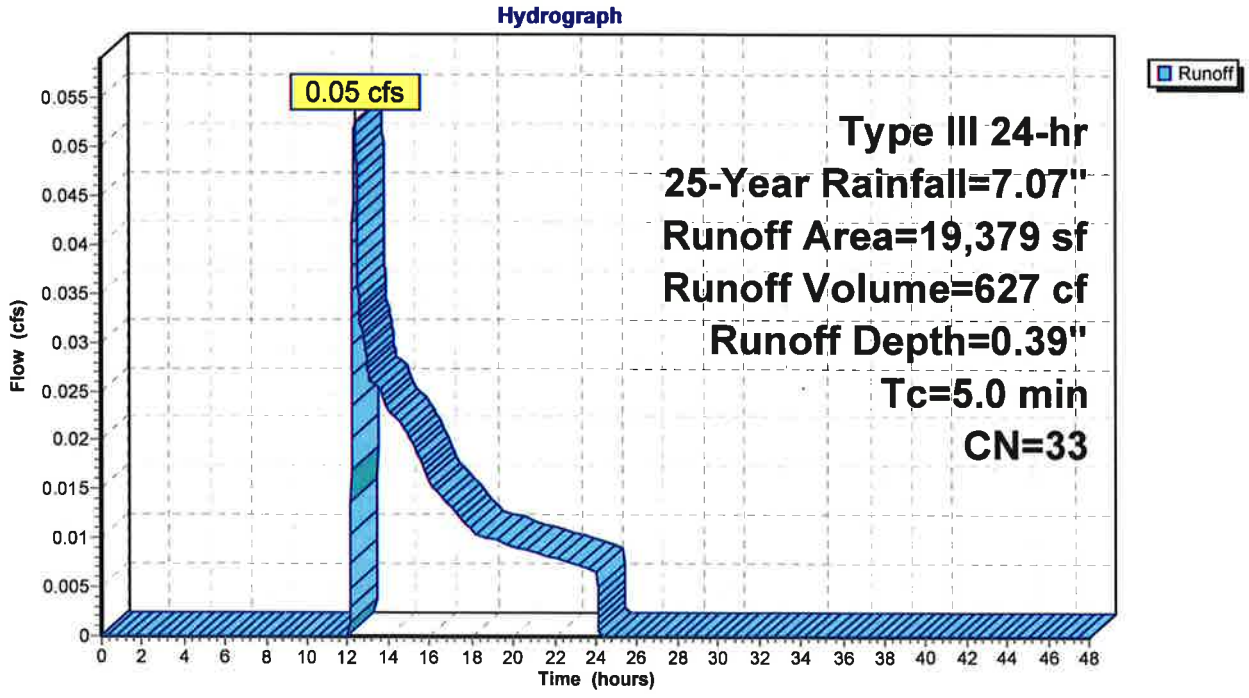
Runoff = 0.05 cfs @ 12.39 hrs, Volume= 627 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
13,847	30	Woods, Good, HSG A
5,532	39	>75% Grass cover, Good, HSG A
19,379	33	Weighted Average
19,379		100.00% Pervious Area

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

Subcatchment PS2a: PS2a



Summary for Subcatchment PS2b: PS2b

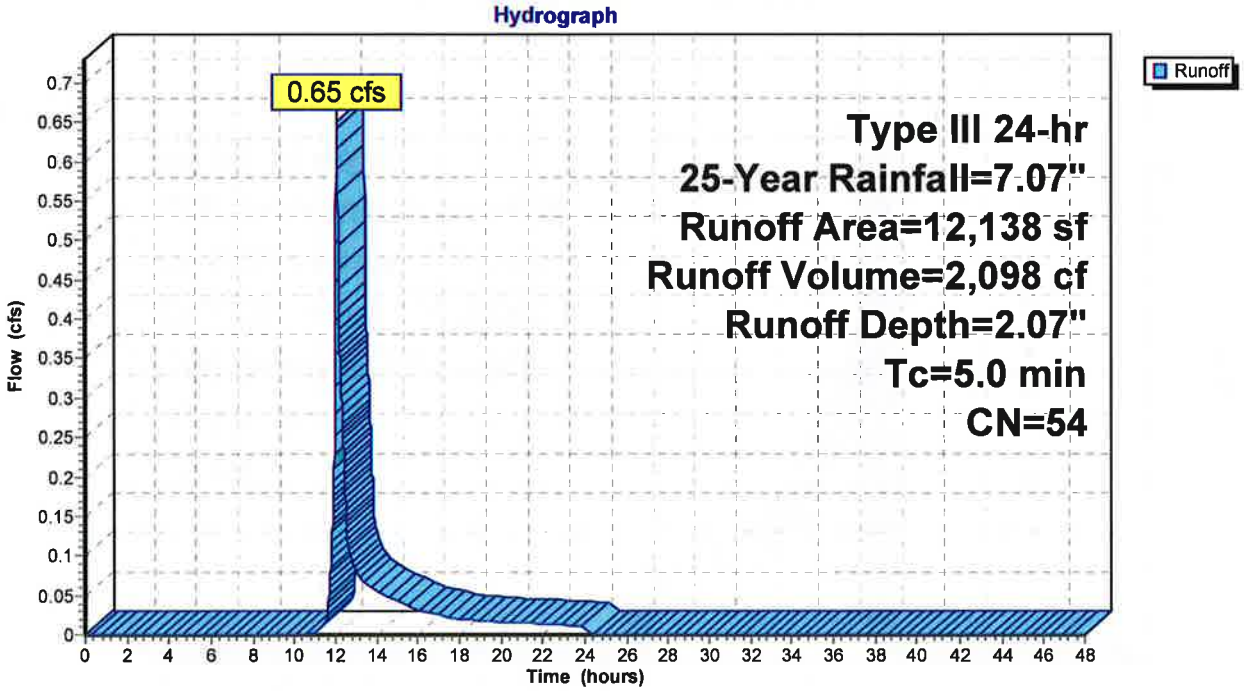
Runoff = 0.65 cfs @ 12.08 hrs, Volume= 2,098 cf, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
12,138	54	1/2 acre lots, 25% imp, HSG A
9,104		75.00% Pervious Area
3,035		25.00% Impervious Area

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

Subcatchment PS2b: PS2b



Summary for Subcatchment PS3: PS3

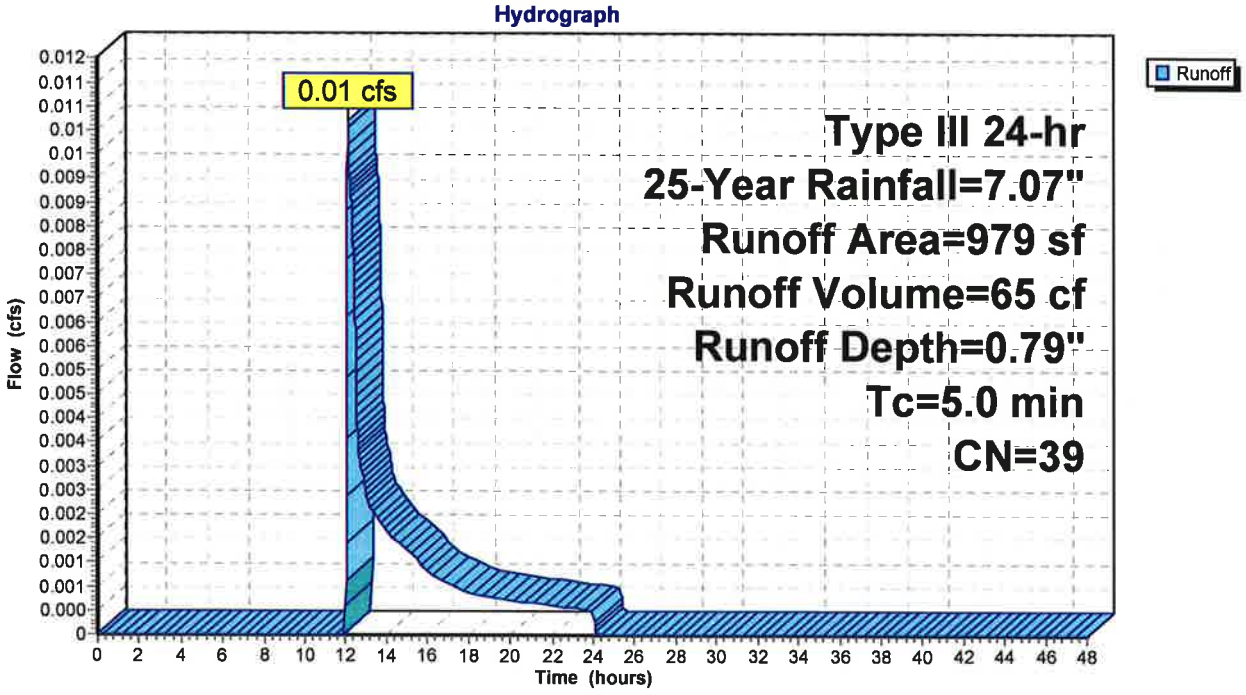
Runoff = 0.01 cfs @ 12.12 hrs, Volume= 65 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
979	39	>75% Grass cover, Good, HSG A
979		100.00% Pervious Area

