INLAND WETLANDS COMMISSION

TUESDAY, June 13, 2023

ZOOM Meeting

A) Call to Order & Roll Call

B) Appointment of Alternates

Agenda Item C) a)

Action on Minutes of Previous Meeting

Minutes of May 9, 2023

TOWN OF THOMPSON
Inland Wetlands Commission
815 Riverside Drive, P.O. Box 899
North Grosvenordale, CT 06255
Phone: 860-923-1852, Ext. 1
Email: wetlands@thompsonct.org
Web: https://www.thompsonct.org/

MEETING MINUTES: Tuesday, May 9, 2023, 7:00PM

Via ZOOM Online Meeting Portal

A) The meeting was called to order at 7:05 PM by Chairman George O'Neil who announced the protocols for conducting the online meeting.

Members and staff present: George O'Neil (Chairman), Charlie Obert (Vice Chairman), Diane Chapin (Treasurer) Fran Morano (Commissioner), Marla Butts (Wetlands Agent), Amy St. Onge, Ex-Officio Member, Gloria Harvey (Recording Secretary)

Members of the public: Janet Blanchette, J & D Civil Engineers, Roberta and Doug Gray, Jason Lavallee, Kevin Calabro, Norm Thibeault, and others.

B) Appointment of Alternates-None

C) Action on Minutes of Previous Meetings

a) The Minutes of April 4, 2023 were unanimously accepted with an amendment to change a scribbler's error NEDH TO NDDH on Page 3.

b) The Minutes of April 6, 2023 Special Meeting were unanimously accepted as presented.

Charlie Obert questioned why the well location in the Jason Lavallee proposed subdivision and the position of the garage in the Bernie Mayo application were not on the agenda. Marla responded and stated that Janet Blanchette was going to address the wells in the Jason Lavallee application, IWA23002, later in tonight's agenda. Bernie Mayo changed the location of the garage and the Commission approved the location being out of the wetlands. He was going to start his excavation work and if he found he had bedrock that would be problematic to his well, he would come back to the Commission and seek a new permit if he needed to relocate the garage. He has not indicated he has started construction. Clarifications to our current agenda were made by the Inland Wetlands Agent. The Commission proceeded with the agenda without modifications.

D) Citizens Comments on Agenda Items - None

E) Applications

a) Old Applications

1. **WAA22029**, Gary Rawson, 46 Logee Road (Assessor's map 141, block 17, lot 184R), construct a new single-family home in a 100-foot upland review area for Quaddick Reservoir, stamped received 11/16/22, issued 5/3/23, legal notice to be published 5/12/23, end of appeal period 5/27/23. No action is required by Commission at this time. Health Department approved the design with authorization to construct.

2. **WAA23001**, Hany Youssef, 274 Riverside Drive, (Assessor's map 87, block 95, lot 39), construct a 13' x 50' concrete pad for a refrigeration/freezer unit, stamped received 1/19/23, revised 2/1/2023 to include construction of 2 second floor decks. One 50' x 13' over proposed concrete slab and one 18' x 36' along entire width of the south side of the building, under review. Application is on hold pending receipt of revised plans by the Building Office. Marla spoke with Hany Youssef who informed her that he was having difficulty getting an architecturally signed plan.

3. **IWA23002**, Jason Lavallee, 0 Azud Road, (Assessor's Map 67, block 53, lots 1H and 1G), construct multifamily dwellings in 5 phases within upland review area with drainage discharging to wetlands/watercourses, stamped received 2/7/2023, statutory receipt date 2/14/2023. Janet Blanchette, J & D Civil Engineering, represented the applicant. The Commission reviewed plans and Janet Blanchette commented on revisions and additions to the project plans including grading, removing of Building F, moving wells further away from the wetlands and vernal pools. Janet submitted a letter to the Commission explaining the water that feeds the vernal pools is from shallow sub-surface flow and the water that feeds the cased wells will be drawn from hundreds of feet below the ground in a bedrock aquifer and will not impact the hydrology that's running in the shallow areas. Marla requested guest parking on the plan be graded to drain away from the pond, adding snow storage locations, details of the drainage system, addition of details for silk saw and woodchip berms used for erosion control, the relocation of the woodland path away from the wetlands plus updating Sheet 4 of the plans due to concerns by the Conservation Commission, and the Connecticut Department of Transportation (CTEOT) approval letter. Marla was concerned about bedrock geology stating the wells are cased preventing infiltration of surface water and wells are fed through water way below the surface and do not drain vernal pools. Janet and Marla went through all of the hydraulics. The CTDOT reviewed the plan and had no objections. CTDOT has engineers and because there was not enough time to get a separate engineer, Janet and Marla agreed that approval by CTDOT is acceptable and okay from their position. Margaret Washburn reported there may be hundreds of vernal pools in Thompson and no surface water from lawns or roads are not going to pollute the vernal pools. Marla stated she doesn't see a problem with this application and has no objection at this time to have the Commission approve this application. Charlie Obert asked where are the wells going to be drilled, their depth, where are the cisterns located for fire control and will they be a detriment to the aquifers? Janet Blanchette replied that the cistern is the responsibility of the Fire Department to keep it filled and is a 10,000-gallon precast sealed concrete tank for public safety. Marla commented wells and cistern are PZC issues. Aquifer is not an IWC responsibility. Marla reported that Plan Sheets 2, 8, and 10 were updated and that Sheet 4 needed to be corrected for the new location of the walking trail. Commissioner Obert made a motion to approve IWA23002. Commissioner Morano seconded the motion and suggested the motion be amended to include approval of the plan and mylar be updated with the recommended revisions as outlined by the wetland's agent and the engineer for the applicant. Commissioner Obert approved the amended motion. Commissioner O'Neil called for a voice vote. The motion with amendments as discussed during the meeting was unanimously **APPROVED**.

b) New Applications

1. **DEC23009,** Francesca Morano, 279 Lowell Davis Road, (Assessor's Map 99, block 29, lot 24), 2-lot subdivision with no work in wetlands or water courses, submitted to meet requirements of Section 8-26(e) of the Connecticut General Statutes, stamped received

4/20/23. Commissioner Morano recused herself from the meeting for this application because it is hers. Marla stated that Section B-26 (e) of the statutes says that when any parcel of land containing wetlands goes for subdivision approval, an application must be filed with the IWC. The statute doesn't say what kind of application. Initially Fran Morano submitted a conceptual subdivision approval application but given there were no regulated activities proposed, Marla suggested she use the declaratory ruling application and check off the last item that there was no regulated activity. If the IWC approves the application then Marla will send a memo to the PZC on the same and that the IWC has no further comment. Amy St. Onge, First Selectman and Ex-Officio Member of the Commission asked why this application is on the agenda for approval for something that is not in the upland review area in wetlands or watercourses and Marla replied when a subdivision application goes before PZC that has wetlands on it, it must go before the Wetlands Commission before it goes before PZC. Commissioner Chapin made a motion to approve DEC23009 and accept the application with qualifications outlined by Marla. Commissioner Obert seconded the motion. The vote was unanimously **APPROVED**. Fran Morano expressed her appreciation to Janet and Daniel Blanchette for their help and support.

Commissioner Morano is no longer recused and returned to the Commission.

2. **IWA23010**, Thompson Business Park LLC, 0 & 0 Reardon Road, (Assessor's Map 65, block 100, lot 40 & 40G), self-storage facilities with grading and stormwater discharges in 100-foot upland review area, stamped received 5/2/23, to be statutorily received 5/9/23. Marla stated Norm Thibeault, professional engineer, did the design work and although there is no work in wetlands and watercourses the applicant filed IWA23010 and the IWC received it tonight and won't be able to render a decision or hold a public hearing before the next meeting. Norm Thibault, Killingly Engineering and Associates, stated this property is commercially zoned and his client purchased the property and is looking to do a mini storage business. He further stated this is a low impact development, done in two tiers with the lower level containing two buildings and the upper level five buildings. It is a gated establishment and renters will have a card to access the units. Grading and filling will take place to create plateaus to put these buildings on. Numerous storm water basins will be installed to address water quality and sediment that may be in the stormwater. The Commissioners will hold a Special Meeting to do a site walk on June 3, 2023 at 9:00 AM. Dan Malo, Conservation, and Cindy Dunne, ZEO will also be invited to attend.

   IWA23011, Kevin Calabro, 117 New Road, (Assessor's Map 154, block 3, lot 2H), relocation of man-made watercourse, curtain drain, clearing and grading in 100-foot upland review area, stamped received 5/2/23, to be statutorily received 5/9/23. This application is in response to a Notice of Violation involving New Road. Norm Thibeault explained the application addresses the water problems that have been occurring on this property and runoff that runs through his property to a cross culvert at New Road. To avoid water on his property, Mr. Gray built a berm, so water began running down Mr. Calabro's driveway and he is looking to improve this condition. A curtain drain has been installed within 100' of the upland review area near the leach field for the septic system to address ground water issues. Tree clearing was done in the upland review area to build a fence for training and exercising his horses and he is proposing clear cutting in the upland review area. Marla questioned a 2" pipe going to the pond and asked Mr. Calabro to explain what that pipe carries and where it originates from. Mr. Calabro replied it's the overflow of the artesian well going to the pond and it cannot be capped. Marla questioned the hydraulics and Norm Thibeault said he will provide the hydraulics by making assumptions to the maximum capacity of the pipes. Marla also stated the relocation of watercourse down Mr. Calabro's

driveway is a regulated activity. Mr. Calabro raised a concern of the Jodie Arpin property whose driveway is not finished and pictures show flooding on that property as well. Commissioner Obert asked if the new tree line is in the upland review area or the wetlands, and Norm Thibeault replied it's in the review area. Commissioner O'Neil asked Norm Thibeault if expanding the tree line would change the hydrology of the site and create future wetlands impacts. Norm Thibeault replied everything flows away from the wetland. Chairman O'Neil recognized Roberta Gray, 131 New Road, who stated the issue is from the artesian well, the direction it flows, and the impact on her and her son's property. Commissioner O'Neil asked if a hydraulic engineer should get involved with this project and Marla said Norm Thibault's background is adequate and he is more than qualified to do this. No further action is required by the Commission at this time.

c) Applications Received After Agenda was Published - None

F) Permit Extensions / Changes - None

G) Violations & Pending Enforcement Actions

a) **Notice of Permit Violation VIOL21036**, Permit IWA20022, Marc Baer, 1227 Thompson Rd (Assessor's map 116, block 24, lot 10), grades not as authorized in modified plan approved by the Commission on February 9, 2021. Marla sent a letter to Mr. Baer. He hired a builder, Meehan Brian, to finish building the house and do sitework and Marla made him aware of what was going on with the property. She asked the Building Department not to issue a Building Permit for the house until the IWC has received an acceptable as built plan showing all the structures and grades.

b) **Notice of Violation VIOL22031,** Douglas and Roberta Gray, 0 New Road, (Assessor's map 154, block 3, lot2J), watercourse alternation causing flooding, issued 1/23/22. Marla said this violation is on hold until there is an acceptable alternative course for the water course, and it will remain open until the Commission renders a final decision on Mr. Calabro's application. Doug Gray, 131 New Road, asked that this violation, which was issued in November, be removed. Marla gave a summary of previous discussions on this matter which can be heard in its entirety on the recording of this meeting. Amy St. Onge, First Selectman and Ex-Officio Member of the Commission, said this is an unfortunate circumstance based on a gravel mining operation. These individuals who purchased this property are trying to figure this all out and understands that the Gray's don't want to see a notice of violation popping up in a meeting month after month. She stated that she believes that the Wetlands Commission is here to help advise residents, to help protect wetlands. She highly recommended the Commission remove this violation and move forward. Mr. Calabro is attempting to rectify this situation with Killingly Engineers and this is the right thing to do. Commissioner Chapin stated that she doesn't believe it is the Commission pitting neighbors against each other and respectfully disagreed with the First Selectman's comment, Commissioner Obert stated it is a matter of resources. The Commission does not have the money or expertise to solve this problem which came about after the gravel mining operation, after the regulations started to change. Nobody put any controls on the graveling operation and nobody did any study afterward and he doesn't want to see neighbors pitted against each other. Commissioner O'Neil sympathized with the residents' issues and stated that changing the watercourse is problematic, however he said it looks like there is a remedy on the horizon that should resolve this issue. Commissioner Morano commented that if the drilling of the well caused the issue, cap it, and asked who is in charge of the water supply in town, suggesting a cooperative effort between Commissions and Board of Selectmen to come up with an acceptable favorable solution to resolve this issue.

c) **Notice of Violation VIOL23007,** Kevin Calabro, 117 New Road, (Assessor's map 154, block 3, lot

3H), earthmoving in 100-foot upland review area, issued 3/24/23. Marla stated that this violation is on hold pending the resolution of the application submitted by Mr. Calabro. and it was issued because of the clearing activities Mr. Calabro did. Whatever the Commission decides on Mr. Calabro's application will address the notice of violation to Mr. Calabro's and the Gray's.

H) Other Business

a) IWC Regulations Revisions
Upon review of the IWC Regulations, Marla questioned what constitutes an application and suggested adding a new definition of what an application is, modify the application form, the language, and the requirements to clarify that in order to be considered an application, the following three components would have to be included: the form, the application fee, and a scaled drawing. Referring to what the application form looks like and what information should be on it, she proposes creating a form that will contain all the regulated activities. She asked the Commission if they wanted her to keep moving forward on modifying the forms. The Commissioners commented on Marla's recommendation to define an application and the modification of two different forms. Questions raised included will the forms be interactive on the web, who would fill out the form electronically or by hand, should the fee structure be included on the form, automated forms, and location of paper copies in the Town Hall with the Town Clerk. Marla will continue going forward drafting modified forms.

b) Update on Amendments to Subdivision Regulations
PZC has approved the amendments to the Subdivision Regulations which are expected to become effective in the next week or two. Marla's work with the subdivision regulations is done.

c) FY23 Budget Update
The proposed budget is posted on the website. Marla questioned IWC line item ZEO and Wetlands Officer and Amy St. Onge, First Selectman and Ex-Officio Member of the Commission, commented stating it is a carryover in the accounting software the town uses to build the budget and it is not an actual working account for the town. Amy St. Onge explained that the 20 hours requested for IWC Agent was removed from the budget because they didn't have a definitive date of the current IWC Agent's retirement, and if and when an IWC Agent/Conservation Officer is hired, the Board of Selectman will go to the Finance Board and request funds.

I) Citizen's Comments - None

J) Reports

a) Budget & Expenditures

Commissioner Chapin reported available budget from July 1, 2022 to April 30, 2023 is $6,525,83 and the IWC has expended 76.3% of the budget.

b) Wetlands Agent Report

Update – **Approval DEC23004**, Thompson Schools Track Reconstruction– At the request of John Rice, Marla sent a memo dated 4/17/23 to 1st Selectman St Onge providing her advice for the addition of backup E&S controls (i.e., waddles) downslope from the two storm drain outfalls (see ZOOM documents Page 99-100). She is continuing to work on drafting IWC regulation revisions as time allows. No progress has been made on the pre-1990 file destruction.

Inspections/Followup Actions – **Complaint 23-02**, 10 Stawscki Rd – On May 1, 2023, Marla did a site visit with Public Works Director Joe Tkacik and property owner Robert Kopacz to discuss his proposed regrading of the shoulder along Pasay Road to correct ground disturbance that Mr. Kopacz claimed was done by his neighbor. On May 7, 2023, Marla received a voice message from Mr. Kopacz stating he would be performing the agreed upon grading work shortly and would send her before and after pictures. While this work is located within the 100-foot upland review area, Marla considered it to be a non-regulated activity under soil conservation providing Mr. Kopacz stabilizes the area with seed and mulch. She will inspect the work in the next week or so.

Building Permits – 8 Building Permits were reviewed

Miscellaneous – ZBA Application 23-03, 128 Elmwood Hill Road - Last night ZBA approved the variance following a memo sent to the ZBA by the IWC agent requesting a site plan showing proposed lot development and would like the applicant to obtain the services of a qualified soil scientist to verify that no wetland soils exist on the property before a variance is granted. Amy St. Onge, First Selectman and Ex-Officio Member of the Commission stated the variance was the first step. The owner of the property needed the variance in order to go forward and that's why it was granted.

Purchase Requisitions – Legal notice prices have dropped and Marla will monitor. Marla has purchased a copy of the book " What's Legally Required" by Mike A. Zizka and offered it to the Commissioners for their review.

K) Correspondence - None

L) Signing of Mylars-None

M) Comments by Commissioners

Commissioner Obert apologized for losing his edge and intends to continue working in the spirit of cooperation with the residents of the town.

Commissioner O'Neil commented that the IWC is making progress in some areas and noted there are frustrations in other areas and we as a Commission will continue to work with the citizens of the town to obtain favorable results.

N) Adjournment

Commissioner Morano made a motion to adjourn the meeting. The motion was seconded by Commissioner Obert. The motion was unanimously **APPROVED**. The meeting adjourned at 9:34 PM.

To see/hear the entire meeting via ZOOM, copy and paste the following link into your search bar:

https://us02web.zoom.us/rec/share/HnX3PIBhIE7AYCE4O5COzby_NXFW-REnKBx22WUt3yglKmvsdfdSi1uo2b89X6-x.iS-RoJwx5TSCOkkt

Passcode: wr.yP=8S

Disclaimer: These minutes have not yet been approved by the Inland Wetlands Commission. Please refer to the next meeting's minutes for approval of, and/or amendments to these minutes.

Respectfully submitted, Gloria Harvey, Recording Secretary,

Gloria Harvey

Agenda Item C) b)

Action on Minutes of Special Meeting

Minutes of June 3, 2023

TOWN OF THOMPSON
Inland Wetlands Commission
815 Riverside Drive, P.O. Box 899
North Grosvenordale, CT 06255
Phone: 860-923-1852, Ext. 1
Email: wetlands@thompsonct.org
Web: https://www.thompsonct.org/

SPECIAL MEETING MINUTES
SITE WALK

Saturday, June 3, 2023 @ 9:00 AM

On Saturday, June 3, 2023 the Inland Wetlands Commission met to perform a site walk at 0 Reardon Road (Assessor's Map 65, block 100, lot 40 & 40G) for Application IWA23010 by Thompson Business Park LLC involving the proposed construction self-storage facilities with grading and stormwater discharges in 100-foot upland review area. The purpose of the meeting was to orient Commissioners to on-site conditions in relations to the application plans.

The meeting was called to order at 9:00 am by Chair O'Neil in a parking lot located north of the proposed construction site (Assessor's Map 65, block 100, lot 40 I). In attendance were Chair George O'Neil, III, Commissioner H. Charles Obert, myself and the applicant's engineer, Normand Thibeault. At the time of the inspection, it was cloudy but not raining.

From the parking lot the group travelled south along the west side of Reardon Road until reaching Wetlands Flag #47A. The group then travelled west northwest along a deer path crossing through a portion of wetlands until reaching Wetlands Flag #54A, and then west along the southern boundary of the open space until reaching the Well House near Wetlands Flag # 72A. After observing the conditions at the Well House the group retraced its path until reaching Reardon Road.

Chair O'Neil then adjourned the meeting at 9:24 am with participants returning to their vehicles.

Respectfully submitted,

Marla Butts

Marla Butts

Thompson Wetlands Agent

Agenda Item D)
Citizens Comments on Agenda Items

Agenda Item E) a) 1. Old Applications

WAA23001, Hany Youssef, 274 Riverside Drive, (Assessor's map 87, block 95, lot 39), construct a 13' x 50' concrete pad for a refrigeration/freezer unit, stamped received 1/19/23, revised 2/1/2023 to include construction of 2 second floor decks: a 50' x 13' over proposed concrete slab and an 18' x 36' along entire width of the south side of the building, under review – on hold pending receipt of revised plans.

Agenda Item E) a) 2. New Applications

IWA23010, Thompson Business Park LLC, 0 & 0 Reardon Road, (Assessor's Map 65, block 100, lot 40 & 40G), self-storage facilities with grading and stormwater discharges in 100-foot upland review area, stamped received 5/2/23, to be statutorily received 5/9/23.

Town Of Thompson
Conservation Commission
815 Riverside Drive
North Grosvenordale, Connecticut 06255

Self-Storage Facility
Thompson Business Park–Reardon Road

DEVELOPMENT REVIEW 06-12-23

To: Thompson Wetlands Commission, Planning & Zoning Commission; Tyra Penn-Gesek, Town Planner

From: Thompson Conservation Commission

Subject: Development Review of the Self-Storage Facility proposed on Reardon Road

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Good afternoon,

Members of the Conservation Commission have walked the site and reviewed the development proposal from Thompson Business Park, LLC (03-10-23 plan by Killingly Engineering Associates) in the Commission's advisory capacity regarding natural resources involved in local development proposals.

The site contains two parcels that each hold portions of Conservation Easement which are contiguous to Conservation Easements on abutting properties. The primary characteristic of these easement areas are wetlands. The property abuts the West Thompson Dam/Army Corps of Engineers campground area.

The location currently functions and is percieved as open space, and abuts one of Thompson's most important outdoor resources for wildlife and recreation. The parcels of the proposed development help to serve as a spacial buffer between the campground and the heavier industrial uses on Reardon Road.

The Commission was concerned about proximity to the uses and functions of the West Thompson Dam property. Beyond the primary flood control and recreational uses, the Dam property (and the proposed development parcels) help to serve wildlife as riparian buffer between the Quinebaug and French Rivers.

- With the amount of lighting proposed, the Commission advises down-cast lighting with "full-cutoff" fixtures. The Commission requests that the majority of these lights be activated by motion sensor, as to limit the extent of light pollution and impact to species affected by it.