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

Subcatchment PS3: PS3

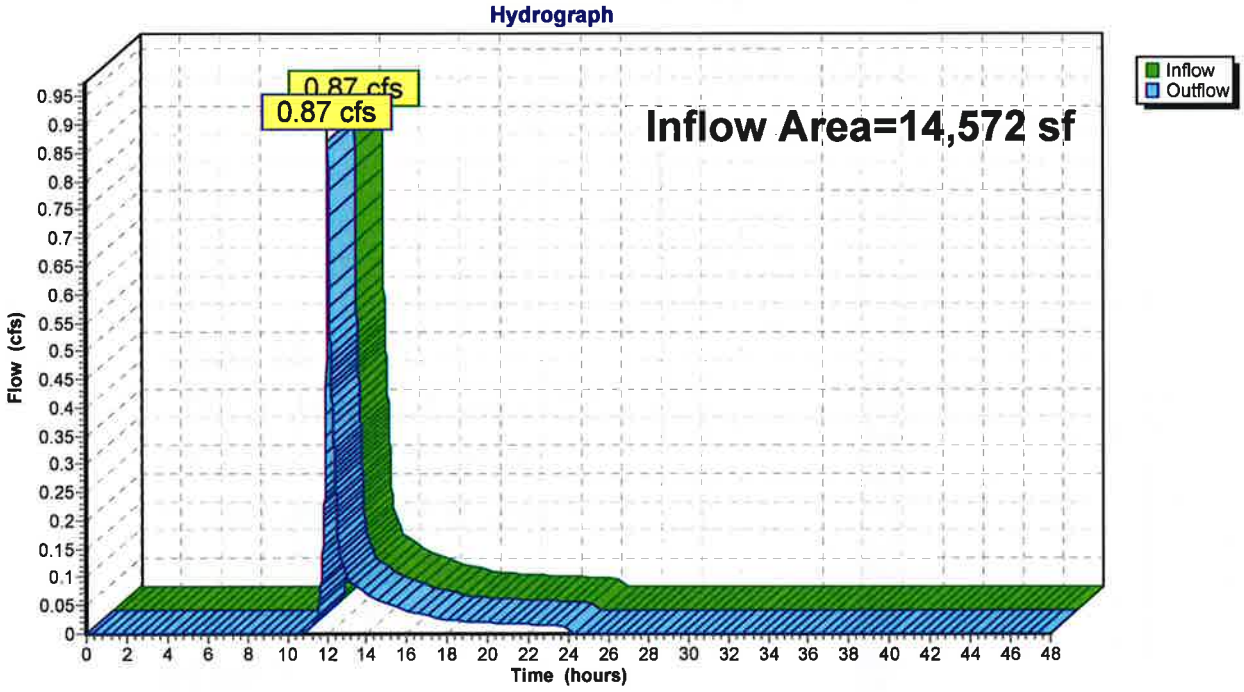


Summary for Reach DP1: DP1

Inflow Area = 14,572 sf, 28.20% Impervious, Inflow Depth = 2.26" for 25-Year event
Inflow = 0.87 cfs @ 12.08 hrs, Volume= 2,749 cf
Outflow = 0.87 cfs @ 12.08 hrs, Volume= 2,749 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