The Commission noted other comments and concerns:

- The Commission asks that the old pump house and stone wall along the northern clearing limit and within the Conservation Easment remain untouched.
- The Commission asks that staff verify the installation of E&S controls prior to site grading.
- The Commission would like staff to monitor E&S controls through the duration of the project.
- The Commission asks that stockpiles over 30 days be covered or seeded to avoid unwanted erosion and sediment transport into the wetlands areas.
- The Commission asks that Easement Markers be prominently displayed upon completion.

Thank you,

Dan Malo
Conservation Agent

Thompson Conservation Commission

cc: Planning & Zoning, Inland Wetlands Commissions
Tyra Penn, Director of Planning & Development
Marla Butts, Wetlands Agent
Cindy Dunne, Zoning Enforcement Officer

PROPOSED SELF STORAGE FACILITY

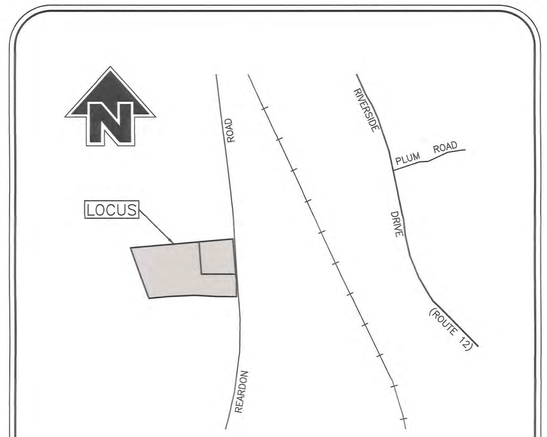
REARDON ROAD
THOMPSON, CONNECTICUT

PREPARED FOR:

THOMPSON BUSINESS PARK, LLC

LEGEND

- IRON PIN FOUND
- IRON PIN TO BE SET
- SIGN
- UTILITY POLE
- PERCOLATION TEST HOLE
- TEST HOLE
- 100 EXISTING CONTOURS
- 100 PROPOSED CONTOURS
- INLAND WETLANDS FLAG
- STONE WALL



LOCATION MAP
SCALE: 1" = 1000'

INDEX TO DRAWINGS

TITLE	SHEET No.
COVER SHEET	1 OF 6
PROPERTY SURVEY	2 OF 6
GRADING PLAN	3 OF 6
SEPTIC SYSTEM DESIGN PLAN	4 OF 6
LAYOUT & LIGHTING PLAN	5 OF 6
DETAIL SHEET	6 OF 6

CONSTRUCTION NOTES

1. All Materials and methods of construction shall conform to "State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges and Incidental Construction, Form 817", and supplements thereto.
2. In the event that ground water or evidence thereof is encountered, sufficient dewatering equipment, shall be installed and maintained to accommodate same.
3. All existing site features not scheduled to remain shall be removed and disposed of in a proper manner, by the contractor.
4. All reinforced concrete storm drainage pipes shall have gasketed rubber joints.
5. All disturbed areas not scheduled for pavement, walks, etc. shall be permanently established as turf.
6. The location of existing utilities is shown for informational purposes only. It is the responsibility of the contractor to verify the location and elevation of all utilities. Contact "CALL BEFORE YOU DIG" at 1-800-922-4455, and obtain all applicable permits, prior to any excavation around utilities.

BEFORE YOU DIG
CALL BEFORE YOU DIG
AT LEAST TWO FULL BUSINESS DAYS
BEFORE DIGGING OR DISTURBING EARTH
DIAL 811 OR 1-800-922-4455

PREPARED BY:

REVISIONS	
DATE	DESCRIPTION

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

APPROVED BY THE TOWN OF THOMPSON
INLAND WETLANDS & WATERCOURSES AGENCY

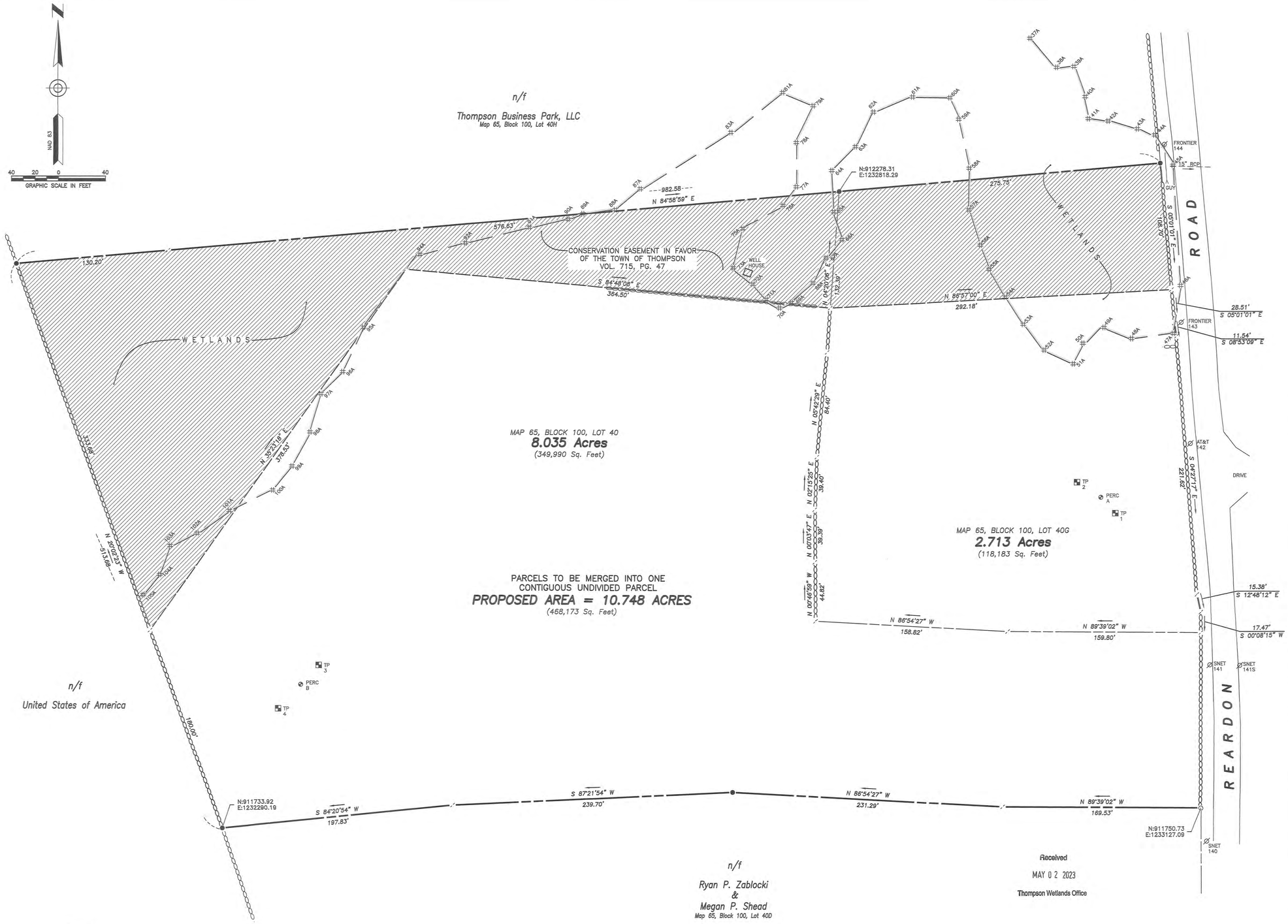
CHAIRMAN DATE

NORMAND THIBEAULT, JR., P.E. No. 22834 DATE 5/1/2023

March 2023

SHEET 1 OF 6
JOB NO: 22082

Appl IWA23010 Copy 1



LEGEND

- ● IRON PIN TO BE SET
- ○ IRON PIN FOUND
- Ø UTILITY POLE
- ---100--- EXISTING CONTOURS
- ———#——— INLAND WETLANDS FLAG
- STONE WALL

APPROVED BY THE TOWN OF THOMPSON
INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

Received
MAY 0 2 2023
Thompson Wetlands Office

NOTES:

1. This survey has been prepared pursuant to the Regulations of Connecticut State Agencies Sections 20–300b–1 through 20–300b–20 and the "Standards for Surveys and Maps in the State of Connecticut" as adopted by the Connecticut Association of Land Surveyors, Inc. on September 26, 1996, Amended October 26, 2018;
   - This survey conforms to a Class "A–2" horizontal accuracy.
   - Survey Type: Property Survey.
   - Boundary Determination Category: Resurvey
2. Zone = BDD (Business Developement District).
3. Owner of record: Thompson Business Park, LLC.
   101 Mackin Drive, Griswold, CT 06351
   See Volume 1022, Page 71
4. Parcel lies within Flood Hazard Zone 'C' (areas of minimal flooding) as shown on FIRM Map # 090117 Panel 0012B Effective Date: 11/01/1984.
5. Wetlands shown were delineated in the field by Joseph Theroux, Certified Soil Scientist, on 8/02/2022.
6. The intent of this map is to show the consolidation of Lot 40G into one contiguous undivided parcel.

MAP REFERENCE:

1. "Subdivision Plan – Prepared for – Thompson Rail Park, LLC – Thompson, Connecticut – Scale: 1" = 100' – Date: 3/25/2008 – Sheet 1 of 6 – Prepared by: KWP Associates".

DATE	DESCRIPTION

REVISIONS

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON,

GREG A. GLAUDE, L.S. LIC. NO. 70191 5/1/2023 DATE

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SEAL AND SIGNATURE OF THE LAND SURVEYOR.

PROPERTY SURVEY
SHOWING PARCEL MERGER
PREPARED FOR

THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 03/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: ---
SHEET: 2 OF 6	CHK BY: ----
DWG. No: CLIENT FILE	JOB No: 22062

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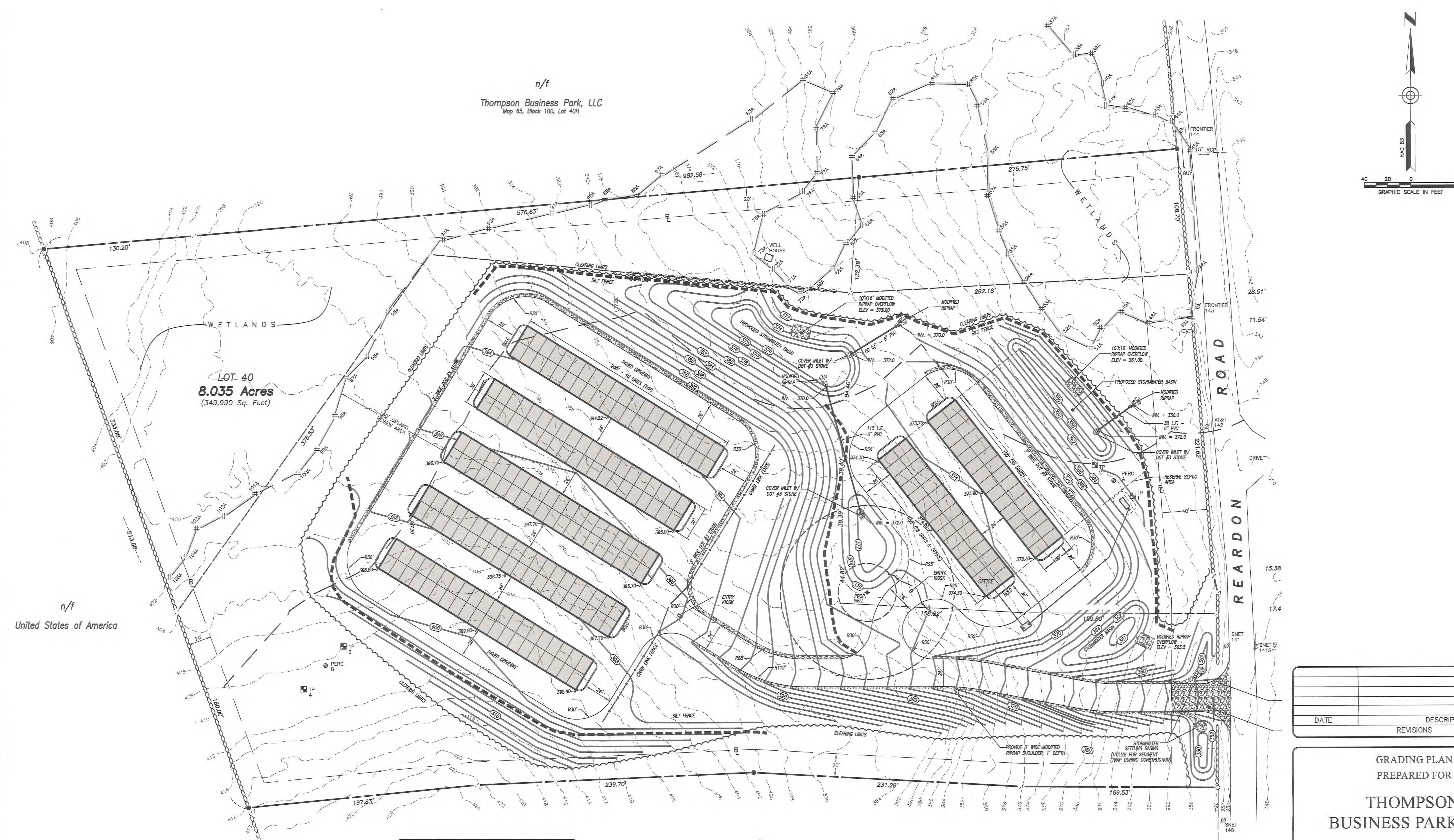


NOTE: FOUNDATIONS SHALL BE SLOPED AT 1% FROM MIDPOINTS TO OTHER LIMITS. FINISHED FLOORS OF BUILDINGS SHALL BE 2" HIGHER THAN FINISHED GRADES SHOWN.

LEGEND

Symbol	Description
●	IRON PIN TO BE SET
○	IRON PIN FOUND
Ø	UTILITY POLE
	PERCOLATION TEST HOLE
	TEST HOLE
---100---	EXISTING CONTOURS
(100)	PROPOSED CONTOURS
#	INLAND WETLANDS FLAG
BB	BUILDING SETBACK LINE
	STONE WALL
	SILT FENCE

APPROVED BY THE TOWN OF THOMPSON INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

Received
MAY 0 2 2023
Thompson Wetlands Office

NORMAND E. THIBEAULT, JR., P.E. 5/1/2023
LIC #PEN 0022834 DATE

DATE	DESCRIPTION

REVISIONS

GRADING PLAN
PREPARED FOR

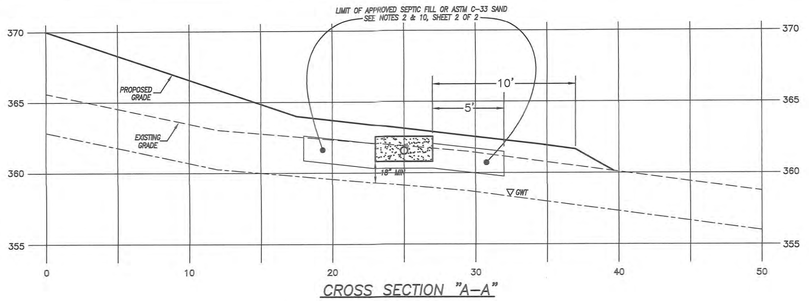
THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 03/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: NET
SHEET: 3 OF 6	CHK BY: ---
DWG. No: CLIENT FILE	JOB No: 22062

K:\22062\Drawings\2022-SELF STORAGE\03_ SITE PLAN SELF STORAGE.dwg May 01, 2023 - 10:04 AM



CROSS SECTION "A-A"

SCALE: 1" = 5'

PERCOLATION TEST RESULT – October 23, 2007
NORTHEAST DISTRICT DEPARTMENT OF HEALTH.

HOLE A
Depth = 19" Rate = 5.0 min./in.

Time	Reading
11:01	8.5"
11:11	17"
11:16	dry

TEST HOLE DATA – August 7, 1987
Northeast District Department of Health

TEST PIT	DEPTH	PROFILE
1	0"–10"	Topsoil w/heavy roots
	10"–22"	Sandy Loam w/gravel
	22"–33"	Sand & Gravel
	23"–116"	Compact Loamy Sand w/fines & rock
	Ledge	N/A
	GWT	N/A
	Mottling	N/A
	Restrictive	33"
2	0"–9"	Topsoil w/heavy roots
	9"–18"	Sandy Loam w/gravel
	18"–31"	Sand & Gravel w/fines, few roots
	31"–38"	Washed coarse sand, gravel, pebbles
	38"–106"	Compact Loamy Sand w/fines & rock
	Ledge	N/A
	GWT	N/A
	Mottling	N/A
	Restrictive	31"

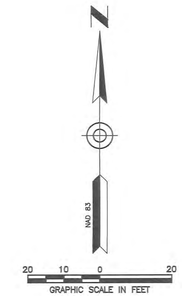
SEPTIC SYSTEM DESIGN DATA

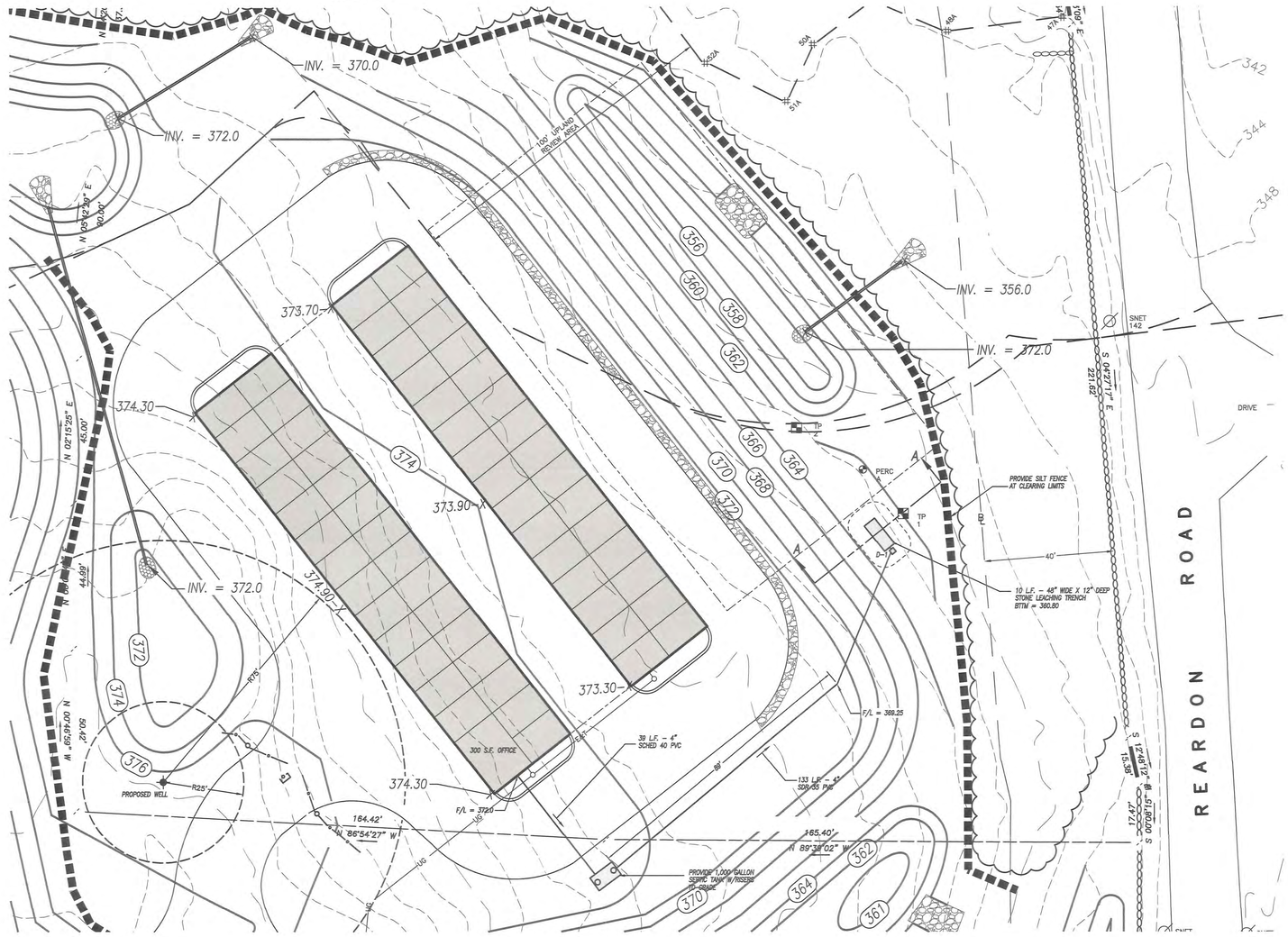
Percolation Rate	= 5 min. / in.
300 s.f. office space @ 0.1 GPD per s.f.	= 30 GPD design flow
Per Table 8	
Application Rate = 1.5 GPD per s.f. of ELA	
ELA = 30 GPD / 1.5	= 20 s.f.
Min. Leaching System Spread (MLSS)	= 20 x 0.1 x 1.0 = 2'
HF = 20 (31", 10.9% slope)	
FF = GPD/300 = 30/300 = 0.1	
HF = 1.0	
MLSS Provided =	= 10'

LEACHING FIELD

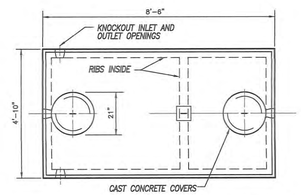
One 48" wide x 12" deep stone trence @ 10 l.f.

Maximum depth into existing grade = 13"

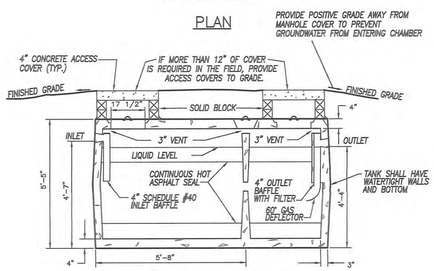




SEPTIC TANK
1000 GALLON TWO COMPARTMENT F/L IN = 371.00 F/L OUT = 370.75
DISTRIBUTION BOXES
D-1 (STANDARD) F/L IN = 361.47 F/L OUT = 361.30



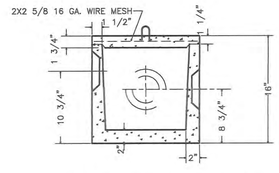
PLAN



CROSS SECTION

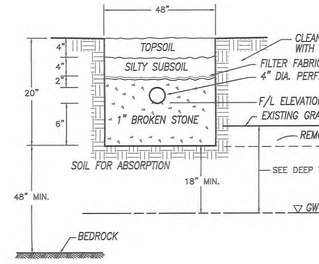
1000 GALLON 2 COMPARTMENT SEPTIC TANK

NOT TO SCALE



STANDARD D-BOX

NOT TO SCALE



APPROVED SEPTIC FILL TO EXTEND 5' AROUND THE PERIMETER OF TRENCHES

TYPICAL LEACHING TRENCH SECTION

NOT TO SCALE

LEGEND

- IRON PIN TO BE SET
- IRON PIN FOUND
- UTILITY POLE
- PERCOLATION TEST HOLE
- TEST HOLE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- INLAND WETLANDS FLAG
- BUILDING SETBACK LINE
- STONE WALL
- SILT FENCE

APPROVED BY THE TOWN OF THOMPSON
INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

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Thompson Wetlands Office

STATE OF CONNECTICUT
NORMAND E. THIBEAULT, JR.
No. 22834
LICENSED PROFESSIONAL ENGINEER

NORMAND E. THIBEAULT, JR., P.E. 5/1/2023
LIC #PEN 0022834 DATE

DATE	DESCRIPTION
REVISIONS	

IMPROVEMENT LOCATION SURVEY
SEPTIC SYSTEM DESIGN PLAN No.1
PREPARED FOR

THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 3/10/2023	DRAWN: RGS
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K:\22062\Drawings\2022-SELF STORAGE\04_ SSD PLAN SELF STORAGE.dwg May 01, 2023 - 10:05 AM

n/f
Thompson Business Park, LLC
Map 65, Block 100, Lot 40H

n/f
United States of America

n/f
Ryan P. Zablocki
&
Megan P. Shead
Map 65, Block 100, Lot 40D

WETLANDS
WETLANDS
WETLANDS
WELL HOUSE
CLEARING LIMITS
SILT FENCE
PROPOSED STORMWATER BASIN
10'X16' MODIFIED RIPRAP OVERFLOW ELEV = 373.00
MODIFIED RIPRAP
50 L.F. - 6" PVC
COVER INLET W/ DOT #3 STONE
INV. = 370.0
10'X16' MODIFIED RIPRAP OVERFLOW ELEV = 381.00
PROPOSED STORMWATER BASIN
MODIFIED RIPRAP
38 L.F. - 6" PVC
115 L.F. 6" PVC
PAVED DRIVEWAY
200' ~ 40 UNITS (TYP)
BUILDING MOUNTED LIGHTING (TYP)
4" WIDE OUT #3 STONE
CHAIN LINK FENCE
20' UPLAND REVIEW AREA
150' (28 UNITS & OFFICE)
ENTRY KIOSK
PROP. WELL
OFFICE
BURIED UTILITIES
STORMWATER SHOW
MODIFIED RIPRAP OVERFLOW ELEV = 383.5
RESERVE SEPTIC AREA
TP 1
TP 2
TP 3
TP 4
PERC A
PERC B
DRIVE
REMOVE ±50 L.F. OF STONE WALL FOR DRIVEWAY CONSTRUCTION
PROVIDE 30" STOP SIGN & 12" WIDE PAINTED STOP BAR
PROVIDE ANTI-TRACKING CONSTRUCTION ENTRANCE
PROVIDE 3' WIDE MODIFIED RIPRAP SHOULDER, 1' DEPTH
STORMWATER SETTLING BASINS (UTILIZE FOR SEDIMENT TRAP DURING CONSTRUCTION)
FRONTIER 144
FRONTIER 143
AT&T 142
SNET 141
SNET 141S
SNET 140
GUY
15" RCP
REARDON ROAD
982.58'
576.63'
275.75'
292.18'
132.39'
106.70'
84.40'
39.39'
378.53'
513.58'
180.00'
197.83'
239.70'
231.29'
169.53'
221.22'
158.82'
159.80'
28.51'
11.54'
15.38'
17.47'
R30'
R25'
R88'
R112'
20'
24'
26'
30'
40'
UG

LEGEND

- IRON PIN TO BE SET
- IRON PIN FOUND
- UTILITY POLE
- PERCOLATION TEST HOLE
- TEST HOLE
- 100 EXISTING CONTOURS
- 100 PROPOSED CONTOURS
- INLAND WETLANDS FLAG
- BUILDING SETBACK LINE
- STONE WALL
- SILT FENCE

APPROVED BY THE TOWN OF THOMPSON
INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

N
NAD 83
40 20 0 40
GRAPHIC SCALE IN FEET

FRONT SIDE

BUILDING MOUNTED LIGHT
FULL CUTOFF WALL PACK
NOT TO SCALE

DESIGN SPECS:
•FULL CUTOFF DESIGN
•LED LIGHT WITH 6,300 LUMENS
•LIGHT SHALL BE POSITIONED TO PREVENT LIGHT AND GLARE FROM SPILLING ONTO ADJACENT PROPERTY

DATE	DESCRIPTION

REVISIONS

IMPROVEMENT LOCATION SURVEY
LAYOUT & LIGHTING PLAN
PREPARED FOR
THOMPSON
BUSINESS PARK, LLC
REARDON ROAD
THOMPSON, CONNECTICUT

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NORMAND E. THIBEAULT, JR. No. 22834 LICENSED PROFESSIONAL ENGINEER
STATE OF CONNECTICUT

NORMAND E. THIBEAULT, JR., P.E. 3/14/2023
LIC #PEN 0022834 DATE

K:\22062\drawings\22022-SELF STORAGE\05_LAYOUT & LANDSCAPING PLAN SELF STORAGE.dwg May 01, 2023 - 10:06 AM

EROSION AND SEDIMENT CONTROL NARRATIVE:

PRINCIPLES OF EROSION AND SEDIMENT CONTROL

The primary function of erosion and sediment controls is to absorb erosional energies and reduce runoff velocities that force the detachment and transport of soil and/or encourage the deposition of eroded soil particles before they reach any sensitive area.

KEEP LAND DISTURBANCE TO A MINIMUM

The more land that is in vegetative cover, the more surface water will infiltrate into the soil, thus minimizing stormwater runoff and potential erosion. Keeping land disturbance to a minimum not only involves minimizing the extent of exposure at any one time, but also the duration of exposure. Phasing, sequencing and construction scheduling are interrelated. Phasing divides a large project into distinct sections where construction work over a specific area occurs over distinct periods of time and each phase is not dependent upon a subsequent phase in order to be functional. A sequence is the order in which construction activities are to occur during any particular phase. A sequence should be developed on the premise of "first things first" and "last things last" with proper attention given to the inclusion of adequate erosion and sediment control measures. A construction schedule is a sequence with time lines applied to it and should address the potential overlap of actions in a sequence which may be in conflict with each other.

- Limit areas of clearing and grading. Protect natural vegetation from construction equipment with fencing, tree armoring, and retaining walls or tree wells.
- Route traffic patterns within the site to avoid existing or newly planted vegetation.
- Phase construction so that areas which are actively being developed at any one time are minimized and only that area under construction is exposed. Clear only those areas essential for construction.
- Sequence the construction of storm drainage systems so that they are operational as soon as possible during construction. Ensure all outlets are stable before outletting storm drainage flow into them.
- Schedule construction so that final grading and stabilization is completed as soon as possible.

SLOW THE FLOW

Detachment and transport of eroded soil must be kept to a minimum by absorbing and reducing the erosive energy of water. The erosive energy of water increases as the volume and velocity of runoff increases. The volume and velocity of runoff increases during development as a result of reduced infiltration rates caused by the removal of existing vegetation, removal of topsoil, compaction of soil and the construction of impervious surfaces.

- Use diversions, stone dikes, silt fences and similar measures to break flow lines and dissipate storm water energy.
- Avoid diverting one drainage system into another without calculating the potential for downstream flooding or erosion.

KEEP CLEAN RUNOFF SEPARATED

Clean runoff should be kept separated from sediment laden water and should not be directed over disturbed areas without additional controls. Additionally, prevent the mixing of clean off-site generated runoff with sediment laden runoff generated on-site until after adequate filtration of on-site waters has occurred.

- Segregate construction waters from clean water.
- Divert site runoff to keep it isolated from wetlands, watercourses and drainage ways that flow through or near the development until the sediment in that runoff is trapped or detained.

REDUCE ON SITE POTENTIAL INTERNALLY AND INSTALL PERIMETER CONTROLS

While it may seem less complicated to collect all waters to one point of discharge for treatment and just install a perimeter control, it can be more effective to apply internal controls to many small sub-drainage basins within the site. By reducing sediment loading from within the site, the chance of perimeter control failure and the potential off-site damage that it can cause is reduced. It is generally more expensive to correct off-site damage than it is to install proper internal controls.

- Control erosion and sedimentation in the smallest drainage area possible. It is easier to control erosion than to contend with sediment after it has been carried downstream and deposited in unwanted areas.
- Direct runoff from small disturbed areas to adjoining undisturbed vegetated areas to reduce the potential for concentrated flows and increase settlement and filtering of sediments.
- Concentrated runoff from development should be safely conveyed to stable outlets using rip rapped channels, waterways, diversions, storm drains or similar measures.
- Determine the need for sediment basins. Sediment basins are required on larger developments where major grading is planned and where it is impossible or impractical to control erosion at the source. Sediment basins are needed on large and small sites when sensitive areas such as wetlands, watercourses, and streets would be impacted by off-site sediment deposition. Do not locate sediment basins in wetlands or permanent or intermittent watercourses. Sediment basins should be located to intercept runoff prior to its entry into the wetland or watercourse.

SEPTIC SYSTEM CONSTRUCTION NOTES

1. The building, septic system and well shall be accurately staked in the field by a licensed Land Surveyor in the State of Connecticut, prior to construction.
2. Topsoil shall be removed and in the area of the primary leaching field scarified, prior to placement of septic fill. Septic fill specifications are as follows:

   – Max. percent of gravel (material between No. 4 & 3 inch sieves) = 45%

   GRADATION OF FILL (MINUS GRAVEL)

SIEVE SIZE	PERCENT PASSING (WET SIEVE)	PERCENT PASSING (DRY SIEVE)
No. 4	100%	100%
No. 10	70% – 100%	70% – 100%
No. 40	10% – 50%	10% – 75%
No. 100	0% – 20%	0% – 5%
No. 200	0% – 5%	0% – 2.5%

   Fill material shall be approved by the sanitarian prior to placement. It shall be compacted in 6" lifts and shall extend a minimum of five feet (5') around the perimeter of the system. Common fill shall extend an additional five feet (5') down gradient of the system (10' total) before tapering off at a maximum slope of 2H:1V.
3. Septic tank shall be two compartment precast 1000 gallon tank with gas deflector and outlet filter as manufactured by Jolley Precast, Inc. or equal.
4. Distribution boxes shall be 4 hole precast concrete as manufactured by Jolley Precast, Inc. or equal.
5. All precast structures such as septic tanks, distribution boxes, etc. shall be set level on six inches (6") of compacted gravel base at the elevations specified on the plans.
6. Solid distribution pipe shall be 4" diameter PVC meeting ASTM D-3034 SDR 35 with compression gasket joints. It shall be laid true to the lines and grades shown on the plans and in no case have a slope less than 0.125 inches per foot.
7. Perforated distribution pipe shall be 4" diameter PVC meeting ASTM D-3034 or ASTM F1760 for SDR 35, or ASTM F810 for SDR 38.
8. Sewer pipe from the foundation wall to the septic tank shall be schedule 40 PVC meeting ASTM D 1785. It shall be laid true to the grades shown on the plans and in no case shall have a slope less than 0.25 inches per foot.
9. Solid footing drain outlet pipe shall be 4" Diameter PVC meeting ASTM D 3034, SDR 35 with compression gasketed joints. Footing drain outlet pipe shall not be backfilled with free draining material, such as gravel, broken stone, rock fragments, etc.
10. Septic sand shall meet the requirements of ASTM C-33 with less than 10% passing a 100 sieve and less than 5% passing a 200 sieve

SIEVE SIZE	% PASSING
0.375	100
#4	95–100
#8	80–100
#16	60–85
#30	25–60
#50	10–30
#100	<10
#200	<5

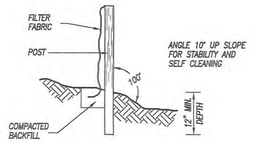
New England Erosion Control/Restoration Mix For Detention Basins

The New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites contains a selection of native grasses and wildflowers designed to colonize generally moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the soil surface. It is an appropriate seed mix for ecologically sensitive restorations that require stabilization as well as long-term establishment of native vegetation.

This mix is particularly appropriate for detention basins that do not hold standing water. Many of the plants in this mix can tolerate infrequent inundation, but not constant flooding. The mix may be applied by hand, by mechanical spreader, or by hydro-seeder. After sowing, lightly rake, roll or cultipack to insure good seed-to-soil contact. Best results are obtained with a Spring or late Summer seeding. Late Fall and Winter dormant seeding requires an increase in the application rate. A light mulching of clean, weed-free straw is recommended.

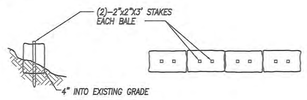
APPLICATION RATE: 35 lbs/acre | 1250 sq ft/lb
PRICE: $34.00/bulk pound
Minimum Order: 3 lbs

SPECIES: Virginia Wild Rye, (Elymus virginicus), Creeping Red Fescue, (Festuca rubra), Little Bluestem,(Schizachyrium scoparium), Big Bluestem, (Andropogon gerardii), Fox Sedge, (Carex vulpinoidea), Switch Grass, (Panicum virgatum), Rough Bentgrass, (Agrostis scabra), New England Aster, (Aster novae-angliae), Boneset, (Eupatorium perfoliatum), Grass Leaved Goldenrod, (Euthamia graminifolia), Green Bulrush, (Scirpus atrovirens), Blue Vervain, (Verbena hastata), Soft Rush, (Juncus effusus), Wool Grass, (Scirpus cyperinus).



SILT FENCE

NOT TO SCALE



HAYBALE BARRIER

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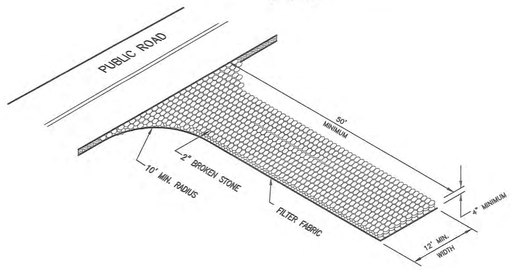
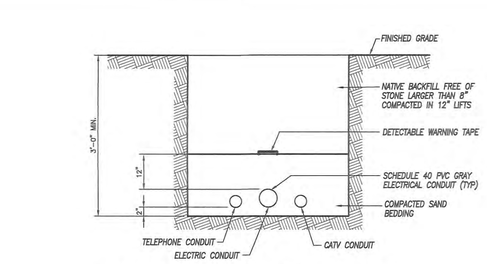


ANTI–TRACKING PAD

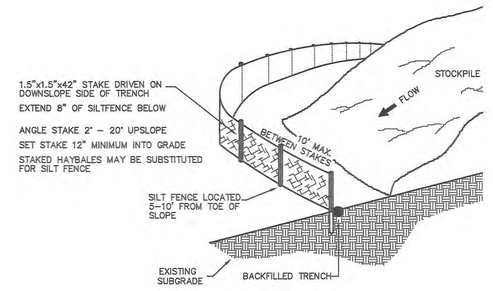
NOT TO SCALE



NOTE: CONTRACTOR SHALL PROVIDE SILT/CLAY DAMS AT 100' INTERVALS ALONG PROPOSED UTILITY TRENCH TO AVOID TRANSPORTING INTERCEPTED WATER.

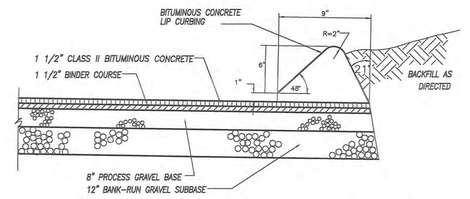
UNDERGROUND UTILITY TRENCH

NOT TO SCALE



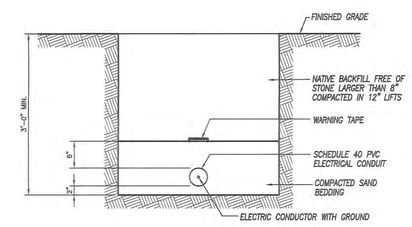
SILT FENCE @ TOE OF SLOPE APPLICATION

NOT TO SCALE



BITUMINOUS CONCRETE LIP CURBING

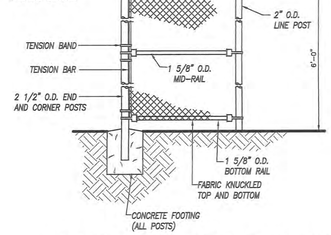
NOT TO SCALE



NOTE: CONTRACTOR SHALL PROVIDE SILT/CLAY DAMS AT 100' INTERVALS ALONG PROPOSED UTILITY TRENCH TO AVOID TRANSPORTING INTERCEPTED WATER.

ELECTRICAL CONDUIT IN TRENCH

NOT TO SCALE

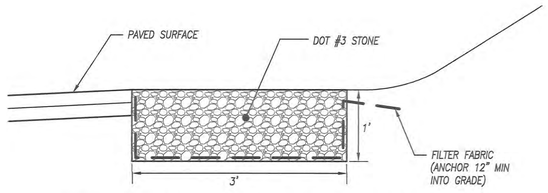


CHAIN LINK FENCE DETAIL

NOT TO SCALE

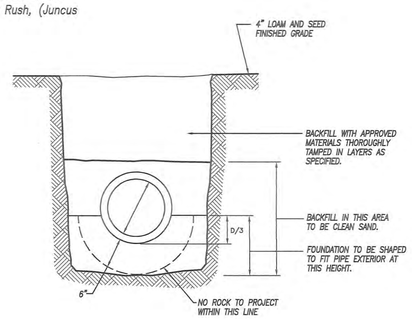
STOP SIGN

NOT TO SCALE



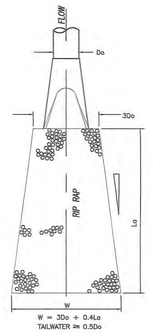
DOT #3 STONE SHOULDER DETAIL

NOT TO SCALE

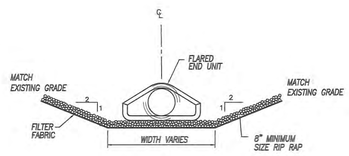


SANITARY SEWER / STORM DRAIN PIPE IN TRENCH DETAIL

NOT TO SCALE



PLAN



SECTION

RIP RAP OUTFALL

NOT TO SCALE

DATE	DESCRIPTION

REVISIONS

DETAIL SHEET

PREPARED FOR

THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

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STATE OF CONNECTICUT * NORMAND THIBEAULT JR * No. 22834 LICENSED PROFESSIONAL ENGINEER

NORMAND THIBEAULT, JR., P.E., No. 22834 DATE 3/1/2023

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DRAINAGE REPORT

Prepared for

PROPOSED SELF-STORAGE FACILITY
REARDON ROAD
THOMPSON, CT

April 2023

Prepared for

Thompson Business Park, LLC

Prepared by

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Civil Engineering & Surveying

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Introduction

Thompson Business Park, LLC has submitted a proposal to the Town of Thompson to construct a a self-storage facility with access from Reardon Road in Thompson. The project will require construction of a 24ô wide paved driveway to access the development with a small on-site septic system and drilled well for the facility office. The design results in the creation of impervious surfaces consisting of pavement and roof which will require treatment for stormwater quality as well as control of peak flows. All stormwater will be conveyed via sheet flow to multiple stormwater basins designed to address water quality as well as attenuate peak flows from the development.

Summary

According to the USDA-NRCS Soil Survey, the area of disturbance consists of moderately drained soils of the Charlton and Chatfield soil series and associated with hydrologic soils group ñBò. Wetlands soils are of the Ridgefield and Chatfield series and associated with hydrologic soils group ñDò. The moderately sloped site sheet flows primarily to the north-northeast to a perimeter wetlands system which is a part of a larger wetlands system to the north on a property also owned by the developer.