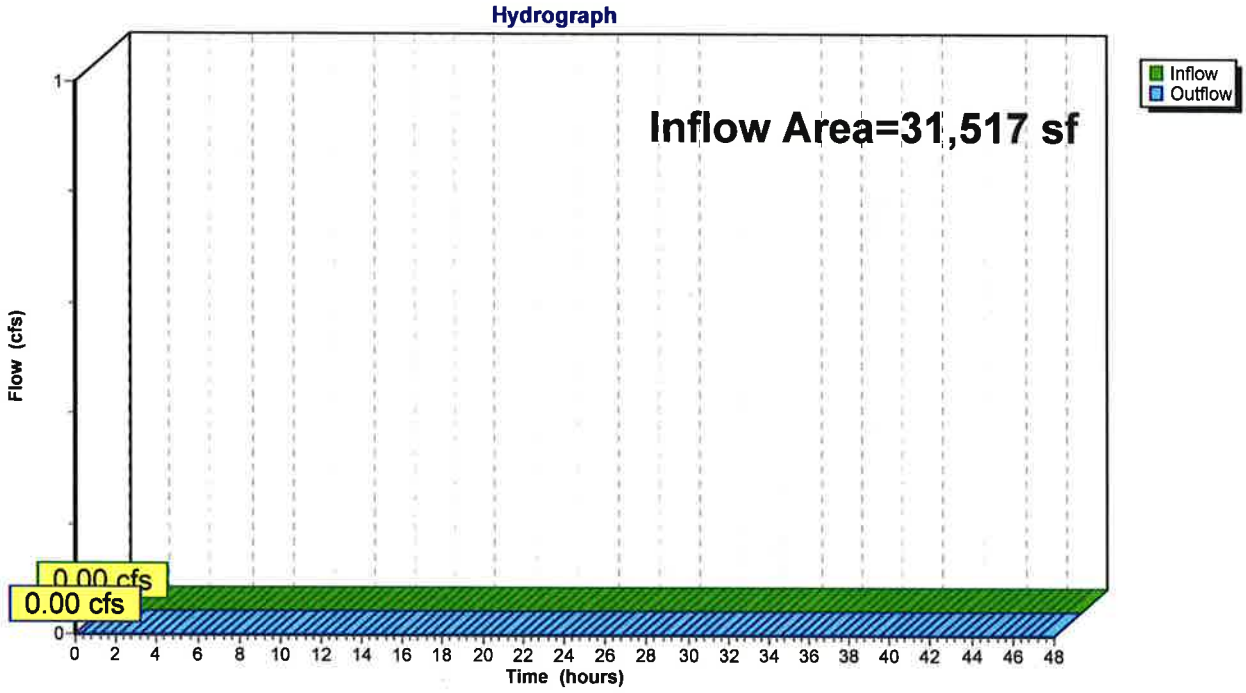


Summary for Reach DP2: DP2

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

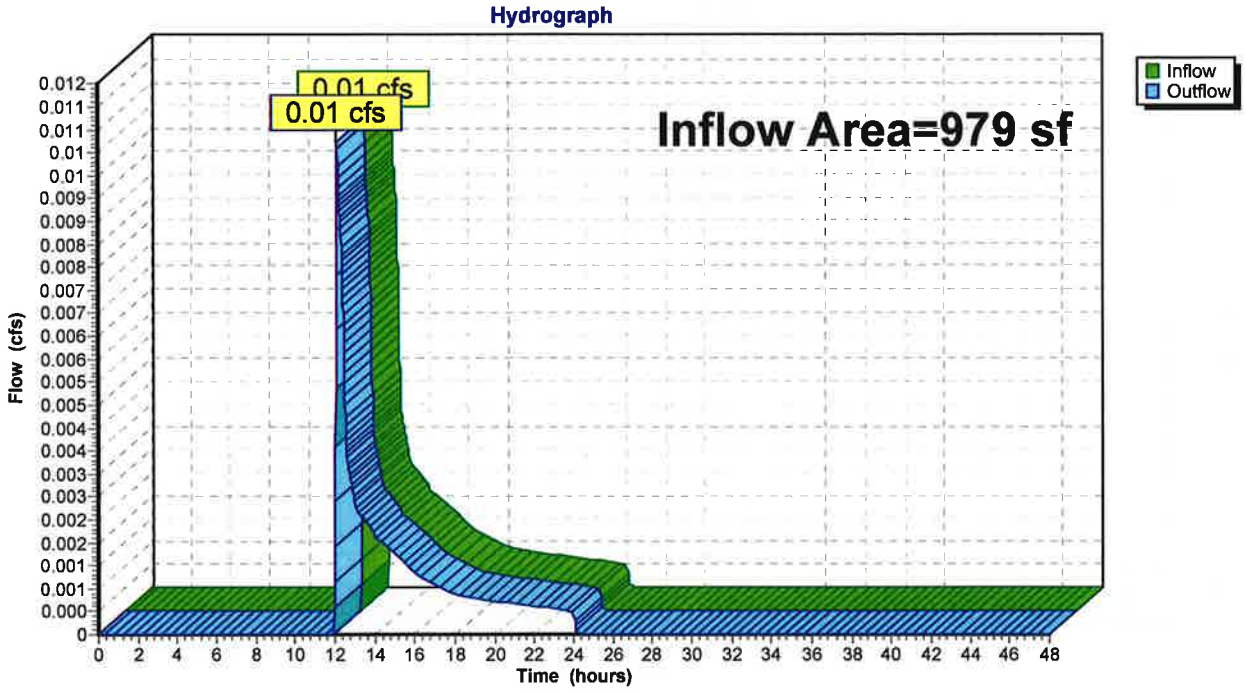


Summary for Reach DP3: DP3

Inflow Area = 979 sf, 0.00% Impervious, Inflow Depth = 0.79" for 25-Year event
Inflow = 0.01 cfs @ 12.12 hrs, Volume= 65 cf
Outflow = 0.01 cfs @ 12.12 hrs, Volume= 65 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



Summary for Pond 1P: Pond 1

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 1.04" for 25-Year event
Inflow = 0.65 cfs @ 12.08 hrs, Volume= 2,725 cf
Outflow = 0.24 cfs @ 12.48 hrs, Volume= 2,725 cf, Atten= 64%, Lag= 23.8 min
Discarded = 0.24 cfs @ 12.48 hrs, Volume= 2,725 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 62.11' @ 12.48 hrs Surf.Area= 3,400 sf Storage= 363 cf

Plug-Flow detention time= 9.0 min calculated for 2,725 cf (100% of inflow)
Center-of-Mass det. time= 9.0 min (902.8 - 893.8)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	6,589 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

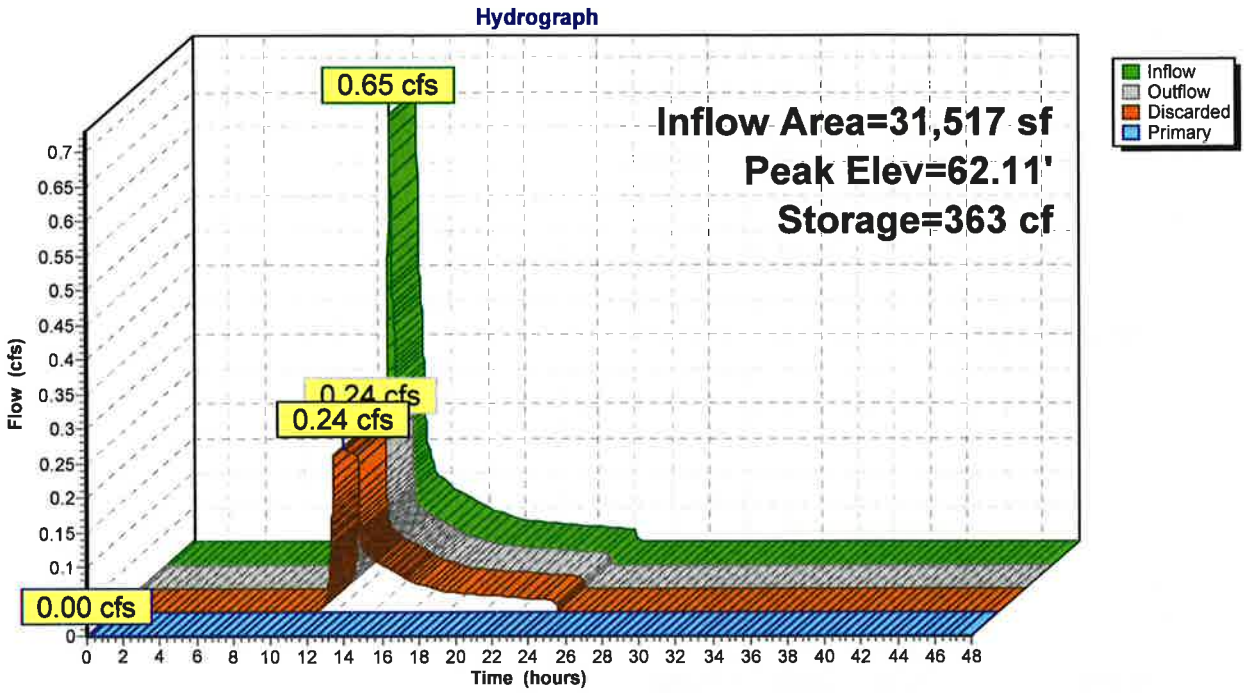
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	3,229	0	0
63.00	4,788	4,009	4,009
63.50	5,532	2,580	6,589

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	62.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.24 cfs @ 12.48 hrs HW=62.11' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



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

Subcatchment PS1: PS1 Runoff Area=14,572 sf 28.20% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=56 Runoff=1.27 cfs 3,908 cf

Subcatchment PS2a: PS2a Runoff Area=19,379 sf 0.00% Impervious Runoff Depth=0.78"
Tc=5.0 min CN=33 Runoff=0.16 cfs 1,265 cf

Subcatchment PS2b: PS2b Runoff Area=12,138 sf 25.00% Impervious Runoff Depth=2.99"
Tc=5.0 min CN=54 Runoff=0.97 cfs 3,023 cf

Subcatchment PS3: PS3 Runoff Area=979 sf 0.00% Impervious Runoff Depth=1.36"
Tc=5.0 min CN=39 Runoff=0.03 cfs 111 cf

Reach DP1: DP1 Inflow=1.27 cfs 3,908 cf
Outflow=1.27 cfs 3,908 cf

Reach DP2: DP2 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DP3: DP3 Inflow=0.03 cfs 111 cf
Outflow=0.03 cfs 111 cf

Pond 1P: Pond 1 Peak Elev=62.26' Storage=896 cf Inflow=1.08 cfs 4,288 cf
Discarded=0.25 cfs 4,288 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 4,288 cf

Total Runoff Area = 47,068 sf Runoff Volume = 8,306 cf Average Runoff Depth = 2.12"
84.82% Pervious = 39,925 sf 15.18% Impervious = 7,144 sf

Summary for Subcatchment PS1: PS1

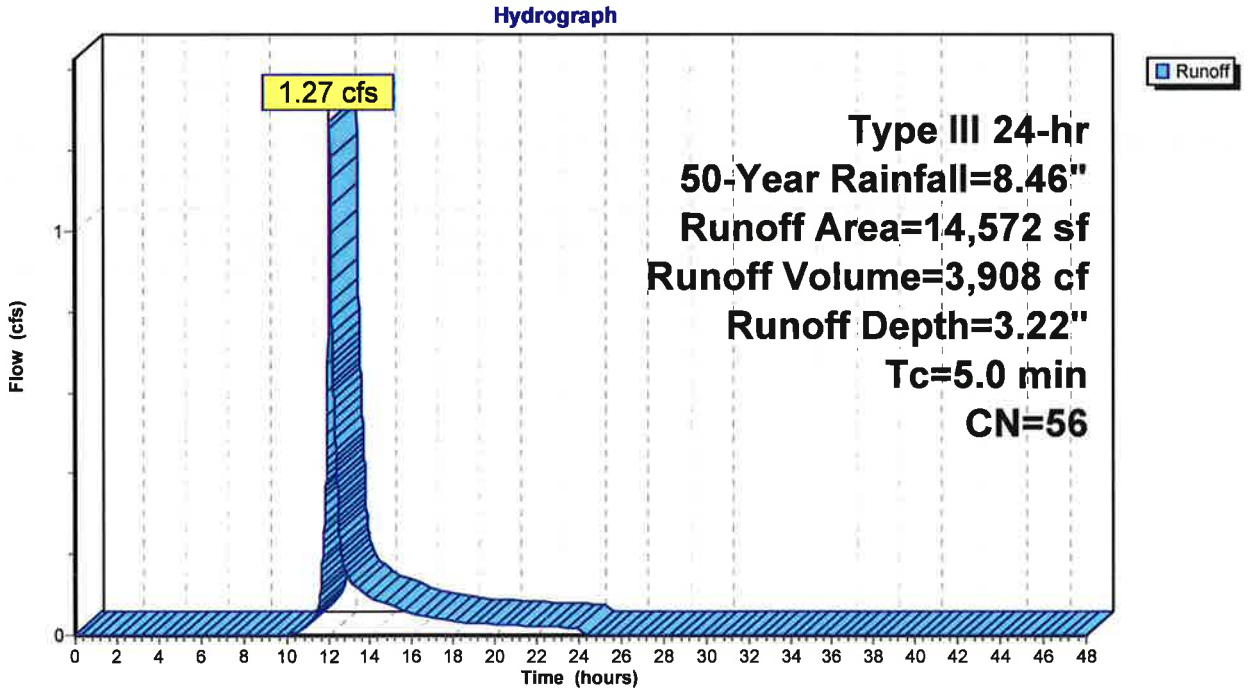
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 3,908 cf, Depth= 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
10,463	39	>75% Grass cover, Good, HSG A
4,109	98	Paved parking, HSG A
14,572	56	Weighted Average
10,463		71.80% Pervious Area
4,109		28.20% Impervious Area