The calculations utilized HydroCAD® Stormwater Modeling System, a computer model, to analyze pre-and post-development drainage conditions, and to aid in the design of the stormwater detention system. The model used the Soil Conservation Service TR-20 method with a Type III 24-hour rainfall to calculate the runoff. The 2 through 100-year frequency storms were analyzed to evaluate peak runoff for conditions for existing and proposed conditions. Table 1 summarizes our findings rounded to the nearest 0.1 CFS;

Table 1. Pre and Post Construction Peak Runoff Rates Drainage Area 1

Design Storm	Depth (in)	Existing Peak	Proposed Peak	Difference
2-Year	3.36	2.7 CFS	2.2 CFS	-0.5 CFS
5-Year	4.27	5.1 CFS	4.2 CFS	-1.1 CFS
10-Year	5.03	7.4 CFS	6.1 CFS	-1.3 CFS
25-Year	6.08	10.9 CFS	9.3 CFS	-1.6 CFS
50-Year	6.86	13.7 CFS	12.5 CFS	-1.2 CFS
100-Year	7.68	16.7 CFS	17.4 CFS	+0.7 CFS

Table 2. Pre and Post Construction Peak Runoff Rates Drainage Area 2

Design Storm	Depth (in)	Existing Peak	Proposed Peak	Difference
2-Year	3.36	1.8 CFS	1.5 CFS	-0.3 CFS
5-Year	4.27	4.1 CFS	3.5 CFS	-0.2 CFS
10-Year	5.03	6.4 CFS	5.6 CFS	-0.8 CFS
25-Year	6.08	9.9 CFS	8.5 CFS	-1.4 CFS
50-Year	6.86	12.7 CFS	10.8 CFS	-1.9 CFS
100-Year	7.68	15.9 CFS	13.5 CFS	-2.4 CFS

Table 3. Pre and Post Construction Peak Runoff Rates Drainage Area 3

Design Storm	Depth (in)	Existing Peak	Proposed Peak	Difference
2-Year	3.36	0.5 CFS	1.2 CFS	+0.7 CFS
5-Year	4.27	1.2 CFS	2.0 CFS	+0.8 CFS
10-Year	5.03	1.9 CFS	3.1 CFS	+1.2 CFS
25-Year	6.08	3.0 CFS	4.6 CFS	+1.6 CFS
50-Year	6.86	4.0 CFS	5.8 CFS	+1.8 CFS
100-Year	7.68	5.0 CFS	6.8 CFS	+1.8 CFS

As seen by the computations, there are slight reductions in peak runoff rates for most design storms from drainage areas 1 and 2. Increases from drainage area 3 will be contained on site and conveyed to the wetlands behind the existing stone wall.

In addition to addressing pre- and post-construction peak runoff rates from the property to the wetlands, the design considers stormwater treatment and water quality for the project. Overland sheet flow is proposed for the entire site and runoff from paved surfaces will be directed to grassed filter strips prior to flowing to the proposed stormwater infiltration basin.

Per Chapter 7 of the Connecticut DEEP Stormwater Quality Manual

Section 7.4.1 Water Quality Volume

Basin 1 Water Quality Volume (WQV)

WQV = (1ò)(R)(A)/12

R = 0.05 + 0.009(I) I = % Impervious = 66.8% (to basin)

R = 0.05 + 0.009(66.8) = 0.651

A = 2.08 acres

WQV = (1ò) (0.651) (2.08) / 12 = 0.113 ac-ft = 4,915 c.f.

5,003 c.f. provided to elevation 371.0 (lowest outlet elevation)

Basin 2 Water Quality Volume (WQV)

Drainage area is 0.431 acres with no impervious ï not WQV treatment is necessary

Basin 3 Water Quality Volume (WQV)

WQV = (1ò)(R)(A)/12

R = 0.05 + 0.009(I) I = % Impervious = 59.7% (to basin)

R = 0.05 + 0.009(59.7) = 0.651

A = 0.998 acres

WQV = (1ò) (0.587) (0.998) / 12 = 0.049 ac-ft = 2,128 c.f.

2,415 c.f. provided to elevation 350.0 (outlet elevation)

Basin 4 Water Quality Volume (WQV)

WQV = (1ò)(R)(A)/12

R = 0.05 + 0.009(I) I = % Impervious = 34.3% (to basin)

R = 0.05 + 0.009(34.3) = 0.3587

A = 0.815 acres

WQV = (1ò) (0.3587) (0.815) / 12 = 0.024 ac-ft = 1,045 c.f.

1,735 c.f. provided to elevation 393.0 (outlet elevation)

Basin 5 Water Quality Volume (WQV)

WQV = (1ò)(R)(A)/12

R = 0.05 + 0.009(I) I = % Impervious = 34.24% (to basin)

R = 0.05 + 0.009(34.24) = 0.358

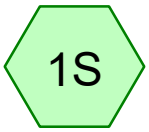
A = 0.248 acres

WQV = (1ò) (0.358) (0.248) / 12 = 0.0074 ac-ft = 322 c.f.

2,280 c.f. provided to elevation 363.5 (weir outlet elevation)

HYDROCAD CALCULATIONS

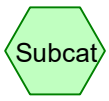
EXISTING CONDITIONS

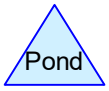


Drainage Area 1

Drainage Area 2

Drainage Area 3





Routing Diagram for Existing Conditions
Prepared by Killingly Engineering Associates, LLC, Printed 5/26/2023

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 2.65 cfs @ 12.20 hrs, Volume= 0.245 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 1.77 cfs @ 12.24 hrs, Volume= 0.198 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 0.45 cfs @ 12.24 hrs, Volume= 0.054 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 5.10 cfs @ 12.19 hrs, Volume= 0.437 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 4.12 cfs @ 12.21 hrs, Volume= 0.385 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 1.17 cfs @ 12.20 hrs, Volume= 0.110 af, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 7.43 cfs @ 12.18 hrs, Volume= 0.621 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 6.43 cfs @ 12.20 hrs, Volume= 0.570 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 1.90 cfs @ 12.19 hrs, Volume= 0.167 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 10.86 cfs @ 12.18 hrs, Volume= 0.895 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 9.94 cfs @ 12.20 hrs, Volume= 0.854 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 3.02 cfs @ 12.18 hrs, Volume= 0.254 af, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 13.65 cfs @ 12.17 hrs, Volume= 1.112 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 12.74 cfs @ 12.20 hrs, Volume= 1.083 af, Depth> 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 3.96 cfs @ 12.17 hrs, Volume= 0.325 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 16.64 cfs @ 12.17 hrs, Volume= 1.354 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	120,996	60	Woods, Fair, HSG B
	185,114	67	Weighted Average
	185,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	725	0.0850	0.99		**Lag/CN Method, Tc 1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 15.88 cfs @ 12.19 hrs, Volume= 1.341 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

Area (sf)	CN	Description
22,122	79	Woods, Fair, HSG D
191,792	60	Woods, Fair, HSG B
213,914	62	Weighted Average
213,914		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	701	0.0870	0.88		**Lag/CN Method, Tc-2s**

Summary for Subcatchment 3S: Drainage Area 3

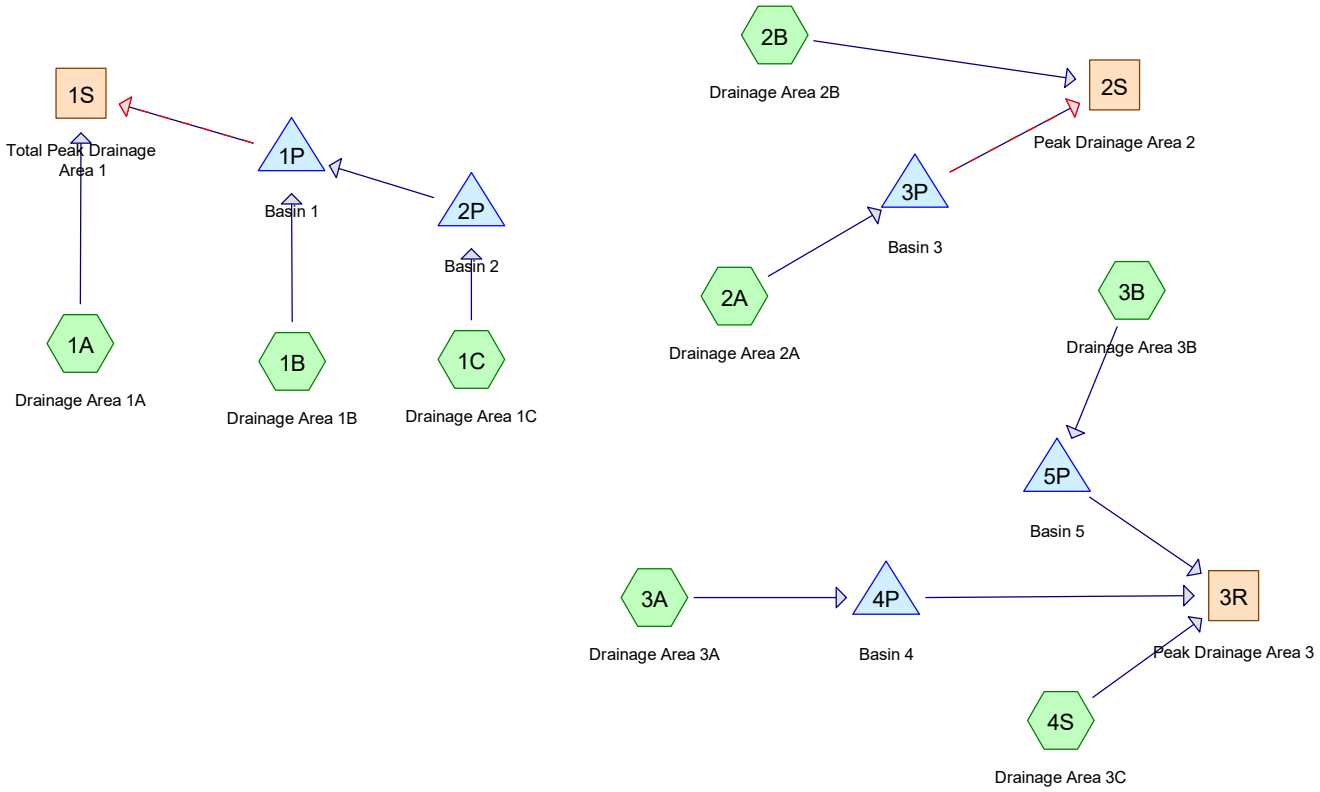
Runoff = 4.99 cfs @ 12.17 hrs, Volume= 0.406 af, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

Area (sf)	CN	Description
69,180	60	Woods, Fair, HSG B
69,180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	580	0.0900	0.82		**Lag/CN Method, Tc-3s**

PROPOSED CONDITIONS



Subcat Reach Pond Link

Routing Diagram for Proposed Conditions
Prepared by Killingly Engineering Associates, LLC, Printed 5/26/2023

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 2.19 cfs @ 12.22 hrs, Volume= 0.205 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 4.41 cfs @ 12.10 hrs, Volume= 0.307 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 0.12 cfs @ 12.10 hrs, Volume= 0.012 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 1.89 cfs @ 12.10 hrs, Volume= 0.129 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 1.51 cfs @ 12.14 hrs, Volume= 0.137 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 0.97 cfs @ 12.07 hrs, Volume= 0.064 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 0.31 cfs @ 12.05 hrs, Volume= 0.019 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 1.16 cfs @ 12.16 hrs, Volume= 0.094 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 0.44" for 2-year event
Inflow = 2.19 cfs @ 12.22 hrs, Volume= 0.207 af
Outflow = 2.19 cfs @ 12.22 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 0.59" for 2-year event
Inflow = 1.51 cfs @ 12.14 hrs, Volume= 0.203 af
Outflow = 1.51 cfs @ 12.14 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 0.60" for 2-year event
Inflow = 1.16 cfs @ 12.16 hrs, Volume= 0.117 af
Outflow = 1.16 cfs @ 12.16 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 1.52" for 2-year event
Inflow = 4.42 cfs @ 12.10 hrs, Volume= 0.318 af
Outflow = 0.49 cfs @ 13.02 hrs, Volume= 0.292 af, Atten= 89%, Lag= 54.9 min
Discarded = 0.46 cfs @ 13.02 hrs, Volume= 0.290 af
Primary = 0.03 cfs @ 13.02 hrs, Volume= 0.002 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 371.10' @ 13.02 hrs Surf.Area= 4,007 sf Storage= 5,973 cf

Plug-Flow detention time= 142.7 min calculated for 0.292 af (92% of inflow)
Center-of-Mass det. time= 114.9 min (908.4 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.46 cfs @ 13.02 hrs HW=371.10' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=0.03 cfs @ 13.02 hrs HW=371.10' (Free Discharge)
├**1=Culvert** (Passes 0.00 cfs of 0.04 cfs potential flow)
│ ├**3=Orifice/Grate** (Controls 0.00 cfs)
│ └**5=Orifice/Grate** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.10 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 0.35" for 2-year event
Inflow = 0.12 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.04 cfs @ 12.57 hrs, Volume= 0.011 af, Atten= 67%, Lag= 28.0 min
Primary = 0.04 cfs @ 12.57 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.13' @ 12.57 hrs Surf.Area= 968 sf Storage= 119 cf

Plug-Flow detention time= 66.3 min calculated for 0.011 af (91% of inflow)
Center-of-Mass det. time= 38.2 min (901.0 - 862.8)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.04 cfs @ 12.57 hrs HW=372.13' (Free Discharge)
1=Culvert (Inlet Controls 0.04 cfs @ 0.96 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 1.55" for 2-year event
Inflow = 1.89 cfs @ 12.10 hrs, Volume= 0.129 af
Outflow = 0.20 cfs @ 13.03 hrs, Volume= 0.066 af, Atten= 90%, Lag= 55.8 min
Primary = 0.20 cfs @ 13.03 hrs, Volume= 0.066 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 358.35' @ 13.03 hrs Surf.Area= 1,908 sf Storage= 3,219 cf

Plug-Flow detention time= 194.3 min calculated for 0.066 af (51% of inflow)
Center-of-Mass det. time= 112.7 min (909.9 - 797.1)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.20 cfs @ 13.03 hrs HW=358.35' (Free Discharge)
1=Culvert (Inlet Controls 0.20 cfs @ 1.60 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=356.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 0.94" for 2-year event
Inflow = 0.97 cfs @ 12.07 hrs, Volume= 0.064 af
Outflow = 0.06 cfs @ 14.88 hrs, Volume= 0.024 af, Atten= 94%, Lag= 168.9 min
Primary = 0.06 cfs @ 14.88 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 393.17' @ 14.88 hrs Surf.Area= 1,792 sf Storage= 1,855 cf

Plug-Flow detention time= 255.7 min calculated for 0.024 af (37% of inflow)
Center-of-Mass det. time= 158.0 min (977.3 - 819.3)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.06 cfs @ 14.88 hrs HW=393.17' (Free Discharge)
1=Culvert (Inlet Controls 0.06 cfs @ 1.10 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 0.94" for 2-year event
Inflow = 0.31 cfs @ 12.05 hrs, Volume= 0.019 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 362.08' @ 20.00 hrs Surf.Area= 1,248 sf Storage= 845 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=361.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 4.03 cfs @ 12.21 hrs, Volume= 0.355 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 6.40 cfs @ 12.10 hrs, Volume= 0.450 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 0.35 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 2.83 cfs @ 12.10 hrs, Volume= 0.194 af, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 3.40 cfs @ 12.12 hrs, Volume= 0.261 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 1.68 cfs @ 12.07 hrs, Volume= 0.106 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 0.54 cfs @ 12.04 hrs, Volume= 0.032 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 2.04 cfs @ 12.15 hrs, Volume= 0.158 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 0.90" for 5-year event
Inflow = 4.15 cfs @ 12.22 hrs, Volume= 0.423 af
Outflow = 4.15 cfs @ 12.22 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 1.14" for 5-year event
Inflow = 3.48 cfs @ 12.13 hrs, Volume= 0.391 af
Outflow = 3.48 cfs @ 12.13 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 1.15" for 5-year event
Inflow = 2.04 cfs @ 12.15 hrs, Volume= 0.224 af
Outflow = 2.04 cfs @ 12.15 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 2.27" for 5-year event
Inflow = 6.47 cfs @ 12.10 hrs, Volume= 0.475 af
Outflow = 0.88 cfs @ 12.80 hrs, Volume= 0.418 af, Atten= 86%, Lag= 41.9 min
Discarded = 0.55 cfs @ 12.80 hrs, Volume= 0.350 af
Primary = 0.33 cfs @ 12.80 hrs, Volume= 0.068 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 371.78' @ 12.80 hrs Surf.Area= 4,764 sf Storage= 8,954 cf

Plug-Flow detention time= 137.1 min calculated for 0.417 af (88% of inflow)
Center-of-Mass det. time= 100.1 min (885.3 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.55 cfs @ 12.80 hrs HW=371.78' (Free Discharge)
└─**6=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.33 cfs @ 12.80 hrs HW=371.78' (Free Discharge)
├─**1=Culvert** (Passes 0.00 cfs of 1.93 cfs potential flow)
│ ├─**3=Orifice/Grate** (Controls 0.00 cfs)
│ └─**5=Orifice/Grate** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 3.79 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 0.73" for 5-year event
Inflow = 0.35 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.14 cfs @ 12.41 hrs, Volume= 0.025 af, Atten= 60%, Lag= 20.5 min
Primary = 0.14 cfs @ 12.41 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.26' @ 12.41 hrs Surf.Area= 1,053 sf Storage= 253 cf

Plug-Flow detention time= 46.6 min calculated for 0.025 af (94% of inflow)
Center-of-Mass det. time= 27.8 min (868.1 - 840.2)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.14 cfs @ 12.41 hrs HW=372.26' (Free Discharge)
1=Culvert (Inlet Controls 0.14 cfs @ 1.37 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 2.33" for 5-year event
Inflow = 2.83 cfs @ 12.10 hrs, Volume= 0.194 af
Outflow = 0.44 cfs @ 12.63 hrs, Volume= 0.130 af, Atten= 85%, Lag= 31.8 min
Primary = 0.44 cfs @ 12.63 hrs, Volume= 0.130 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 358.91' @ 12.63 hrs Surf.Area= 2,219 sf Storage= 4,486 cf

Plug-Flow detention time= 162.0 min calculated for 0.130 af (67% of inflow)
Center-of-Mass det. time= 92.3 min (880.1 - 787.8)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.44 cfs @ 12.63 hrs HW=358.91' (Free Discharge)
1=Culvert (Inlet Controls 0.44 cfs @ 3.19 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=356.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 1.57" for 5-year event
Inflow = 1.68 cfs @ 12.07 hrs, Volume= 0.106 af
Outflow = 0.26 cfs @ 12.59 hrs, Volume= 0.066 af, Atten= 84%, Lag= 31.6 min
Primary = 0.26 cfs @ 12.59 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 393.38' @ 12.59 hrs Surf.Area= 1,865 sf Storage= 2,243 cf

Plug-Flow detention time= 161.5 min calculated for 0.066 af (62% of inflow)
Center-of-Mass det. time= 82.4 min (890.1 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.26 cfs @ 12.59 hrs HW=393.38' (Free Discharge)
1=Culvert (Inlet Controls 0.26 cfs @ 1.65 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 1.57" for 5-year event
Inflow = 0.54 cfs @ 12.04 hrs, Volume= 0.032 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 362.50' @ 20.00 hrs Surf.Area= 1,430 sf Storage= 1,411 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=361.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 5.75 cfs @ 12.20 hrs, Volume= 0.497 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 8.09 cfs @ 12.10 hrs, Volume= 0.574 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 0.041 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 3.64 cfs @ 12.10 hrs, Volume= 0.251 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 5.22 cfs @ 12.12 hrs, Volume= 0.383 af, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 2.32 cfs @ 12.06 hrs, Volume= 0.146 af, Depth> 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 0.74 cfs @ 12.04 hrs, Volume= 0.044 af, Depth> 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 2.84 cfs @ 12.15 hrs, Volume= 0.218 af, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 1.36" for 10-year event
Inflow = 6.07 cfs @ 12.21 hrs, Volume= 0.640 af
Outflow = 6.07 cfs @ 12.21 hrs, Volume= 0.640 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 1.65" for 10-year event
Inflow = 5.58 cfs @ 12.12 hrs, Volume= 0.569 af
Outflow = 5.58 cfs @ 12.12 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 1.66" for 10-year event
Inflow = 3.14 cfs @ 12.16 hrs, Volume= 0.323 af
Outflow = 3.14 cfs @ 12.16 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 2.93" for 10-year event
Inflow = 8.27 cfs @ 12.10 hrs, Volume= 0.613 af
Outflow = 1.41 cfs @ 12.63 hrs, Volume= 0.536 af, Atten= 83%, Lag= 31.9 min
Discarded = 0.59 cfs @ 12.63 hrs, Volume= 0.392 af
Primary = 0.82 cfs @ 12.63 hrs, Volume= 0.144 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.32' @ 12.63 hrs Surf.Area= 5,138 sf Storage= 11,610 cf

Plug-Flow detention time= 132.6 min calculated for 0.536 af (87% of inflow)
Center-of-Mass det. time= 93.5 min (873.3 - 779.8)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.59 cfs @ 12.63 hrs HW=372.32' (Free Discharge)
└─**6=Exfiltration** (Exfiltration Controls 0.59 cfs)

Primary OutFlow Max=0.81 cfs @ 12.63 hrs HW=372.32' (Free Discharge)
├─**1=Culvert** (Passes 0.36 cfs of 3.88 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.91 fps)
│ └─**5=Orifice/Grate** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Orifice Controls 0.45 cfs @ 5.16 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 1.13" for 10-year event
Inflow = 0.60 cfs @ 12.07 hrs, Volume= 0.041 af
Outflow = 0.26 cfs @ 12.33 hrs, Volume= 0.039 af, Atten= 56%, Lag= 16.1 min
Primary = 0.26 cfs @ 12.33 hrs, Volume= 0.039 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.38' @ 12.33 hrs Surf.Area= 1,129 sf Storage= 380 cf

Plug-Flow detention time= 38.5 min calculated for 0.039 af (96% of inflow)
Center-of-Mass det. time= 23.5 min (852.6 - 829.1)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.26 cfs @ 12.33 hrs HW=372.38' (Free Discharge)
1=Culvert (Inlet Controls 0.26 cfs @ 1.65 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 3.02" for 10-year event
Inflow = 3.64 cfs @ 12.10 hrs, Volume= 0.251 af
Outflow = 0.59 cfs @ 12.61 hrs, Volume= 0.186 af, Atten= 84%, Lag= 30.5 min
Primary = 0.59 cfs @ 12.61 hrs, Volume= 0.186 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 359.49' @ 12.61 hrs Surf.Area= 2,542 sf Storage= 5,799 cf