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

Subcatchment PS1: PS1



Summary for Subcatchment PS2a: PS2a

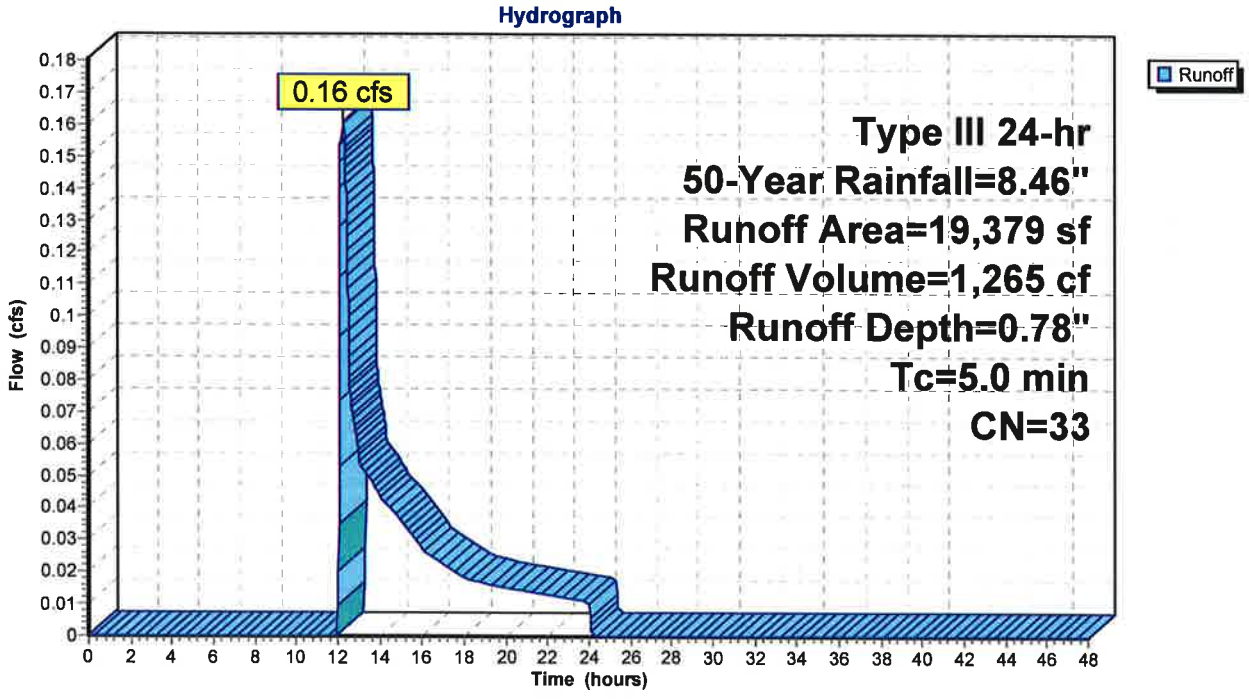
Runoff = 0.16 cfs @ 12.28 hrs, Volume= 1,265 cf, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
13,847	30	Woods, Good, HSG A
5,532	39	>75% Grass cover, Good, HSG A
19,379	33	Weighted Average
19,379		100.00% Pervious Area

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

Subcatchment PS2a: PS2a



Summary for Subcatchment PS2b: PS2b

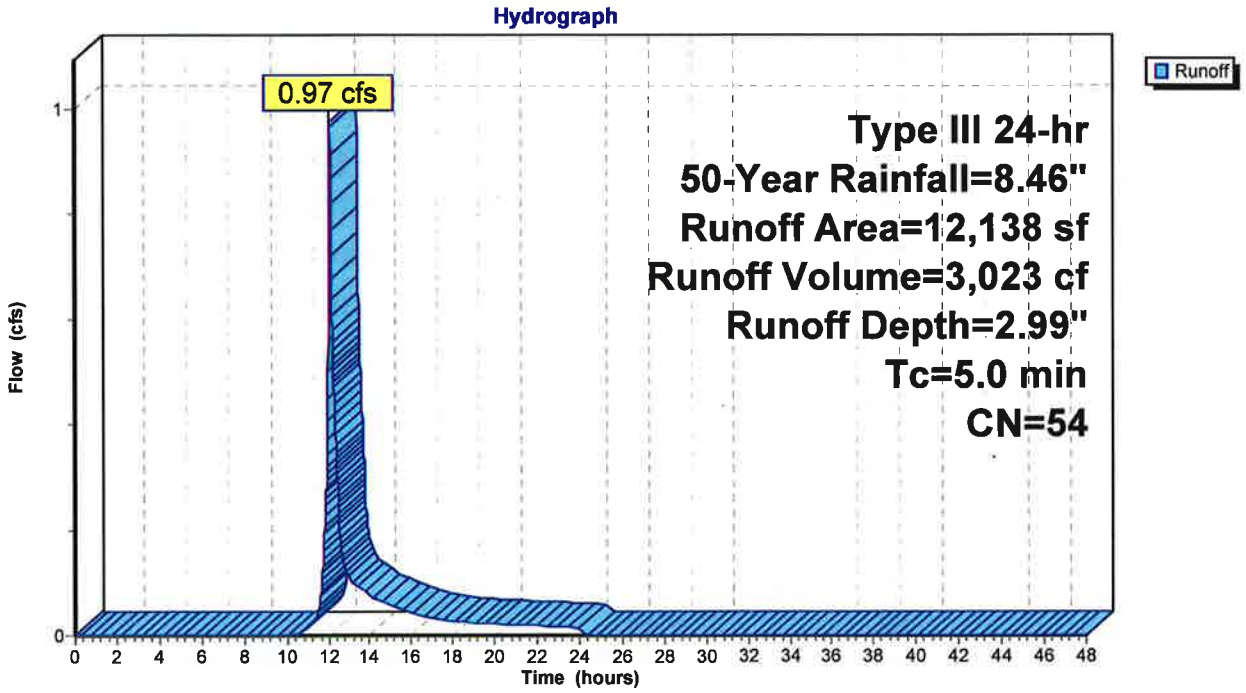
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,023 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
12,138	54	1/2 acre lots, 25% imp, HSG A
9,104		75.00% Pervious Area
3,035		25.00% Impervious Area

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

Subcatchment PS2b: PS2b



Summary for Subcatchment PS3: PS3

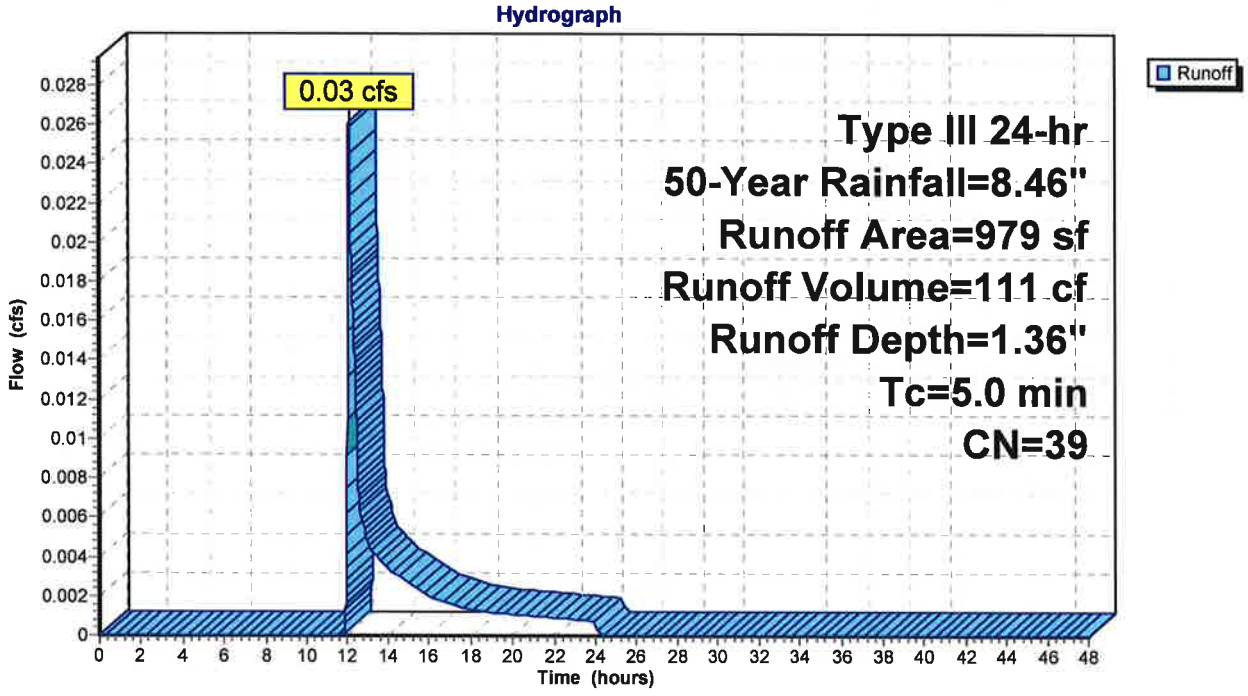
Runoff = 0.03 cfs @ 12.10 hrs, Volume= 111 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
979	39	>75% Grass cover, Good, HSG A
979		100.00% Pervious Area

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

Subcatchment PS3: PS3

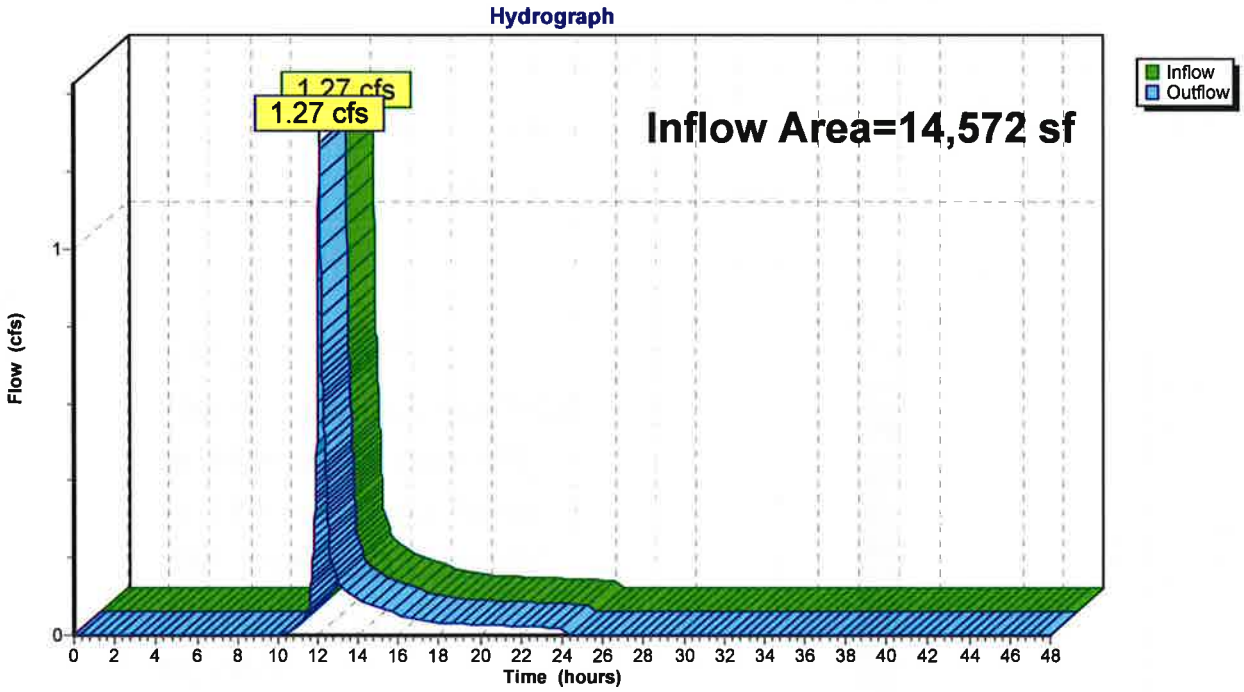


Summary for Reach DP1: DP1

Inflow Area = 14,572 sf, 28.20% Impervious, Inflow Depth = 3.22" for 50-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 3,908 cf
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 3,908 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP1: DP1

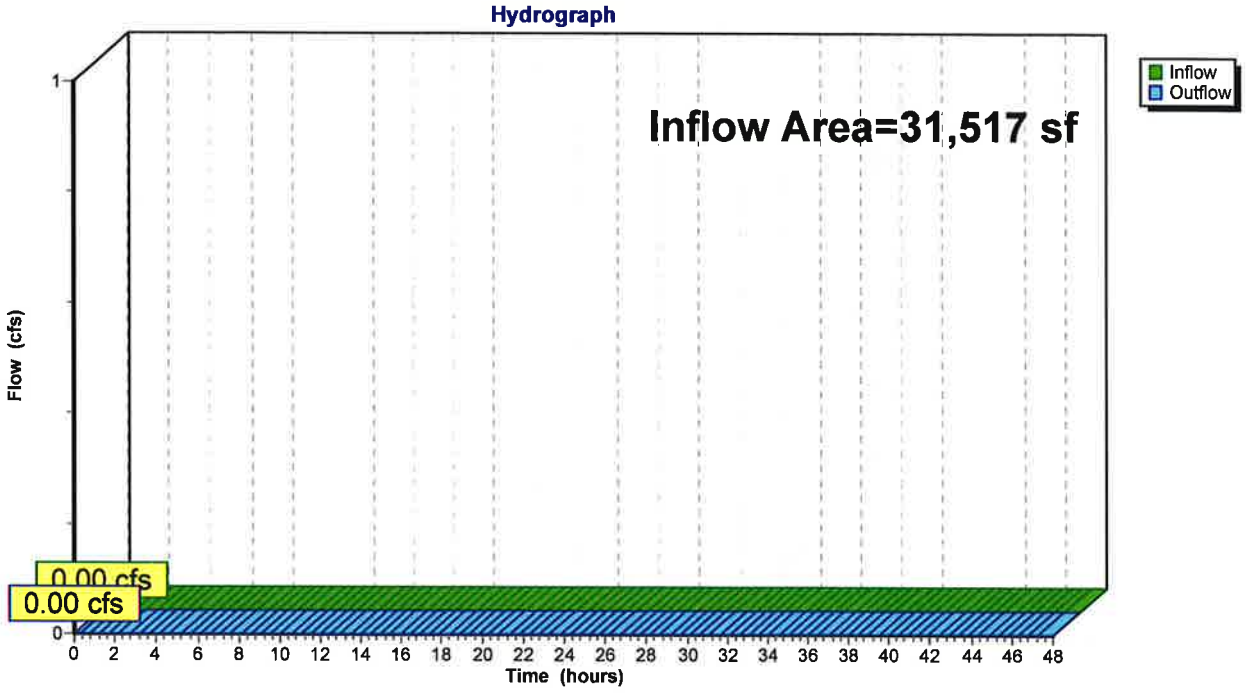


Summary for Reach DP2: DP2

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 0.00" for 50-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP2: DP2