Plug-Flow detention time= 156.1 min calculated for 0.185 af (74% of inflow)
Center-of-Mass det. time= 95.5 min (877.3 - 781.8)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.59 cfs @ 12.61 hrs HW=359.49' (Free Discharge)
1=Culvert (Inlet Controls 0.59 cfs @ 4.31 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=356.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 2.15" for 10-year event
Inflow = 2.32 cfs @ 12.06 hrs, Volume= 0.146 af
Outflow = 0.50 cfs @ 12.49 hrs, Volume= 0.104 af, Atten= 78%, Lag= 25.9 min
Primary = 0.50 cfs @ 12.49 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 393.70' @ 12.49 hrs Surf.Area= 1,976 sf Storage= 2,856 cf

Plug-Flow detention time= 131.3 min calculated for 0.104 af (72% of inflow)
Center-of-Mass det. time= 64.5 min (865.1 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.50 cfs @ 12.49 hrs HW=393.70' (Free Discharge)
1=Culvert (Inlet Controls 0.50 cfs @ 2.54 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 2.15" for 10-year event
Inflow = 0.74 cfs @ 12.04 hrs, Volume= 0.044 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 362.85' @ 20.00 hrs Surf.Area= 1,580 sf Storage= 1,935 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=361.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 8.25 cfs @ 12.20 hrs, Volume= 0.707 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 10.41 cfs @ 12.10 hrs, Volume= 0.747 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 0.99 cfs @ 12.06 hrs, Volume= 0.063 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 4.75 cfs @ 12.10 hrs, Volume= 0.332 af, Depth> 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 7.97 cfs @ 12.11 hrs, Volume= 0.569 af, Depth> 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 3.25 cfs @ 12.06 hrs, Volume= 0.204 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 1.03 cfs @ 12.04 hrs, Volume= 0.062 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 4.01 cfs @ 12.15 hrs, Volume= 0.307 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 2.11" for 25-year event
Inflow = 9.33 cfs @ 12.22 hrs, Volume= 0.993 af
Outflow = 9.33 cfs @ 12.22 hrs, Volume= 0.993 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 2.42" for 25-year event
Inflow = 8.51 cfs @ 12.12 hrs, Volume= 0.834 af
Outflow = 8.51 cfs @ 12.12 hrs, Volume= 0.834 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 2.41" for 25-year event
Inflow = 4.61 cfs @ 12.15 hrs, Volume= 0.468 af
Outflow = 4.61 cfs @ 12.15 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 3.86" for 25-year event
Inflow = 10.77 cfs @ 12.10 hrs, Volume= 0.809 af
Outflow = 2.86 cfs @ 12.51 hrs, Volume= 0.713 af, Atten= 73%, Lag= 24.4 min
Discarded = 0.62 cfs @ 12.51 hrs, Volume= 0.427 af
Primary = 2.24 cfs @ 12.51 hrs, Volume= 0.286 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.83' @ 12.51 hrs Surf.Area= 5,357 sf Storage= 14,323 cf

Plug-Flow detention time= 115.7 min calculated for 0.713 af (88% of inflow)
Center-of-Mass det. time= 78.3 min (852.3 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.62 cfs @ 12.51 hrs HW=372.83' (Free Discharge)
└─**6=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=2.24 cfs @ 12.51 hrs HW=372.83' (Free Discharge)
├─**1=Culvert** (Passes 1.69 cfs of 5.13 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 1.69 cfs @ 3.11 fps)
│ └─**5=Orifice/Grate** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 6.21 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 1.76" for 25-year event
Inflow = 0.99 cfs @ 12.06 hrs, Volume= 0.063 af
Outflow = 0.42 cfs @ 12.30 hrs, Volume= 0.061 af, Atten= 57%, Lag= 14.5 min
Primary = 0.42 cfs @ 12.30 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.57' @ 12.30 hrs Surf.Area= 1,253 sf Storage= 610 cf

Plug-Flow detention time= 33.1 min calculated for 0.061 af (97% of inflow)
Center-of-Mass det. time= 21.3 min (840.0 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.42 cfs @ 12.30 hrs HW=372.57' (Free Discharge)
1=Culvert (Inlet Controls 0.42 cfs @ 2.15 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 3.99" for 25-year event
Inflow = 4.75 cfs @ 12.10 hrs, Volume= 0.332 af
Outflow = 0.74 cfs @ 12.61 hrs, Volume= 0.265 af, Atten= 84%, Lag= 30.8 min
Primary = 0.74 cfs @ 12.61 hrs, Volume= 0.265 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 360.25' @ 12.61 hrs Surf.Area= 3,110 sf Storage= 7,718 cf

Plug-Flow detention time= 158.3 min calculated for 0.264 af (80% of inflow)
Center-of-Mass det. time= 106.2 min (881.4 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.74 cfs @ 12.61 hrs HW=360.25' (Free Discharge)
1=Culvert (Inlet Controls 0.74 cfs @ 5.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=356.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 3.00" for 25-year event
Inflow = 3.25 cfs @ 12.06 hrs, Volume= 0.204 af
Outflow = 0.73 cfs @ 12.47 hrs, Volume= 0.161 af, Atten= 77%, Lag= 24.7 min
Primary = 0.73 cfs @ 12.47 hrs, Volume= 0.161 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.22' @ 12.47 hrs Surf.Area= 2,188 sf Storage= 3,939 cf

Plug-Flow detention time= 114.4 min calculated for 0.161 af (79% of inflow)
Center-of-Mass det. time= 59.7 min (852.8 - 793.1)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.73 cfs @ 12.47 hrs HW=394.22' (Free Discharge)
1=Culvert (Inlet Controls 0.73 cfs @ 3.74 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 3.00" for 25-year event
Inflow = 1.03 cfs @ 12.04 hrs, Volume= 0.062 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 363.30' @ 20.00 hrs Surf.Area= 1,776 sf Storage= 2,701 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=361.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 10.19 cfs @ 12.20 hrs, Volume= 0.872 af, Depth> 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 12.12 cfs @ 12.10 hrs, Volume= 0.878 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 1.30 cfs @ 12.06 hrs, Volume= 0.082 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 5.59 cfs @ 12.10 hrs, Volume= 0.393 af, Depth> 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 10.15 cfs @ 12.11 hrs, Volume= 0.718 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 3.96 cfs @ 12.06 hrs, Volume= 0.249 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 1.25 cfs @ 12.04 hrs, Volume= 0.076 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 4.90 cfs @ 12.15 hrs, Volume= 0.375 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 2.71" for 50-year event
Inflow = 12.50 cfs @ 12.22 hrs, Volume= 1.273 af
Outflow = 12.50 cfs @ 12.22 hrs, Volume= 1.273 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 3.03" for 50-year event
Inflow = 10.79 cfs @ 12.11 hrs, Volume= 1.043 af
Outflow = 10.79 cfs @ 12.11 hrs, Volume= 1.043 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 3.02" for 50-year event
Inflow = 5.66 cfs @ 12.15 hrs, Volume= 0.587 af
Outflow = 5.66 cfs @ 12.15 hrs, Volume= 0.587 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 4.57" for 50-year event
Inflow = 12.57 cfs @ 12.10 hrs, Volume= 0.957 af
Outflow = 4.53 cfs @ 12.41 hrs, Volume= 0.851 af, Atten= 64%, Lag= 18.8 min
Discarded = 0.63 cfs @ 12.41 hrs, Volume= 0.450 af
Primary = 3.90 cfs @ 12.41 hrs, Volume= 0.402 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 373.13' @ 12.41 hrs Surf.Area= 5,480 sf Storage= 15,905 cf

Plug-Flow detention time= 105.8 min calculated for 0.851 af (89% of inflow)
Center-of-Mass det. time= 70.0 min (840.5 - 770.5)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.63 cfs @ 12.41 hrs HW=373.12' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.63 cfs)

Primary OutFlow Max=3.88 cfs @ 12.41 hrs HW=373.12' (Free Discharge)
├**1=Culvert** (Passes 3.29 cfs of 5.71 cfs potential flow)
│ ├**3=Orifice/Grate** (Orifice Controls 2.21 cfs @ 4.05 fps)
│ └**5=Orifice/Grate** (Weir Controls 1.08 cfs @ 1.54 fps)
└**2=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.73 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 2.28" for 50-year event
Inflow = 1.30 cfs @ 12.06 hrs, Volume= 0.082 af
Outflow = 0.52 cfs @ 12.32 hrs, Volume= 0.079 af, Atten= 60%, Lag= 15.3 min
Primary = 0.52 cfs @ 12.32 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.74' @ 12.32 hrs Surf.Area= 1,360 sf Storage= 827 cf

Plug-Flow detention time= 31.5 min calculated for 0.079 af (97% of inflow)
Center-of-Mass det. time= 21.2 min (834.1 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.52 cfs @ 12.32 hrs HW=372.74' (Free Discharge)
1=Culvert (Inlet Controls 0.52 cfs @ 2.65 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 4.73" for 50-year event
Inflow = 5.59 cfs @ 12.10 hrs, Volume= 0.393 af
Outflow = 2.17 cfs @ 12.39 hrs, Volume= 0.325 af, Atten= 61%, Lag= 17.4 min
Primary = 0.96 cfs @ 12.40 hrs, Volume= 0.312 af
Secondary = 1.21 cfs @ 12.39 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 361.62' @ 12.40 hrs Surf.Area= 3,402 sf Storage= 8,507 cf

Plug-Flow detention time= 154.7 min calculated for 0.325 af (83% of inflow)
Center-of-Mass det. time= 106.9 min (878.0 - 771.2)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.96 cfs @ 12.40 hrs HW=361.62' (Free Discharge)
1=Culvert (Inlet Controls 0.96 cfs @ 7.02 fps)

Secondary OutFlow Max=1.09 cfs @ 12.39 hrs HW=361.62' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 1.09 cfs @ 0.92 fps)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 3.66" for 50-year event
Inflow = 3.96 cfs @ 12.06 hrs, Volume= 0.249 af
Outflow = 0.87 cfs @ 12.47 hrs, Volume= 0.206 af, Atten= 78%, Lag= 24.8 min
Primary = 0.87 cfs @ 12.47 hrs, Volume= 0.206 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.61' @ 12.47 hrs Surf.Area= 2,381 sf Storage= 4,840 cf

Plug-Flow detention time= 108.8 min calculated for 0.205 af (82% of inflow)
Center-of-Mass det. time= 61.2 min (849.7 - 788.6)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.87 cfs @ 12.47 hrs HW=394.61' (Free Discharge)
1=Culvert (Inlet Controls 0.87 cfs @ 4.44 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 3.66" for 50-year event
Inflow = 1.25 cfs @ 12.04 hrs, Volume= 0.076 af
Outflow = 0.03 cfs @ 17.51 hrs, Volume= 0.005 af, Atten= 98%, Lag= 328.2 min
Primary = 0.03 cfs @ 17.51 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 363.50' @ 17.51 hrs Surf.Area= 1,862 sf Storage= 3,065 cf

Plug-Flow detention time= 488.2 min calculated for 0.005 af (7% of inflow)
Center-of-Mass det. time= 325.5 min (1,112.6 - 787.1)

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.01 cfs @ 17.51 hrs HW=363.50' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.17 fps)

Summary for Subcatchment 1A: Drainage Area 1A

Runoff = 12.33 cfs @ 12.20 hrs, Volume= 1.055 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
*	64,118	79	Woods, Fair, HSG D (wetlands)
	59,224	60	Woods, Fair, HSG B
	13,100	58	Meadow, non-grazed, HSG B
	136,442	69	Weighted Average
	136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	788	0.0660	0.94		**Lag/CN Method, Tc 1A**

Summary for Subcatchment 1B: Drainage Area 1B

Runoff = 13.95 cfs @ 12.10 hrs, Volume= 1.019 af, Depth> 5.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
	23,199	58	Meadow, non-grazed, HSG B
	6,920	60	Woods, Fair, HSG B
*	60,620	98	Paved parking/roof, HSG B
	90,739	85	Weighted Average
	30,119		33.19% Pervious Area
	60,620		66.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	642	0.0720	1.52		**Lag/CN Method, Tc-1B**

Summary for Subcatchment 1C: Drainage Area 1C

Runoff = 1.65 cfs @ 12.06 hrs, Volume= 0.103 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

Area (sf)	CN	Description
18,775	58	Meadow, non-grazed, HSG B
18,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	160	0.1500	0.77		**Lag/CN Method, Tc-3s**

Summary for Subcatchment 2A: Drainage Area 2A

Runoff = 6.48 cfs @ 12.10 hrs, Volume= 0.460 af, Depth> 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
	17,545	58	Meadow, non-grazed, HSG B
*	25,940	98	Paved parking/roof, HSG B
	43,485	82	Weighted Average
	17,545		40.35% Pervious Area
	25,940		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	405	0.0490	1.03		**Lag/CN Method, Tc-2A**

Summary for Subcatchment 2B: Drainage Area 2B

Runoff = 12.58 cfs @ 12.11 hrs, Volume= 0.886 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

Area (sf)	CN	Description
23,123	79	Woods, Fair, HSG D
14,450	58	Meadow, non-grazed, HSG B
98,869	60	Woods, Fair, HSG B
136,442	63	Weighted Average
136,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	328	0.0790	0.74		**Lag/CN Method, Tc-2B**

Summary for Subcatchment 3A: Drainage Area 3A

Runoff = 4.73 cfs @ 12.06 hrs, Volume= 0.298 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
*	12,180	98	Paved parking/roof, HSG B
	6,900	60	Woods, Fair, HSG B
	16,442	58	Meadow, non-grazed, HSG B
	35,522	72	Weighted Average
	23,342		65.71% Pervious Area
	12,180		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	262	0.1220	1.11		**Lag/CN Method, Tc-3A**

Summary for Subcatchment 3B: Drainage Area 3B

Runoff = 1.49 cfs @ 12.04 hrs, Volume= 0.091 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,700	98	Paved parking/roof, HSG B
	7,105	58	Meadow, non-grazed, HSG B
	10,805	72	Weighted Average
	7,105		65.76% Pervious Area
	3,700		34.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					**Direct Entry, Tc-3B**

Summary for Subcatchment 4S: Drainage Area 3C

Runoff = 5.88 cfs @ 12.14 hrs, Volume= 0.452 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

	Area (sf)	CN	Description
*	17,507	98	Paved parking/roof, HSG B
	16,745	60	Woods, Fair, HSG B
	21,040	58	Meadow, non-grazed, HSG B
	55,292	71	Weighted Average
	37,785		68.34% Pervious Area
	17,507		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	610	0.0780	1.02		**Lag/CN Method, Tc-3C**

Summary for Reach 1S: Total Peak Drainage Area 1

Inflow Area = 5.646 ac, 24.65% Impervious, Inflow Depth > 3.37" for 100-year event
Inflow = 17.36 cfs @ 12.22 hrs, Volume= 1.587 af
Outflow = 17.36 cfs @ 12.22 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2S: Peak Drainage Area 2

Inflow Area = 4.131 ac, 14.42% Impervious, Inflow Depth > 3.71" for 100-year event
Inflow = 13.51 cfs @ 12.19 hrs, Volume= 1.277 af
Outflow = 13.51 cfs @ 12.19 hrs, Volume= 1.277 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Peak Drainage Area 3

Inflow Area = 2.333 ac, 32.86% Impervious, Inflow Depth > 3.74" for 100-year event
Inflow = 6.76 cfs @ 12.15 hrs, Volume= 0.727 af
Outflow = 6.76 cfs @ 12.15 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Basin 1

Inflow Area = 2.514 ac, 55.35% Impervious, Inflow Depth > 5.34" for 100-year event
Inflow = 14.49 cfs @ 12.10 hrs, Volume= 1.119 af
Outflow = 6.36 cfs @ 12.33 hrs, Volume= 1.003 af, Atten= 56%, Lag= 14.0 min
Discarded = 0.65 cfs @ 12.33 hrs, Volume= 0.471 af
Primary = 5.71 cfs @ 12.33 hrs, Volume= 0.532 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 373.35' @ 12.33 hrs Surf.Area= 5,577 sf Storage= 17,170 cf

Plug-Flow detention time= 96.6 min calculated for 1.000 af (89% of inflow)
Center-of-Mass det. time= 62.9 min (830.4 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	24,047 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	1,675	0	0
370.00	2,776	2,226	2,226
372.00	5,004	7,780	10,006
374.00	5,850	10,854	20,860
374.50	6,900	3,188	24,047

Device	Routing	Invert	Outlet Devices
#1	Primary	371.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 371.00' / 370.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	371.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	372.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	373.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 1	372.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Discarded	369.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.65 cfs @ 12.33 hrs HW=373.35' (Free Discharge)
└─**6=Exfiltration** (Exfiltration Controls 0.65 cfs)

Primary OutFlow Max=5.70 cfs @ 12.33 hrs HW=373.35' (Free Discharge)
├─**1=Culvert** (Passes 5.08 cfs of 6.13 cfs potential flow)
│ ├─**3=Orifice/Grate** (Orifice Controls 2.54 cfs @ 4.66 fps)
│ └─**5=Orifice/Grate** (Orifice Controls 2.54 cfs @ 3.24 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.62 cfs @ 7.12 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=369.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = 0.431 ac, 0.00% Impervious, Inflow Depth > 2.86" for 100-year event
Inflow = 1.65 cfs @ 12.06 hrs, Volume= 0.103 af
Outflow = 0.61 cfs @ 12.34 hrs, Volume= 0.100 af, Atten= 63%, Lag= 16.6 min
Primary = 0.61 cfs @ 12.34 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 372.93' @ 12.34 hrs Surf.Area= 1,482 sf Storage= 1,096 cf

Plug-Flow detention time= 31.0 min calculated for 0.100 af (97% of inflow)
Center-of-Mass det. time= 21.8 min (829.6 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	372.00'	5,628 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
372.00	885	0	0
374.00	2,175	3,060	3,060
375.00	2,960	2,568	5,628

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**6.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 370.00' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.61 cfs @ 12.34 hrs HW=372.92' (Free Discharge)
1=Culvert (Inlet Controls 0.61 cfs @ 3.12 fps)

Summary for Pond 3P: Basin 3

Inflow Area = 0.998 ac, 59.65% Impervious, Inflow Depth > 5.53" for 100-year event
Inflow = 6.48 cfs @ 12.10 hrs, Volume= 0.460 af
Outflow = 4.40 cfs @ 12.21 hrs, Volume= 0.391 af, Atten= 32%, Lag= 7.0 min
Primary = 0.97 cfs @ 12.20 hrs, Volume= 0.342 af
Secondary = 3.41 cfs @ 12.21 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 361.75' @ 12.20 hrs Surf.Area= 3,402 sf Storage= 8,507 cf

Plug-Flow detention time= 142.4 min calculated for 0.390 af (85% of inflow)
Center-of-Mass det. time= 98.8 min (866.2 - 767.4)

Volume	Invert	Avail.Storage	Storage Description
#1	356.00'	8,507 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
356.00	705	0	0
358.00	1,710	2,415	2,415
360.00	2,825	4,535	6,950
360.50	3,402	1,557	8,507

Device	Routing	Invert	Outlet Devices
#1	Primary	358.00'	**5.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 358.00' / 356.00' S= 0.0526 '/' Cc= 0.900 n= 0.012, Flow Area= 0.14 sf
#2	Secondary	361.50'	**10.0' long x 16.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.97 cfs @ 12.20 hrs HW=361.75' (Free Discharge)
1=Culvert (Inlet Controls 0.97 cfs @ 7.15 fps)

Secondary OutFlow Max=2.98 cfs @ 12.21 hrs HW=361.73' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 2.98 cfs @ 1.29 fps)

Summary for Pond 4P: Basin 4

Inflow Area = 0.815 ac, 34.29% Impervious, Inflow Depth > 4.39" for 100-year event
Inflow = 4.73 cfs @ 12.06 hrs, Volume= 0.298 af
Outflow = 0.99 cfs @ 12.48 hrs, Volume= 0.255 af, Atten= 79%, Lag= 25.2 min
Primary = 0.99 cfs @ 12.48 hrs, Volume= 0.255 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 395.02' @ 12.48 hrs Surf.Area= 2,581 sf Storage= 5,854 cf

Plug-Flow detention time= 106.8 min calculated for 0.254 af (85% of inflow)
Center-of-Mass det. time= 64.5 min (848.8 - 784.3)

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	8,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	1,390	0	0
394.00	2,080	3,470	3,470
396.00	3,060	5,140	8,610

Device	Routing	Invert	Outlet Devices
#1	Primary	393.00'	**6.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 393.00' / 390.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.99 cfs @ 12.48 hrs HW=395.02' (Free Discharge)
1=Culvert (Inlet Controls 0.99 cfs @ 5.06 fps)

Summary for Pond 5P: Basin 5

Inflow Area = 0.248 ac, 34.24% Impervious, Inflow Depth > 4.39" for 100-year event
Inflow = 1.49 cfs @ 12.04 hrs, Volume= 0.091 af
Outflow = 0.08 cfs @ 14.38 hrs, Volume= 0.020 af, Atten= 95%, Lag= 140.7 min
Primary = 0.08 cfs @ 14.38 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 363.51' @ 14.38 hrs Surf.Area= 1,866 sf Storage= 3,081 cf

Plug-Flow detention time= 311.1 min calculated for 0.020 af (22% of inflow)
Center-of-Mass det. time= 200.6 min (983.4 - 782.8)

Volume	Invert	Avail.Storage	Storage Description
#1	361.00'	4,040 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
361.00	285	0	0
362.00	1,215	750	750
364.00	2,075	3,290	4,040

Device	Routing	Invert	Outlet Devices
#1	Primary	363.50'	**16.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.06 cfs @ 14.38 hrs HW=363.51' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.29 fps)