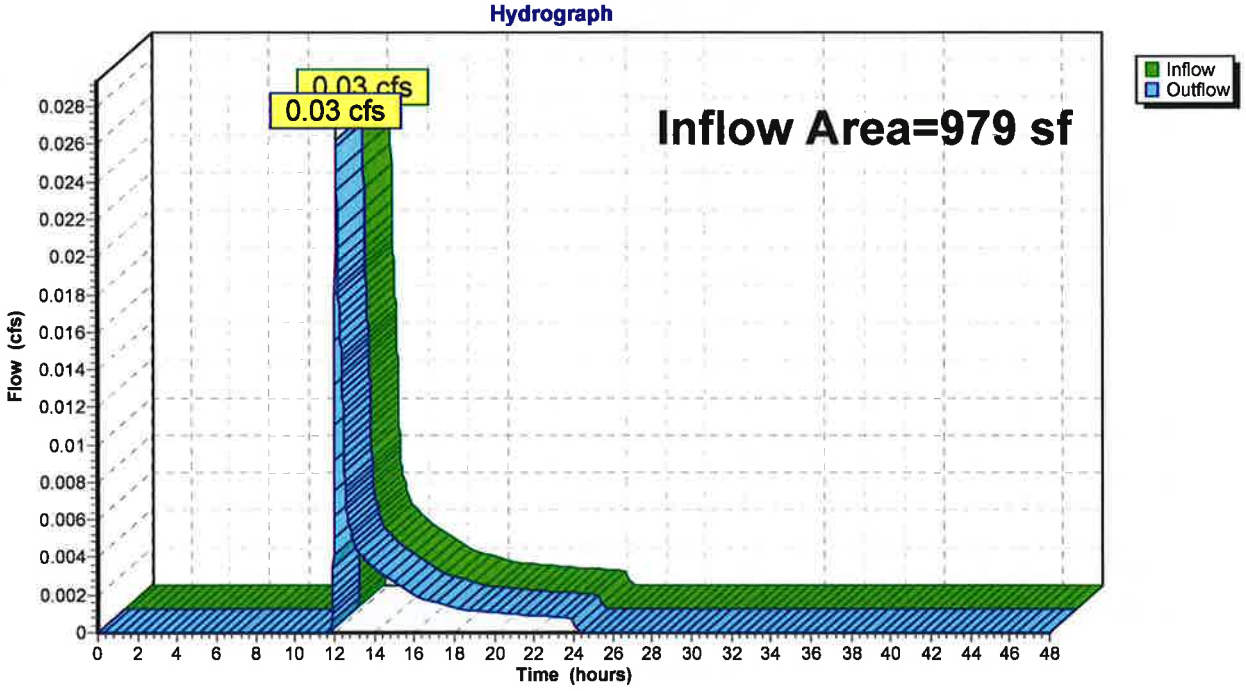


Summary for Reach DP3: DP3

Inflow Area = 979 sf, 0.00% Impervious, Inflow Depth = 1.36" for 50-Year event
Inflow = 0.03 cfs @ 12.10 hrs, Volume= 111 cf
Outflow = 0.03 cfs @ 12.10 hrs, Volume= 111 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP3: DP3



Summary for Pond 1P: Pond 1

Inflow Area = 31,517 sf, 9.63% Impervious, Inflow Depth = 1.63" for 50-Year event
Inflow = 1.08 cfs @ 12.09 hrs, Volume= 4,288 cf
Outflow = 0.25 cfs @ 12.57 hrs, Volume= 4,288 cf, Atten= 77%, Lag= 29.0 min
Discarded = 0.25 cfs @ 12.57 hrs, Volume= 4,288 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 62.26' @ 12.57 hrs Surf.Area= 3,636 sf Storage= 896 cf

Plug-Flow detention time= 23.6 min calculated for 4,287 cf (100% of inflow)
Center-of-Mass det. time= 23.6 min (904.9 - 881.3)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	6,589 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

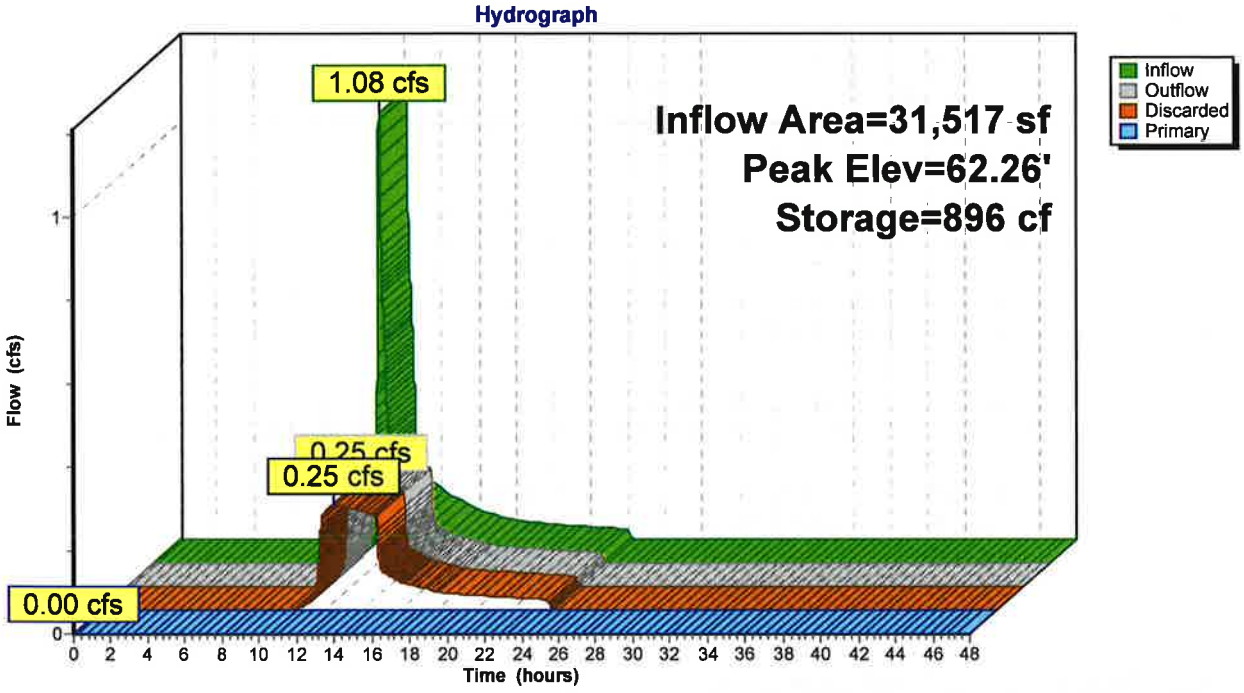
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	3,229	0	0
63.00	4,788	4,009	4,009
63.50	5,532	2,580	6,589

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Discarded	62.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.25 cfs @ 12.57 hrs HW=62.26' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.00' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Pond 1



APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

January 6, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,440 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 35, 70, 140, 210

Feet: 0, 100, 200, 400, 600

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil 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 21, Sep 16, 2019

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—Sep 9, 2017

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	13.3	100.0%
Totals for Area of Interest		**13.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

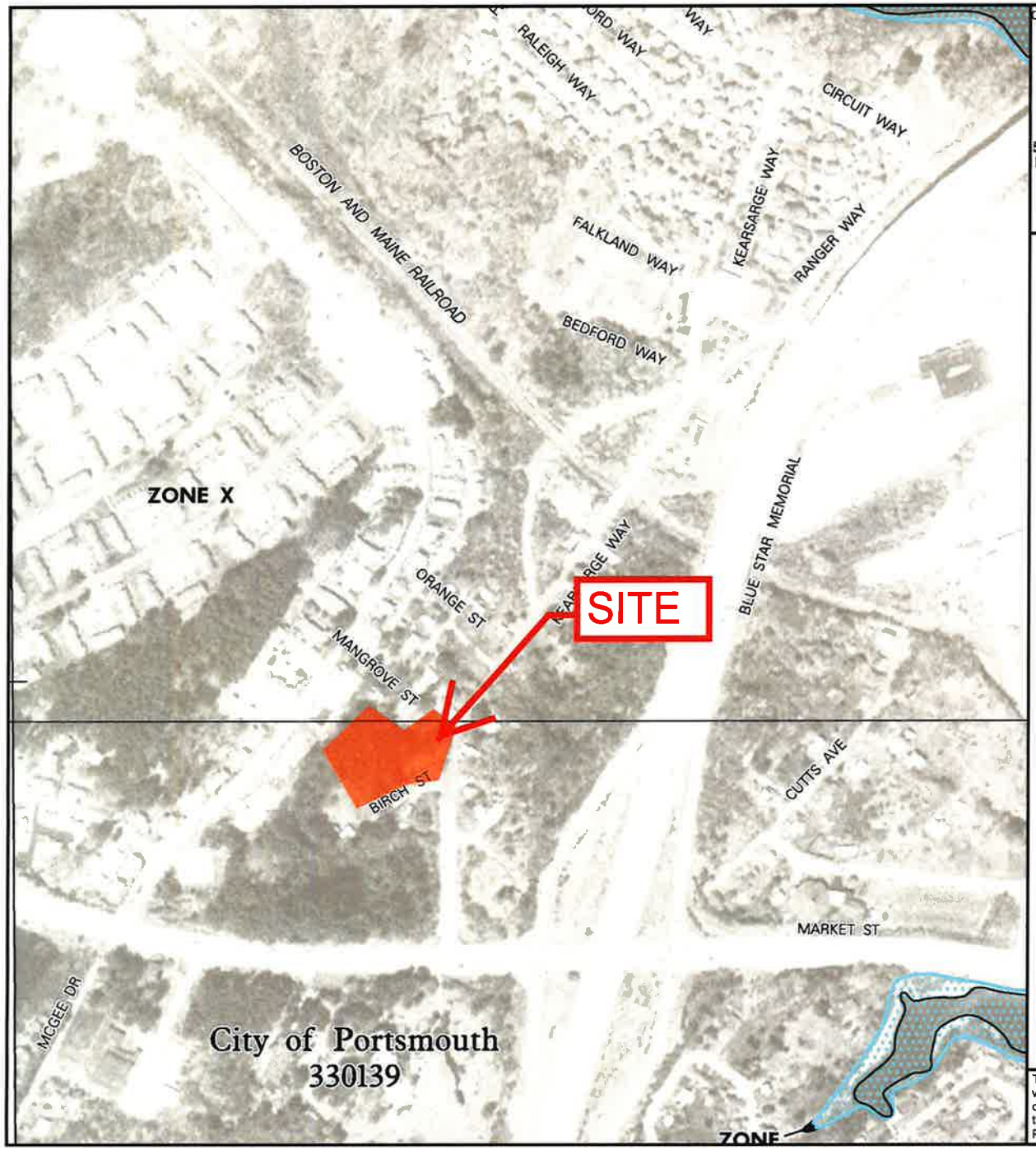
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX E

FEMA FIRM MAP



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0259E

FIRM

FLOOD INSURANCE RATE MAP

ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS)

PANEL 259 OF 681

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTSMOUTH, CITY OF	330139	0259	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33015C0259E

EFFECTIVE DATE
MAY 17, 2005

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX F

INSPECTION & MAINTENANCE PLAN

INSPECTION & MAINTENANCE PLAN

FOR

SUBDIVISION PLAN
201 KEARSARGE WAY
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide Richard Fusegni (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, infiltration system and associated structures on the project site (collectively referred to as the "Stormwater Management System").

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly. These measures will also help minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the City of Portsmouth Code Enforcement Officer.

Inspection & Maintenance Checklist/Log

The following pages contain a Stormwater Management System Inspection & Maintenance Checklist and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

STORMWATER MANAGEMENT SYSTEM COMPONENTS

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMP's

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to: temporary and permanent mulching, temporary and permanent grass cover, trees, shrubs and ground covers, miscellaneous landscape plantings, dust control, tree protection, topsoiling, sediment barriers, and a stabilized construction entrance.

Structural BMP's

Structural BMP's are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to: overflow weir and the infiltration pond.

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMP's that may be found on this project.

1. **Grassed areas:** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.
2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year. Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.
3. **Overflow Weir:** Monitor inlets and outlet for excessive accumulation of sediments. Remove sediments as required to maintain filtering capabilities of the soil.
4. **Infiltration Basin:** After acceptance of the Infiltration Basin, perform the following inspections on a semi-annual basis or after significant rainfall events (10-year, 24 hour storms, or back to back 2 year, 24 hour storms):
    a. Monitor Infiltration Basin for 72 hours following a rain storm. If the Infiltration Basin fails to fully drain within this period time, the soil may have become plugged. Inspect for other causes of blockage. If it's determined that the soil has become plugged and is no longer functioning, then replacement of soils shall be required. Contractor shall use care in removing soil around tree roots. An airspade shall be used to remove soils around tree roots.
    b. Monitor for excessive or concentrated accumulations of debris, or excessive erosion. Remove debris as required.
    c. Repair or remove clogs as required and determine cause of clogging.

d. Monitor side slopes of ponds for damages or erosion—repair as necessary.
e. Monitor turf health and keep protected from fire, grazing, traffic and dense weed growth. Lime and fertilizer should be applied as necessary to promote good growth as determined by soil tests. Mowing the vegetated areas of the basin should be carried out as necessary.
f. Sediment accumulation should be continually checked in the basin. Sediment should be removed as it is discovered. Particularly if it has accumulated near the outlet of the basin.
g. The outlet should be inspected annually and after every major rainstorm.

5. **Stone Trenches:** Monitor for settlement of stone and accumulation of excessive debris and sediment.

Invasive Species

Monitor Stormwater Management System for signs of invasive species growth. If caught earlier enough, their eradication is much easier. The most likely places where invasions start are in wetter, disturbed soils. Measures that do not require the application of chemical herbicides should be the first line of defense.

Stormwater Management System

Inspection & Maintenance Checklist for Post Construction Condition—for Richard Fusegni, 201 Kearsarge Way, Portsmouth, N.H.

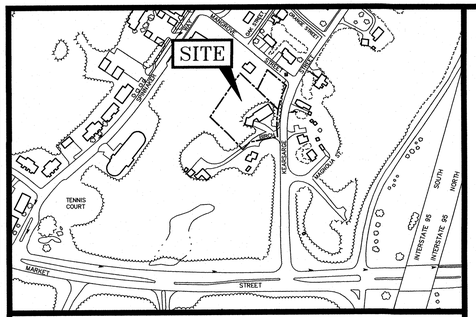
BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Closed Drainage System			
Infiltration Basin	2 X Annually	*Check for sediment clogging and standing water*	Remove any trash, debris and accumulated sediment. If area does not drain within 72 hours following a rain event, a qualified professional should assess the condition of the facility to determine restoration measures.
Stone Trenches	2 X Annually	*Check for sediment and debris*	Remove any sediment or debris. Check outlet pipe for clogging.
Annual Report	Yearly	*Prepare Annual Report, including all Inspection & Maintenance Logs. Provide to Town (if required).*	N/A

Stormwater Management System Maintenance Summary

Inspection & Maintenance Log— for Richard Fusegni, 201 Kearsarge Way, Portsmouth, N.H.

BMP/System Component	Date Inspected	Inspector	Problems Noted, Required Maintenance *(List Items/Comments)*	Date of Maintenance	Performed By