SUPPORTING DOCUMENTATION

NOAA Point Precipitation Estimates
Web Soil Survey
Rawls Rate Table

NOAA Atlas 14, Volume 10, Version 3
Location name: North Grosvenordale, Connecticut, USA*
Latitude: 41.9744°, Longitude: -71.904°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.329** (0.260-0.413)	**0.392** (0.309-0.492)	**0.495** (0.388-0.624)	**0.579** (0.452-0.735)	**0.696** (0.524-0.921)	**0.784** (0.578-1.06)	**0.875** (0.625-1.23)	**0.976** (0.660-1.40)	**1.12** (0.725-1.67)	**1.23** (0.780-1.88)
10-min	**0.466** (0.368-0.585)	**0.555** (0.437-0.697)	**0.700** (0.549-0.882)	**0.820** (0.640-1.04)	**0.985** (0.742-1.31)	**1.11** (0.818-1.50)	**1.24** (0.885-1.74)	**1.38** (0.936-1.99)	**1.58** (1.03-2.36)	**1.75** (1.11-2.66)
15-min	**0.549** (0.433-0.689)	**0.653** (0.514-0.820)	**0.823** (0.646-1.04)	**0.964** (0.753-1.22)	**1.16** (0.874-1.54)	**1.31** (0.963-1.77)	**1.46** (1.04-2.05)	**1.63** (1.10-2.34)	**1.86** (1.21-2.78)	**2.05** (1.30-3.13)
30-min	**0.770** (0.607-0.966)	**0.916** (0.722-1.15)	**1.16** (0.907-1.46)	**1.35** (1.06-1.72)	**1.63** (1.23-2.15)	**1.83** (1.35-2.48)	**2.05** (1.46-2.87)	**2.28** (1.55-3.29)	**2.62** (1.70-3.90)	**2.88** (1.83-4.39)
60-min	**0.991** (0.782-1.24)	**1.18** (0.929-1.48)	**1.49** (1.17-1.88)	**1.74** (1.36-2.21)	**2.10** (1.58-2.77)	**2.36** (1.74-3.19)	**2.64** (1.88-3.70)	**2.94** (1.99-4.23)	**3.37** (2.19-5.03)	**3.71** (2.35-5.66)
2-hr	**1.27** (1.01-1.58)	**1.50** (1.19-1.88)	**1.88** (1.49-2.36)	**2.20** (1.73-2.77)	**2.63** (2.00-3.48)	**2.95** (2.20-4.00)	**3.30** (2.39-4.66)	**3.72** (2.52-5.32)	**4.35** (2.83-6.45)	**4.88** (3.10-7.39)
3-hr	**1.46** (1.17-1.82)	**1.73** (1.38-2.15)	**2.17** (1.72-2.70)	**2.53** (2.00-3.17)	**3.03** (2.32-3.99)	**3.40** (2.54-4.59)	**3.80** (2.77-5.36)	**4.29** (2.92-6.13)	**5.06** (3.30-7.48)	**5.73** (3.65-8.64)
6-hr	**1.86** (1.49-2.29)	**2.21** (1.77-2.73)	**2.79** (2.23-3.45)	**3.26** (2.59-4.07)	**3.92** (3.02-5.14)	**4.40** (3.32-5.92)	**4.93** (3.62-6.93)	**5.60** (3.82-7.93)	**6.64** (4.34-9.75)	**7.55** (4.82-11.3)
12-hr	**2.33** (1.88-2.85)	**2.80** (2.26-3.43)	**3.57** (2.87-4.40)	**4.21** (3.37-5.22)	**5.10** (3.94-6.63)	**5.75** (4.35-7.66)	**6.46** (4.75-8.99)	**7.33** (5.02-10.3)	**8.67** (5.69-12.6)	**9.82** (6.29-14.6)
24-hr	**2.76** (2.25-3.36)	**3.36** (2.73-4.10)	**4.34** (3.52-5.31)	**5.16** (4.15-6.34)	**6.28** (4.88-8.11)	**7.11** (5.41-9.41)	**8.00** (5.91-11.1)	**9.09** (6.26-12.7)	**10.8** (7.08-15.6)	**12.2** (7.81-18.0)
2-day	**3.11** (2.55-3.76)	**3.82** (3.13-4.62)	**4.97** (4.06-6.04)	**5.93** (4.81-7.24)	**7.25** (5.67-9.32)	**8.22** (6.30-10.8)	**9.28** (6.90-12.8)	**10.6** (7.31-14.7)	**12.6** (8.31-18.1)	**14.3** (9.19-21.0)
3-day	**3.37** (2.78-4.06)	**4.14** (3.40-4.99)	**5.39** (4.41-6.52)	**6.43** (5.23-7.82)	**7.86** (6.17-10.1)	**8.91** (6.85-11.7)	**10.1** (7.51-13.8)	**11.5** (7.94-15.9)	**13.6** (9.04-19.6)	**15.5** (10.0-22.7)
4-day	**3.61** (2.98-4.33)	**4.42** (3.65-5.31)	**5.75** (4.72-6.93)	**6.85** (5.59-8.31)	**8.37** (6.59-10.7)	**9.48** (7.31-12.4)	**10.7** (8.00-14.6)	**12.2** (8.46-16.8)	**14.5** (9.62-20.7)	**16.5** (10.7-24.0)
7-day	**4.28** (3.55-5.11)	**5.19** (4.31-6.20)	**6.68** (5.52-8.01)	**7.91** (6.49-9.54)	**9.61** (7.61-12.2)	**10.9** (8.41-14.1)	**12.2** (9.18-16.6)	**13.9** (9.68-19.1)	**16.5** (11.0-23.4)	**18.7** (12.1-27.1)
10-day	**4.96** (4.14-5.90)	**5.93** (4.93-7.06)	**7.51** (6.22-8.97)	**8.82** (7.26-10.6)	**10.6** (8.43-13.4)	**12.0** (9.27-15.4)	**13.4** (10.1-18.0)	**15.1** (10.6-20.7)	**17.8** (11.8-25.1)	**20.0** (13.0-28.9)
20-day	**7.12** (5.98-8.41)	**8.15** (6.84-9.64)	**9.84** (8.22-11.7)	**11.2** (9.32-13.4)	**13.2** (10.5-16.4)	**14.6** (11.3-18.6)	**16.1** (12.0-21.2)	**17.8** (12.5-24.1)	**20.1** (13.5-28.2)	**22.0** (14.3-31.5)
30-day	**8.94** (7.54-10.5)	**9.99** (8.42-11.8)	**11.7** (9.83-13.8)	**13.2** (11.0-15.6)	**15.1** (12.1-18.6)	**16.6** (12.9-20.9)	**18.2** (13.5-23.6)	**19.7** (13.9-26.5)	**21.7** (14.6-30.3)	**23.2** (15.1-33.1)
45-day	**11.2** (9.47-13.1)	**12.3** (10.4-14.4)	**14.0** (11.8-16.5)	**15.5** (13.0-18.4)	**17.5** (14.0-21.4)	**19.1** (14.9-23.8)	**20.6** (15.3-26.5)	**22.0** (15.6-29.5)	**23.7** (16.0-33.0)	**24.9** (16.3-35.4)
60-day	**13.1** (11.1-15.2)	**14.2** (12.0-16.6)	**16.0** (13.5-18.7)	**17.5** (14.7-20.6)	**19.5** (15.7-23.8)	**21.2** (16.5-26.3)	**22.7** (16.9-29.0)	**24.1** (17.1-32.1)	**25.6** (17.3-35.4)	**26.5** (17.4-37.6)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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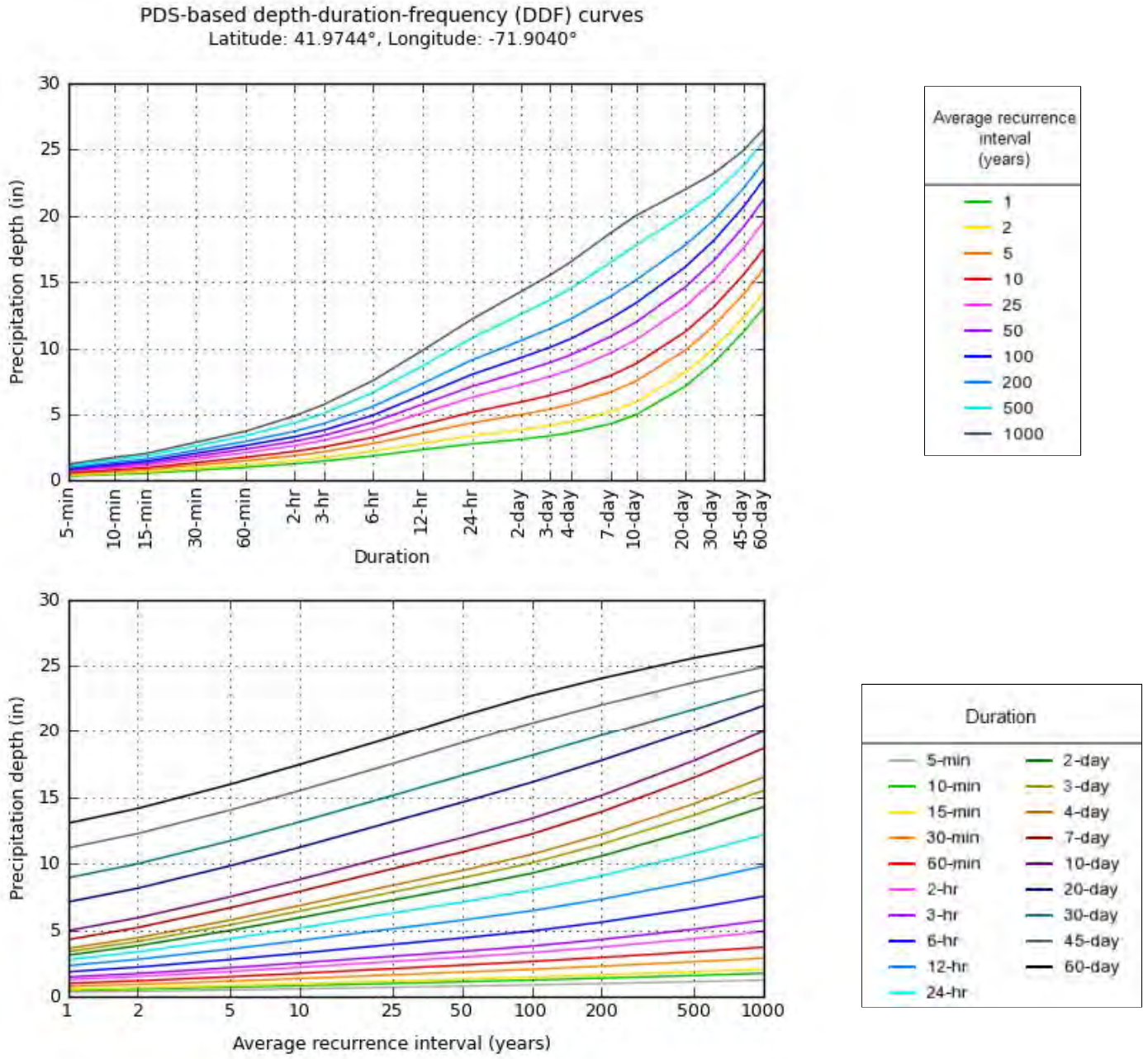
PF graphical



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Wed May 3 11:16:03 2023

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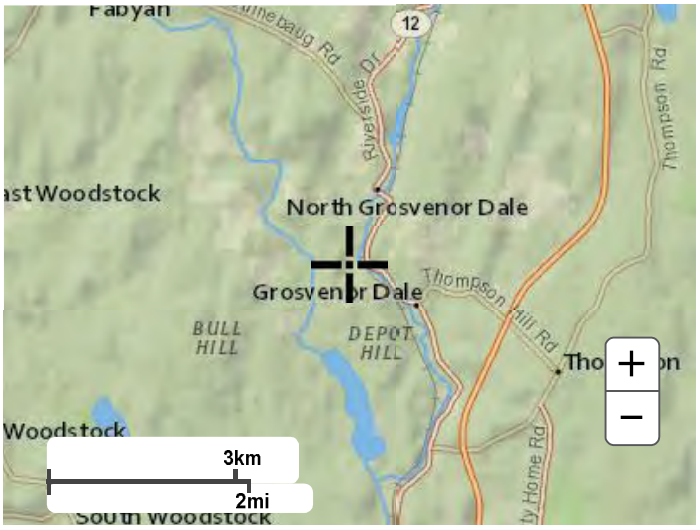
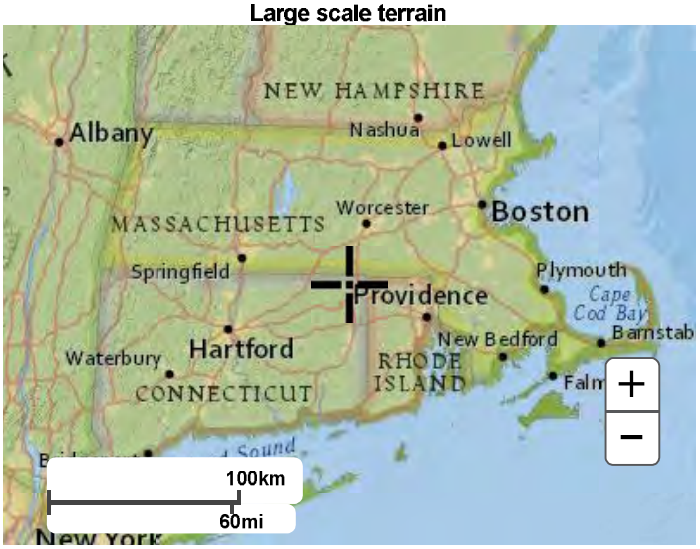
Maps & aerials

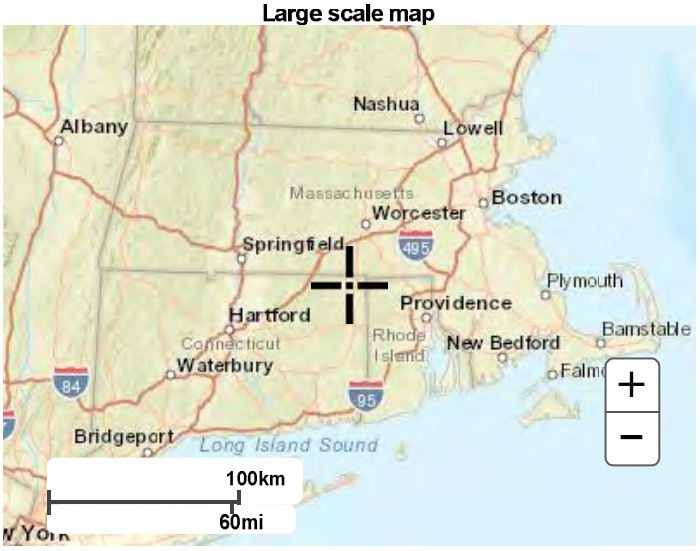
Small scale terrain



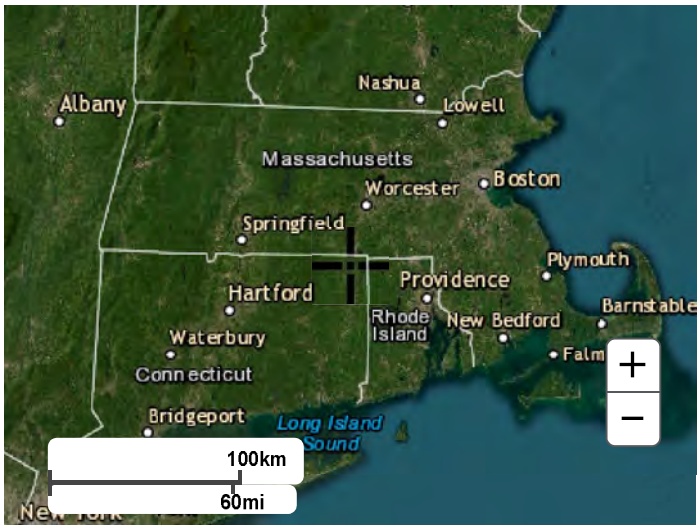
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Soil Map—State of Connecticut
(Pollock)

Map Scale: 1:1,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

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

Soils
- Soil 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 1:12,000.

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: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

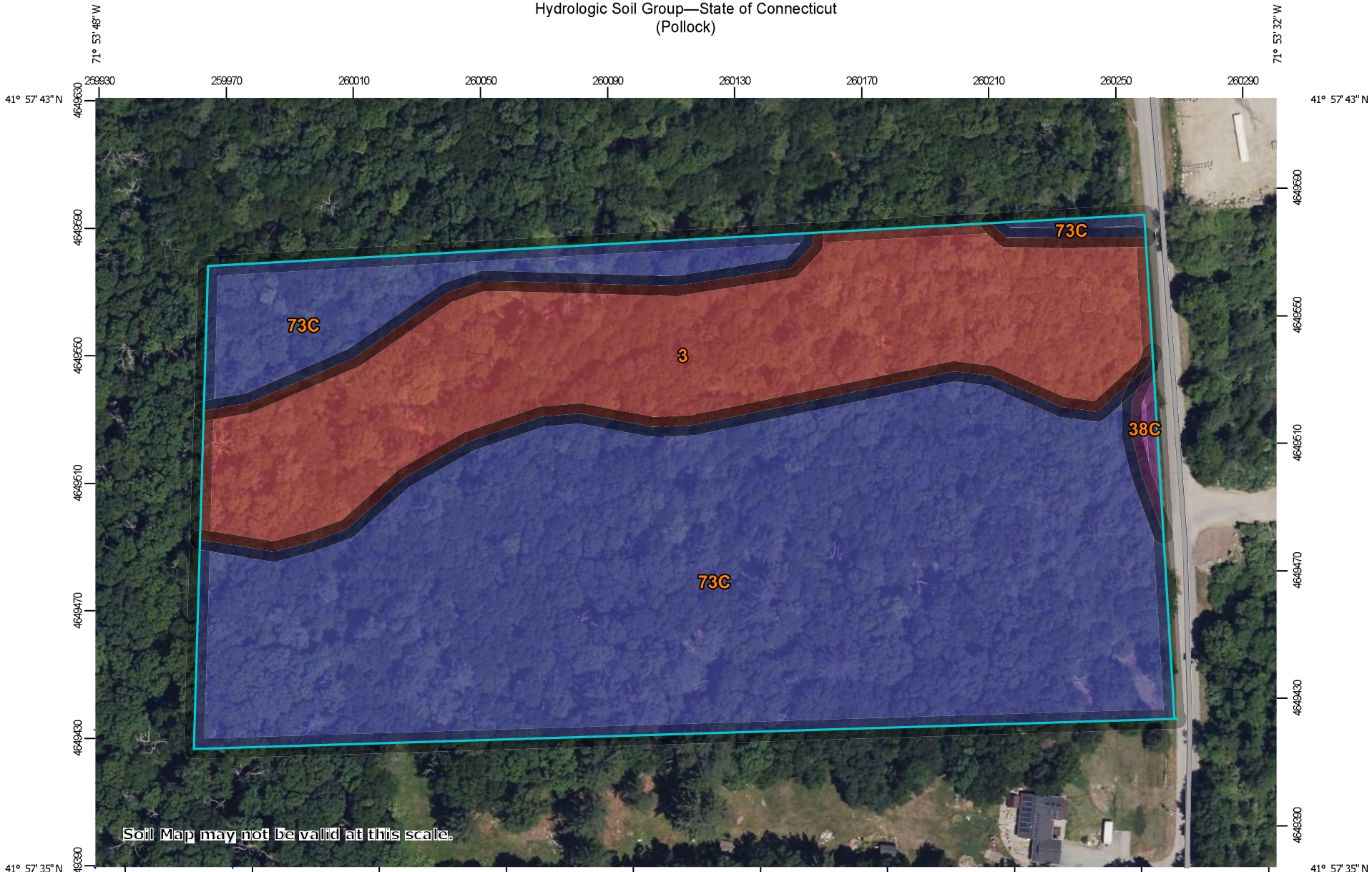
Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	3.5	30.1%
38C	Hinckley loamy sand, 3 to 15 percent slopes	0.1	0.6%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	8.0	69.3%
Totals for Area of Interest		**11.6**	**100.0%**

Hydrologic Soil Group—State of Connecticut
(Pollock)



Map Scale: 1:1,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	3.5	30.1%
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	0.1	0.6%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	8.0	69.3%
Totals for Area of Interest			**11.6**	**100.0%**

Description

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

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

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

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

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

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

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

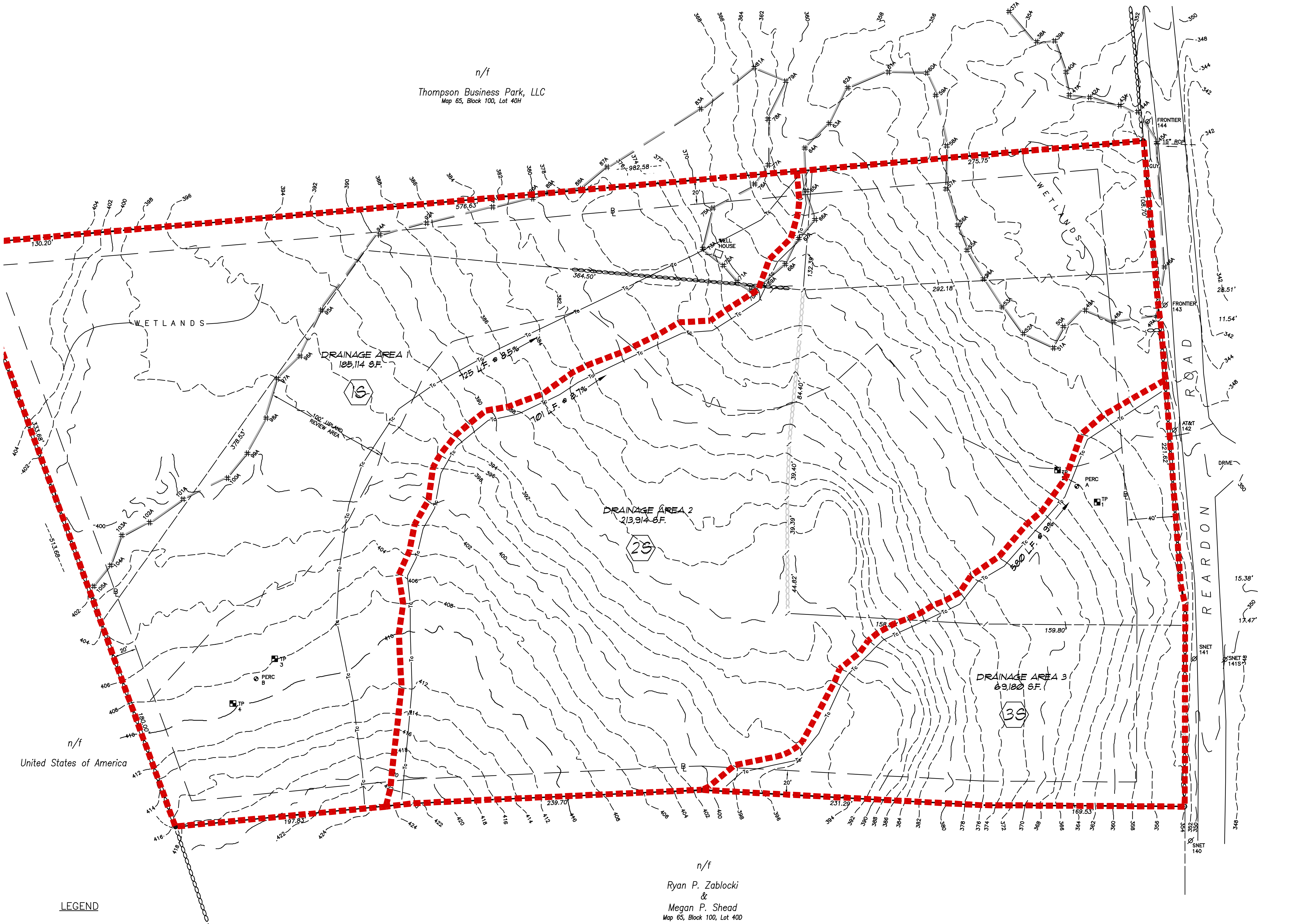
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

DRAINAGE AREA PLANS



DATE	DESCRIPTION

REVISIONS

EXISTING DRAINAGE AREAS
PREPARED FOR

THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 03/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: NET
SHEET: 1 OF 2	CHK BY: ---
DWG. No: CLIENT FILE	JOB No: 22062

NORMAND E. THIBEAULT, JR., P.E.
LIC #PEN 0022834
5/1/2023
DATE

LEGEND

- IRON PIN TO BE SET
- IRON PIN FOUND
- UTILITY POLE
- PERCOLATION TEST HOLE
- TEST HOLE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- INLAND WETLANDS FLAG
- BUILDING SETBACK LINE
- STONE WALL
- SILT FENCE

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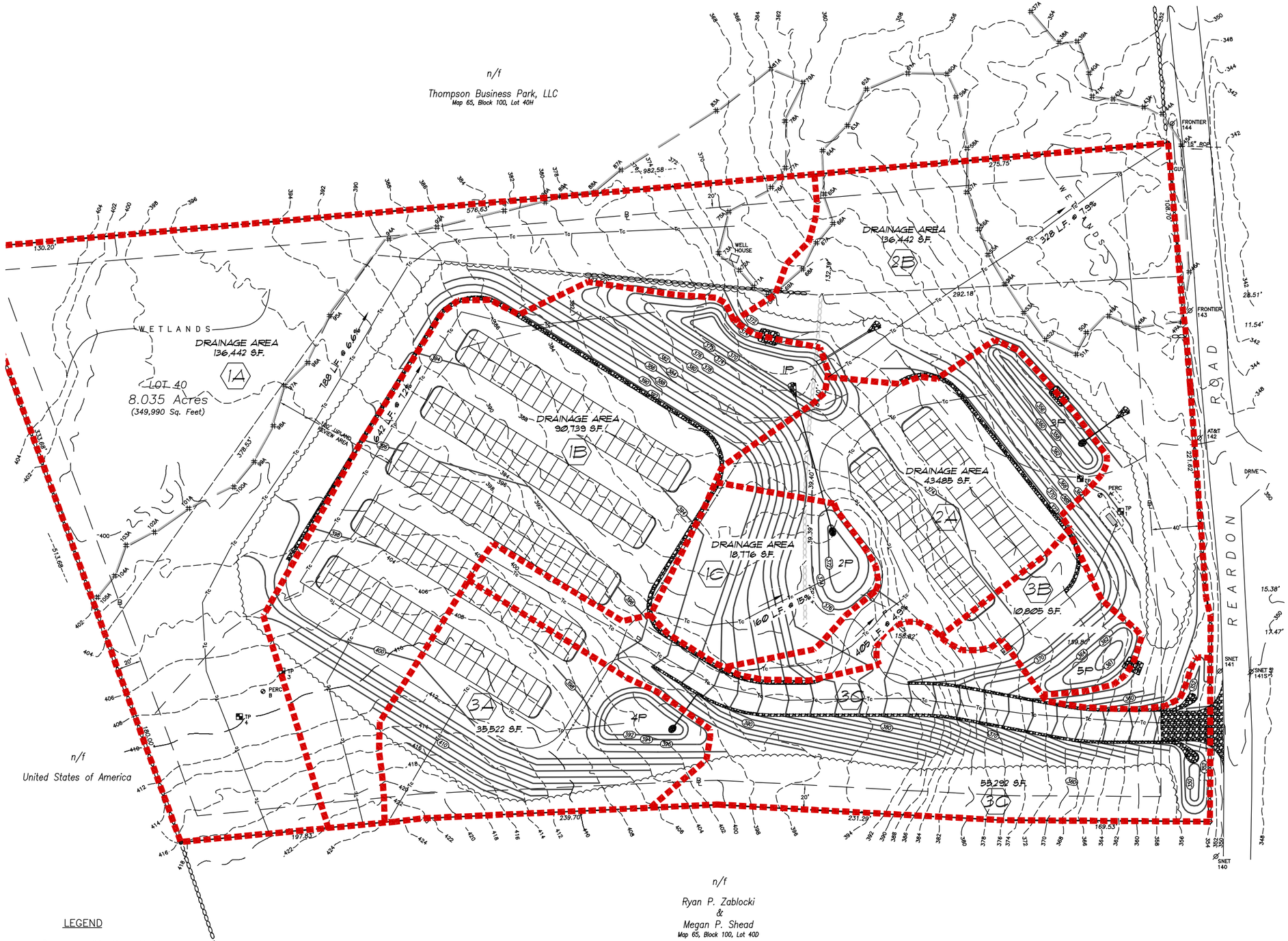

LEGEND

- IRON PIN TO BE SET
- IRON PIN FOUND
- UTILITY POLE
- PERCOLATION TEST HOLE
- TEST HOLE
- 100 EXISTING CONTOURS
- 100 PROPOSED CONTOURS
- INLAND WETLANDS FLAG
- BUILDING SETBACK LINE
- STONE WALL
- SILT FENCE

DATE	DESCRIPTION
	REVISIONS

PROPOSED DRAINAGE AREAS
PREPARED FOR

THOMPSON BUSINESS PARK, LLC

REARDON ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

STATE OF CONNECTICUT · NORMAND E. THIBEAULT, JR. · No. 22834 · LICENSED PROFESSIONAL ENGINEER

NORMAND E. THIBEAULT, JR., P.E.
LIC #PEN 0022834

5/1/2023
DATE

DATE: 03/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: NET
SHEET: 2 OF 2	CHK BY: ---
DWG. No: CLIENT FILE	JOB No: 22062

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Agenda Item E) a) 3. Old Applications

IWA23011, Kevin Calabro, 117 New Road, (Assessor's Map 154, block 3, lot 2H), relocation of man-made watercourse, curtain drain, clearing and grading in 100-foot upland review area, stamped received 5/2/23, to be statutorily received 5/9/23.

NOTES:

1. This survey has been prepared pursuant to the Regulations of Connecticut State Agencies Sections 20–300b–1 through 20–300b–20 and the "Standards for Surveys and Maps in the State of Connecticut" as adopted by the Connecticut Association of Land Surveyors, Inc. on September 26, 1996;
   - This survey conforms to a Class "A–2" horizontal accuracy.
   - Topographic features conform to a Class "T–2", "V–2" vertical accuracy.
   - Survey Type: Improvement Location Survey.
   - Boundary Determination Category: Resurvey.
2. Zone = RA–80.
3. Owner of record: Kevin Calabro
   117 New Road
   Thompson, CT 06277
4. Parcel is shown as Lot #2H, Block #3 on Assessors Map #154.
5. North orientation, bearings and coordinate values shown are based on North American Datum of 1983 (NAD 83) and are taken from GPS readings.
6. Wetlands shown were taken from Rocky Brook Estates Subdivision map.
7. Parcel lies within Flood Hazard Zone 'C' (areas of minimal flooding) as shown on FIRM Map # 090117 Panel 0010B Effective Date: 11/01/1984.

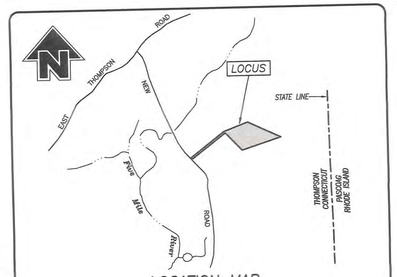
MAP REFERENCE:

1. "Property Survey – Showing Boundary Line Adjustment – Prepared for – O&G Industries, Inc. & River Junction Estates, LLC – New Road – Thompson, Connecticut – Scale: 1" = 80' – Date: 4/24/2020 Sheet 1 of 1 – Prepared by: Provost & Rovero, Inc."

NAD 83

40 20 0 40

GRAPHIC SCALE IN FEET



LOCATION MAP
SCALE: 1" = 1000'

n/f
Douglas W. Gray
&
Roberta M. Gray
Map 154, Block 3, Lot 2J

n/f
Douglas W. Gray
&
Roberta M. Gray
Map 154, Block 3, Lot 2A

n/f
Alexander J. Kennett
&
Deborah M. Kennett
Map 154, Block 3, Lot 2K

n/f
Jodie Aprin
Map 154, Block 3, Lot 2G

n/f
Derek E. Deary
Map 154, Block 3, Lot 2F

n/f
Fernando Ernesto Rivas
Map 154, Block 3, Lot 2D

701A
34A
23A
3

N 89°14'04" E
357.84'

S 64°33'54" E
507.44'

248.56'

258.88'

412.66'

S 71°59'41" W
566.92'

N 43°39'39" W
340.67'

N 52°15'07" E
583.17'

S 52°15'07" W
351.65'

175.43'

25.33'
N 47°01'29" W

100' UPLAND REVIEW AREA

WETLANDS

4' HIGH STOCKADE FENCE

REGRADE AS REQUIRED TO REDUCE PONDED AREA

PONDED AREA

GRAVEL DRIVE

WELL

PROPOSED ROOF LEADER

1 STORY WOOD FRAME HOUSE

PATIO

PORCH

ELEC TRANS.

4" PIPE

POND

CURTAIN DRAIN OUTLET

LEACHING FIELD

4" PVC

CURTAIN DRAIN

APPROXIMATE LOCATION OF OUTLET PIPE FROM CURTAIN DRAIN PER CONTRACTOR. NOTE: CONSTRUCTED WITH TIGHT PIPE.

SEPTIC TANK

TREELINE

NEWLY CLEARED AREA

PROPOSED CLEARING LIMIT

AREA = 3.997 ACRES
(174,109 S.F.)

NOTE: SEE SHEET 2 OF 2 FOR DRIVEWAY SWALE DESIGN

NEW ROAD

DRIVE

15" CPP

POST

SNET 3355

LEGEND

- IRON PIN FOUND
- UTILITY POLE
- ELEC HH — ELECTRIC HANDHOLE
- INLAND WETLANDS FLAG

BEFORE YOU DIG
CALL BEFORE YOU DIG
AT LEAST TWO FULL BUSINESS DAYS
BEFORE DIGGING OR DISTURBING EARTH
DIAL 811 OR 1-800-922-4455

APPROVED BY THE TOWN OF THOMPSON
INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

Received
MAY 02 2023
Thompson Wetlands Office

STATE OF CONNECTICUT
GREG A. GLAUDE
No. 70191
LICENSED LAND SURVEYOR

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON,

GREG A. GLAUDE, L.S. LIC. NO. 70191 5.02.2023 DATE

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SEAL AND SIGNATURE OF THE LAND SURVEYOR.

DATE	DESCRIPTION
	REVISIONS

IMPROVEMENT LOCATION SURVEY
OVERALL PLAN
PREPARED FOR

KEVIN CALABRO

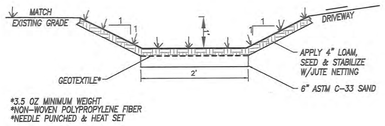
117 NEW ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 3/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: NET
SHEET: 1 OF 2	CHK BY: GG
DWG. No: CLIENT FILE	JOB No: 20112

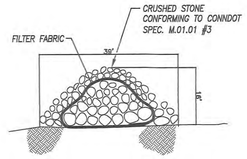
K:\20112\Drawings\2023 DRAINAGE\01 OVERALL .dwg Apr 27, 2023 - 4:02 PM

Appl #WA23011 Copy 1



GRASS LINED SWALE

NOT TO SCALE

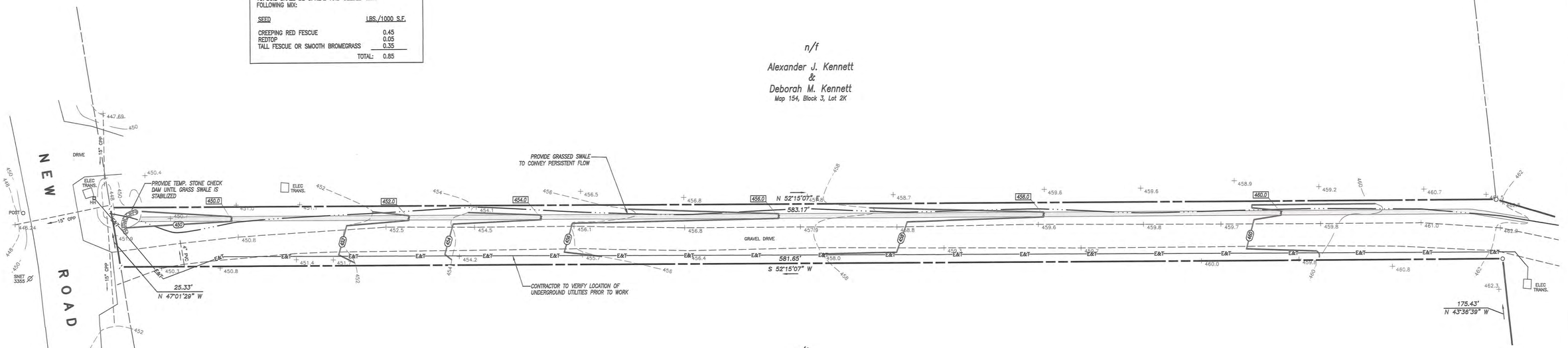


STONE CHECK DAM

NOT TO SCALE

UPON ACHIEVEMENT OF FINAL GRADES, 4" OF TOPSOIL SHALL BE SPREAD AND SEEDED WITH FOLLOWING MIX:

SEED	LBS./1000 S.F.
CREEPING RED FESCUE	0.45
REDTOP	0.05
TALL FESCUE OR SMOOTH BROMEGRASS	0.35
TOTAL:	0.85



n/f

Alexander J. Kennett

&

Deborah M. Kennett

Map 154, Block 3, Lot 2K

n/f

Jodie Aprin

Map 154, Block 3, Lot 2G

SOIL TYPES:

3 Ridgebury, Leicester, and Whitman soils, extremely stony.

Included with this soil in mapping are areas of moderately well drained Sutton and Woodbridge soils that are slightly higher on the landscape. Sutton soils lack the dense substratum that Woodbridge soils have. Also included are a few non-stony surface soils, small areas of soils subject to flooding, small areas with steeper slopes, and areas with silt loam surface and subsoil textures. Minor components make up about 10 percent of the map unit.
Slope: nearly level to gently sloping
Landscape: depressions on uplands, drainageways on uplands
Surface cover: 3 to 14 percent stones
Size of map unit: Areas commonly range from 3 to 150 acres.

23A—Sudbury sandy loam, 0 to 5 percent slopes

Included with this soil in mapping are areas of somewhat excessively drained Merrimac soils and well drained Agawam soils that are higher on the landscape. Also included are moderately well drained Ninigret and Tisbury soils in areas with a finer surface texture. Small areas of poorly drained Walpole soils are included in drainageways and shallow depressions. Minor components make up about 20 percent of this map unit.

34A—Merrimac sandy loam, 0 to 3 percent slopes

Included with this soil in mapping are areas of excessively drained Hinckley and Windsor soils that are higher on the landscape. Hinckley soils are sandy and gravelly and Windsor soils are sandy throughout. Also included are well drained Agawam soils that are loamy over sand and gravel. Moderately well drained Ninigret and Sudbury soils are included in slightly lower areas of the landscape. Ninigret soils are loamy over sand and gravel and Sudbury soils are sandy and gravelly. Small areas of poorly drained Walpole soils and very poorly drained Scarboro soils are included in depressions and drainageways. A few areas include soils with a fine sandy loam surface texture. Reddish brown soils are included in the southern part of the town of Woodbury, in Litchfield County. Minor components make up about 20 percent of this map unit

701A—Ninigret fine sandy loam, 0 to 3 percent slopes

LEGEND

- ○ IRON PIN FOUND
- Ø UTILITY POLE
- ELEC HH ELECTRIC HANDHOLE
- #—— INLAND WETLANDS FLAG

BEFORE YOU DIG CALL BEFORE YOU DIG

AT LEAST TWO FULL BUSINESS DAYS BEFORE DIGGING OR DISTURBING EARTH

DIAL 811 OR 1-800-922-4455

APPROVED BY THE TOWN OF THOMPSON INLAND WETLANDS & WATERCOURSES AGENCY

CHAIRMAN DATE

Received

MAY 02 2023

Thompson Wetlands Office

STATE OF CONNECTICUT · NORMAND THIBEAULT JR. · No. 22834 · LICENSED PROFESSIONAL ENGINEER

NORMAND E. THIBEAULT, JR., P.E. DATE 4/27/2023

LIC #PEN 0022834

DATE	DESCRIPTION

REVISIONS

DRIVEWAY DRAINAGE PLAN

PREPARED FOR

KEVIN CALABRO

117 NEW ROAD

THOMPSON, CONNECTICUT

Killingly Engineering Associates

Civil Engineering & Surveying

114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 3/10/2023	DRAWN: RGS
SCALE: 1" = 20'	DESIGN: NET
SHEET: 2 OF 2	CHK BY: GG
DWG. No: CLIENT FILE	JOB No: 20112

N

NAD 83

20 10 0 20

GRAPHIC SCALE IN FEET

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DRAINAGE ANALYSIS

Prepared for

PROPOSED DRIVEWAY SWALE
NEW ROAD
THOMPSON, CT

April 2023

Prepared for

Kevin Calabro

Prepared by

Killingly Engineering Associates
Civil Engineering & Surveying

Normand Thibeault Jr., P.E.
CT License #22834

Introduction

In order to address persistent groundwater flow associated with historical over excavation on the subject property and runoff conditions during rain events, Killingly Engineering Associates, LLC has evaluated runoff conditions from the subject property and designed a grassed drainage swale along the existing driveway to convey runoff to a cross culvert at New Road. The attached computation verifies that the swale is capable of conveying a 100-year design storm with sufficient factor of safety.

Summary

According to the USDA-NRCS Soil Survey, the site generally consists of soils associated with hydrologic soil group ñAò which are excessively well drained. On this property, these soils have been disturbed and excavation on site indicates that the surface soils are underlain with ledge and restrictive soils.

The calculations utilized HydroCAD® Stormwater Modeling System, a computer model, to analyze pre-and post-development drainage conditions, and to aid in the design of the stormwater detention system. The model used the Soil Conservation Service TR-20 method with a Type III 24-hour rainfall to calculate the runoff. The 2 through 100-year frequency storms were analyzed to evaluate peak runoff for conditions for existing and proposed conditions. The table below summarizes our findings;

Peak Runoff Rates to Grassed Swale

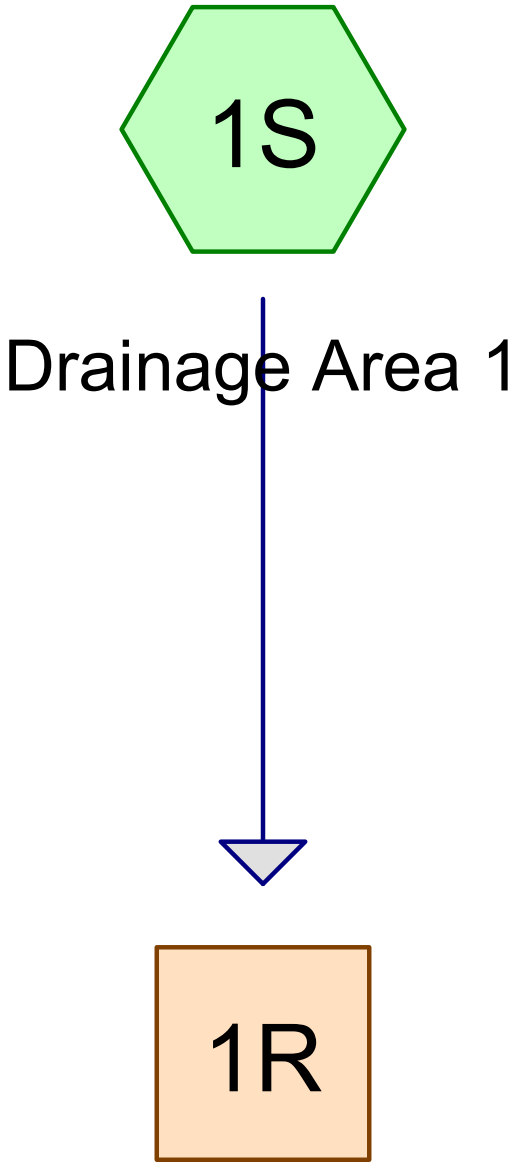
Design Storm	Depth (in)	Existing Peak
2-Year	3.36	0.06 CFS
5-Year	4.27	0.42 CFS
10-Year	5.03	0.96 CFS
25-Year	6.08	2.04 CFS
50-Year	6.86	3.01 CFS
100-Year	7.68	4.20 CFS

The capacity of the swale when full is 17.7 CFS and the maximum capacity of the 4ò curtain drain and 2ò well overflow is less than 1 cubic foot per second. The swale as designed is capable of conveying a 100-year design storm plus any additional flows generated by the curtain drain and well overflow.