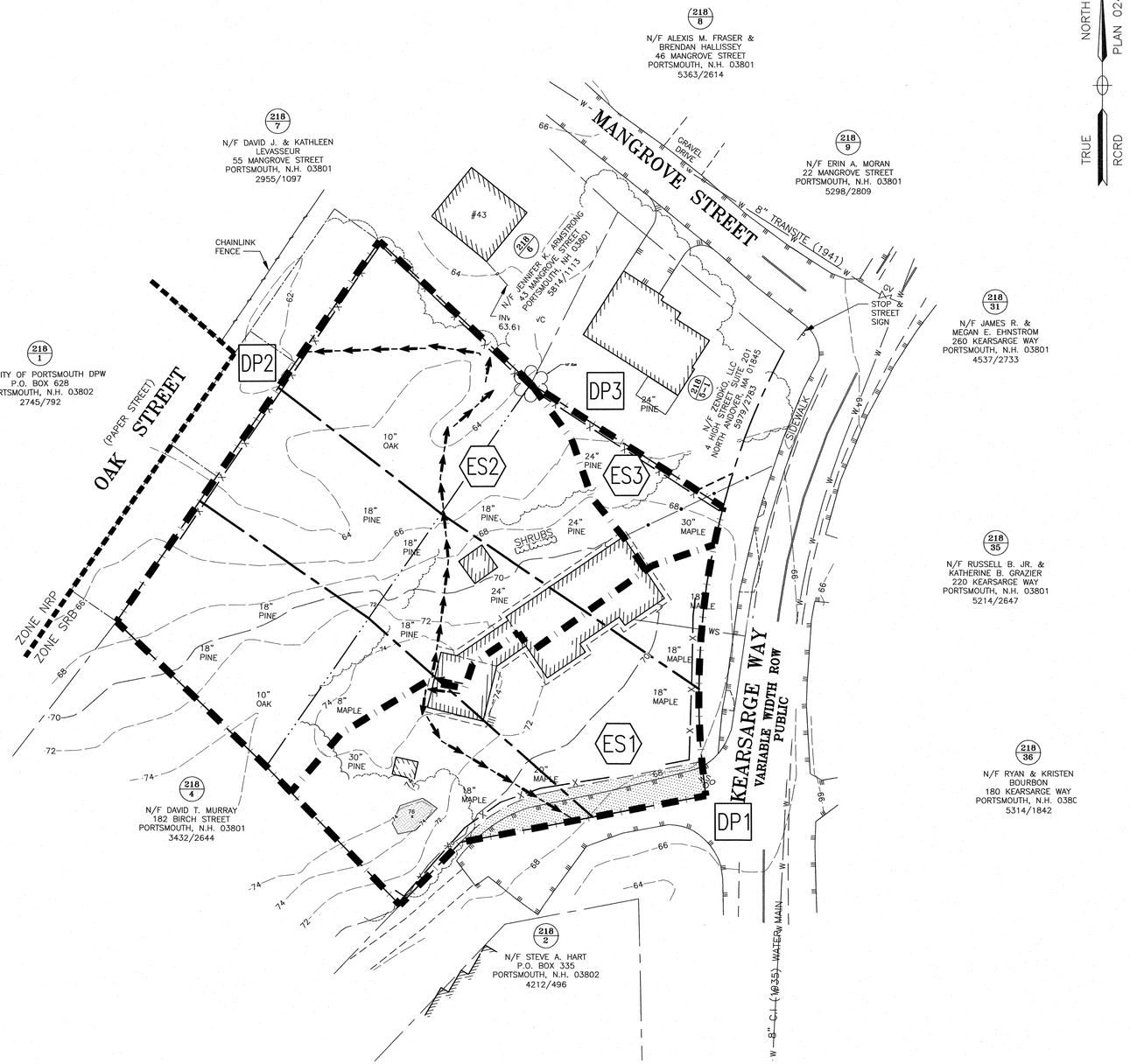
Data Sheets



LOCATION MAP SCALE: 1" = 300'

LEGEND

EXISTING	PROPOSED	
— — —	D	PROPERTY LINE
D	X X	STORM DRAIN
X X	100	SILT FENCE
100	98x0	CONTOUR
97x3		SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
ES1	PS1	SUBCATCHMENT NUMBER
1234 WOODS	1234 WOODS	AREA IN SQUARE FEET DESCRIPTION OF COVER
1	1	POND (DESIGN MODEL)
DP1	DP1	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
		CATCH BASIN
		DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW
HSG	HSG	HYDROLGIC SOIL GROUP



GRAPHIC SCALE

30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 218 AS LOT 5.

2) OWNER OF RECORD:
RICHARD P. FUSEGNI
201 KEARSARGE WAY
PORTSMOUTH, N.H. 03801
5476/2661 (5979/2783)
RCRD PLAN 0245

3) PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E, EFFECTIVE MAY 17, 2005.

4) EXISTING LOT AREA:
47,062 S.F.
1.0804 AC.

NOTES:

1) THIS PLAN IS INTENDED FOR RUNOFF ANALYSIS ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

4) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

SUBDIVISION PLAN
TAX MAP 218 – LOT 5
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	1/21/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
1/21/20

SCALE: 1" = 30' JANUARY 2020

PRE-DEVELOPMENT DRAINAGE PLAN

W1

FB 311, PG 01

2258

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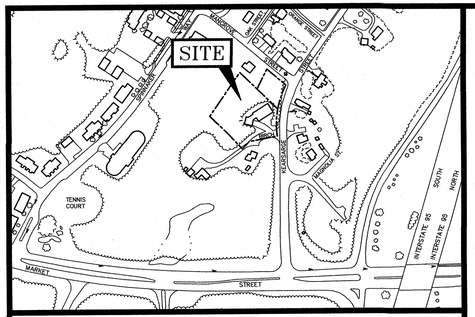

LOCATION MAP SCALE: 1" = 300'

LEGEND

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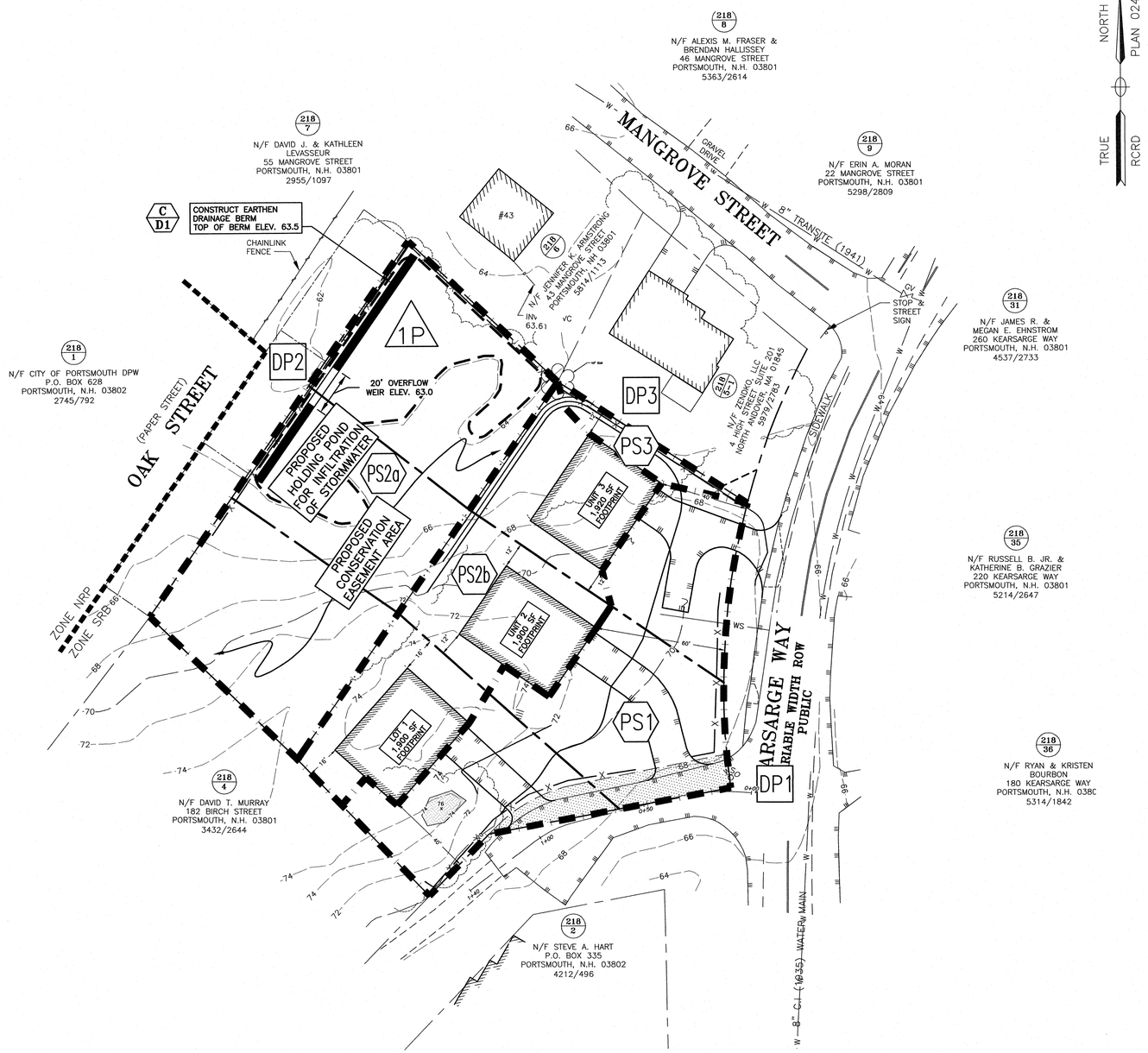
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW
H5G	H5G	HYDROLGIC SOIL GROUP



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SUBDIVISION PLAN
TAX MAP 218 – LOT 5
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	1/21/20

REVISIONS

JOSEPH L. MULLEDY No. 11302 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
1/21/20

SCALE: 1" = 30' JANUARY 2020

POST-DEVELOPMENT DRAINAGE PLAN

W2

FB 311, PG 01

2258

J:\JOBS2\JN2250\JN2250-2935\5 Subdivision\Lot 5\Plans & Specs\SW\2255 SUBDIVISION 2935.dwg