HYDROCAD CALCULATIONS

SUPPORTING DOCUMENTATION

NOAA Point Precipitation Estimates



Subcat Reach Pond Link

Routing Diagram for Drainage Analysis
Prepared by Killingly Engineering Associates, LLC, Printed 5/30/2023

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.06 cfs @ 12.65 hrs, Volume= 0.024 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.36"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 0.11" for 2-year event
Inflow = 0.06 cfs @ 12.65 hrs, Volume= 0.024 af
Outflow = 0.06 cfs @ 13.33 hrs, Volume= 0.023 af, Atten= 9%, Lag= 40.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.68 fps, Min. Travel Time= 14.1 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 16.8 min

Peak Storage= 47 cf @ 13.09 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.44 cfs @ 12.46 hrs, Volume= 0.075 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.34"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 0.34" for 5-year event
Inflow = 0.44 cfs @ 12.46 hrs, Volume= 0.075 af
Outflow = 0.42 cfs @ 12.66 hrs, Volume= 0.073 af, Atten= 6%, Lag= 12.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.43 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 11.4 min

Peak Storage= 170 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.00 cfs @ 12.34 hrs, Volume= 0.134 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.16"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 0.61" for 10-year event
Inflow = 1.00 cfs @ 12.34 hrs, Volume= 0.134 af
Outflow = 0.96 cfs @ 12.51 hrs, Volume= 0.132 af, Atten= 4%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 9.5 min

Peak Storage= 295 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 2.12 cfs @ 12.28 hrs, Volume= 0.235 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.28"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

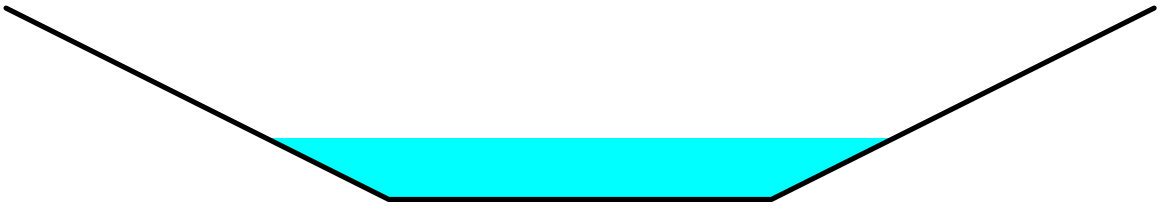
Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 1.07" for 25-year event
Inflow = 2.12 cfs @ 12.28 hrs, Volume= 0.235 af
Outflow = 2.04 cfs @ 12.41 hrs, Volume= 0.233 af, Atten= 4%, Lag= 8.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.41 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 8.1 min

Peak Storage= 494 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'



Summary for Subcatchment 1S: Drainage Area 1

Runoff = 3.14 cfs @ 12.26 hrs, Volume= 0.322 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=7.11"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 1.46" for 50-year event
Inflow = 3.14 cfs @ 12.26 hrs, Volume= 0.322 af
Outflow = 3.01 cfs @ 12.38 hrs, Volume= 0.319 af, Atten= 4%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.71 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 7.4 min

Peak Storage= 651 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 4.33 cfs @ 12.26 hrs, Volume= 0.425 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.00"

Area (sf)	CN	Description
4,100	98	Roofs, HSG A
4,450	96	Gravel surface, HSG A
3,240	98	Water Surface, HSG A
62,130	49	50-75% Grass cover, Fair, HSG A
41,130	36	Woods, Fair, HSG A
115,050	49	Weighted Average
107,710		93.62% Pervious Area
7,340		6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	470	0.0590	0.48		**Lag/CN Method, Tc 1**

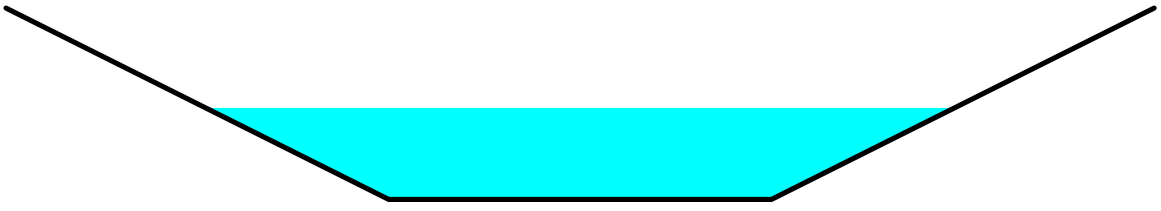
Summary for Reach 1R: Driveway Swale

Inflow Area = 2.641 ac, 6.38% Impervious, Inflow Depth > 1.93" for 100-year event
Inflow = 4.33 cfs @ 12.26 hrs, Volume= 0.425 af
Outflow = 4.20 cfs @ 12.36 hrs, Volume= 0.422 af, Atten= 3%, Lag= 6.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.98 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 6.9 min

Peak Storage= 819 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 17.72 cfs

2.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 580.0' Slope= 0.0207 '/'
Inlet Invert= 462.00', Outlet Invert= 450.00'



DRAINAGE AREA PLAN

NOTES:

1. This survey has been prepared pursuant to the Regulations of Connecticut State Agencies Sections 20–300b–1 through 20–300b–20 and the "Standards for Surveys and Maps in the State of Connecticut" as adopted by the Connecticut Association of Land Surveyors, Inc. on September 26, 1996;
   - This survey conforms to a Class "A–2" horizontal accuracy.
   - Topographic features conform to a Class "T–2", "V–2" vertical accuracy.
   - Survey Type: Improvement Location Survey.
   - Boundary Determination Category: Resurvey.
2. Zone = RA–80.
3. Owner of record: Kevin Calabro
   117 New Road
   Thompson, CT 06277
4. Parcel is shown as Lot #2H, Block #3 on Assessors Map #154.
5. North orientation, bearings and coordinate values shown are based on North American Datum of 1983 (NAD 83) and are taken from GPS readings.
6. Wetlands shown were taken from Rocky Brook Estates Subdivision map.
7. Parcel lies within Flood Hazard Zone 'C' (areas of minimal flooding) as shown on FIRM Map # 090117 Panel 0010B Effective Date: 11/01/1984.

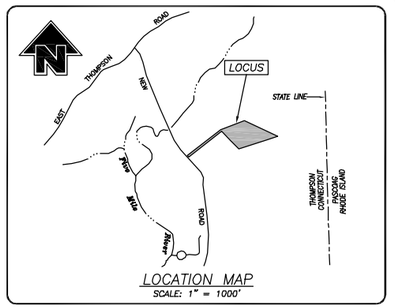
MAP REFERENCE:

1. "Property Survey – Showing Boundary Line Adjustment – Prepared for – O&G Industries, Inc. & River Junction Estates, LLC – New Road – Thompson, Connecticut – Scale: 1" = 80' – Date: 4/24/2020 Sheet 1 of 1 – Prepared by: Provost & Rovero, Inc."

NAD 83

40 20 0 40

GRAPHIC SCALE IN FEET



LOCATION MAP
SCALE: 1" = 1000'

701A

n/f
Douglas W. Gray
&
Roberta M. Gray
Map 154, Block 3, Lot 2J

n/f
Douglas W. Gray
&
Roberta M. Gray
Map 154, Block 3, Lot 2A

100' UPLAND REVIEW AREA

WETLANDS

4" HIGH STOCKADE FENCE

N 69°14'04" E
357.84'

248.56'

507.44'
S 64°33'54" E

208.88'

REGRADE AS REQUIRED TO REDUCE PONDED AREA

PONDED AREA

GRAVEL DRIVE

WELL

PROPOSED ROOF LEADER

1 STORY WOOD FRAME HOUSE

PATIO

PORCH

ELEC TRANS.

2" PIPE

POND

PROPOSED ROOF LEADER

CURTAIN DRAIN OUTLET

SEPTIC TANK

LEACHING FIELD

4" PVC

DRAINAGE AREA = 2.64 ACRES

TREELINE

NEWLY CLEARED AREA

PROPOSED CLEARING LIMIT

23A

470'

N 43°56'39" W
345.67'

468

CURTAIN DRAIN

100' UPLAND REVIEW AREA

APPROXIMATE LOCATION OF OUTLET PIPE FROM CURTAIN DRAIN PER CONTRACTOR. NOTE: CONSTRUCTED WITH TIGHT PIPE.

S 71°59'41" W
566.92'

412.66'

WETLANDS

n/f
Derek E. Deary
Map 154, Block 3, Lot 2F

3

n/f
Fernando Ernesto Rivas
Map 154, Block 3, Lot 2D

34A

n/f
Alexander J. Kennett
&
Deborah M. Kennett
Map 154, Block 3, Lot 2K

n/f
Jodie Aprin
Map 154, Block 3, Lot 2G

N 52°15'07" E
583.17'

561.85'

S 52°15'07" W

ELEC TRANS.

450

15" CPP

DRIVE

4" PVC

ELEC TRANS.

25.33'
N 47°01'29" W

15" CPP

POST

SNET 3355

NEW ROAD

23A

NOTE: SEE SHEET 2 OF 2 FOR DRIVEWAY SWALE DESIGN

LEGEND

- IRON PIN FOUND
- UTILITY POLE
- ELEC HH — ELECTRIC HANDHOLE
- INLAND WETLANDS FLAG

BEFORE YOU DIG
CALL BEFORE YOU DIG
AT LEAST TWO FULL BUSINESS DAYS BEFORE DIGGING OR DISTURBING EARTH
DIAL 811 OR 1-800-922-4455

NORMAND E. THIBEAULT, JR., P.E. DATE
LIC #PEN 0022834

DATE	DESCRIPTION

REVISIONS

DRAINAGE AREA PLAN
OVERALL PLAN
PREPARED FOR

KEVIN CALABRO

117 NEW ROAD
THOMPSON, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 3/10/2023	DRAWN: RGS
SCALE: 1" = 40'	DESIGN: NET
SHEET: 1 OF 1	CHK BY: GG
DWG. No: CLIENT FILE	JOB No: 20112

K:\20112\Drawings\2023 DRAINAGE\DRAINAGE AREA PLAN.dwg May 30, 2023 - 10:05 AM

Re: Grays filled in their swale [Application IWA23011]

Marla Butts <wetlands@thompsonct.org>

Thu 6/1/2023 1:29 PM

To:Kevin Calabro <calabro722@gmail.com>

Cc:Norm Thibeault <nthibeault@killinglyea.com>

1 attachments (4 MB)

Proximate Drainage Area to Calabro Barn Paddock (Application IWA23011).pdf;

Kevin, as we discussed yesterday, that particular ditch is not regulated by the Inland Wetlands Commission as it does not meet the definition of a watercourse and is not located within the 100-foot upland review area. You can establish a ditch from your northern corner pin to the western edge of the paddock next to the barn. You will need to amend the application if you want a more formal ditch from the paddock to the "ponded area" that is referenced on your site plan. I suggest you contact your engineer regarding adding that drainage area to his design calculations to ensure your proposed driveway channel can handle the additional flow without a problem. Attached for your engineer's benefit is a MapGeo print showing my estimated location of the contributing drainage area to the start of the ditch filled in on the Gray's property. The wetlands system in the Gray's property east of your property is very flat and overland flow appears to go in a southerly direction on the east side of the stonewall internal to your property. I estimate the contributing drainage area to be less than 12,000 sq ft.

The next meeting of the Inland Wetlands Commission is scheduled for June 13, 2023 via ZOOM. Please have Mr. Thibeault available to answer questions and you should be prepared to answer questions regarding how you plan to construct the formalized ditch without causing a pollution problem. Call me on Monday if you would like to discuss this. - Marla Butts, Thompson Wetlands Agent

---

From: Kevin Calabro <calabro722@gmail.com>
Sent: Wednesday, May 31, 2023 2:33 PM
To: Marla Butts <wetlands@thompsonct.org>
Subject: Grays filled in their swale

Hi Marla. They Grays filled in the swale that they made feeding their pond. Do you know how much water comes out off of their property!? I can send you a video. I can make it go into my swale? I don’t know what to do ?

Sent from my iPhone

Proximate Drainage Area to Calabro Barn Paddock (Application IWA23011)

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Thompson, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

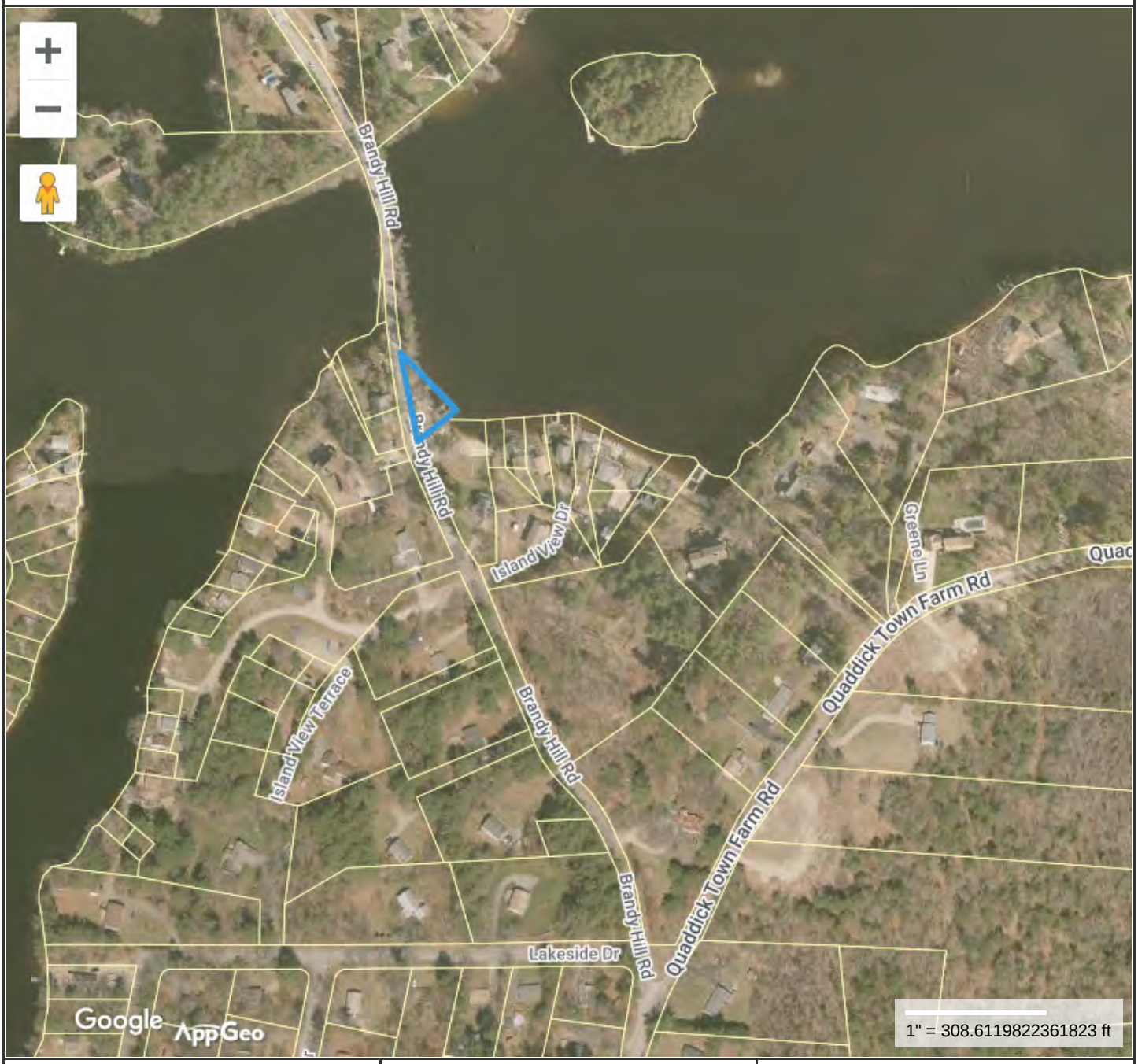
Geometry updated December 1, 2022
Data updated December 1, 2022

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Agenda Item E) b) 1. New Applications

WAA23012, David Bove, 519 Brandy Hill Road, (Assessor's Map 143, block 17, lot 1A), 22' x 4' house addition and new 20' x 24' attached garage, stamped received 5/9/23, under review.

Locus Map for 511 Brandy Hill Rd Application WAA23012



Property Information

Property ID	4692
Location	511 BRANDY HILL RD
Owner	BOVE KENNETH EST OF

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Thompson, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated December 1, 2022
Data updated December 1, 2022

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

For Wetland Agent: rev 01/11
APPLICATION #WAA 23012
DATE RECEIVED May 9, 2023

Application
for
Wetland Agent Approval
to conduct a regulated activity

Town of Thompson

INLAND WETLANDS COMMISSION
815 RIVERSIDE DRIVE
NORTH GROSVENORDALE, CT 06255

Instructions:

Two (2) copies of the completed application and two (2) copies of all the additional attached documents (site plan, etc.) must be submitted to the Agent.

The applicant is advised to read Sections 7 and 8 of the Regulations for further information regarding application requirements and procedures. THE APPLICANT IS FURTHER ADVISED THAT A BUFFER (SETBACK) OF 100 FEET FROM AN INLAND WETLAND OR WATERCOURSE IS REQUIRED, AND A BUFFER/SETBACK OF 200 FEET FROM THE TEN (10) ESPECIALLY NOTEWORTHY WETLANDS AND WATERCOURSES IDENTIFIED IN THE *TOWN OF THOMPSON INLAND WETLAND INVENTORY* PREPARED BY NORTHEASTERN CONNECTICUT REGIONAL PLANNING AGENCY 1980 PAGES 9, 14 AND 15 IS REQUIRED. See Section 6 of the Regulations for further information regarding regulated activities.

Please provide the following information:

- Directions to the property from the Thompson Town Hall
- Location of Utility Pole nearest your property
  *Pole Number *Location of property in reference to Pole

NO APPROVAL SHALL BE TRANSFERRED WITHOUT PERMISSION OF THE AGENCY.

FEE SCHEDULE:
(Additional $60.00 fee to State as per Public Act 09-03, Section 396)

- Individual Lot ..... $50 + $60
  (Includes Mandatory Legal Advertisements Fee of $20)

If the Agent finds that greater than a minimal impact may occur to wetlands, then this proposal must undergo a full permit application. Fee will be applied to the permit application.

Please complete the following application information.
If you need assistance contact the Wetland Agent (office 860- 923-1852)
Fax 860-923-9897
www.thompsonct.org/wetlands

Received
MAY 09 2023
Thompson Wetlands Office

Date 5-9-23

1) Name of Applicant DAVID BOVE

Home Address 377 CARLE RD. WESTBURY, NY 11590

Home Tele & Hrs 516-369-8702 Business Tele & Hrs 516-369-8702

Business Address

2) Applicant's interest in the Property: X Owner _____ Other
INLAND WETLANDS APPROVALS CAN BE GRANTED TO PROPERTY OWNER ONLY.

3) Name of Property Owner (if not applicant)

Home Address

Business Address

Home Tele & Hrs Business Tele & Hrs

4) Geographical Location of the Property (site plan to include utility pole number nearest property or other identifying landmarks)

Pole # and Location 1401
Street or Road Location 511 BRANDY HILL RD. THOMPSON

Tax Assessor's Map # 143
Block # 17
Lot # that appears on site plan 1A

Deed Information : Volume 1037
Page # 212

5) The property to be affected by the proposed activity contains:

Soil Types SANDY LOAM MIX

Wetland Soils _____ (Swamp_____ Marsh_____ Bog____ Vernal Pool____)

Watercourses _____ (Lake or Pond____ Stream or River_____ Intermittent Stream_____)

Floodplain - Yes (No)

6) Description of the Activity for which Approval is requested HOUSE RENOVATION

7) Submit a Site Plan, drawn to scale, with the certification of the preparing Surveyor and/or Engineer including:

- ☐ 1-Locus map at approx. 1" = 1000'
- ☐ 2-Location of property, with boundaries defined and utility pole # near property and any other identifying landmarks.
- ☐ 3-Location of wetlands and /or watercourses. A wetland delineation in the field must be marked with numbered wetlands flags by a certified soil scientist and located on the map/site plan. Site plan shall bear the soil scientist's original signature.
- ☐ 4-Soil types on the property.
- ☐ 5-Flood Hazard area classification and delineation.
- ☐ 6-(a)Location of the proposed activity (i.e. house, septic, well or other areas to be disturbed).
  (b)Location of perc tests and soil test holes.
  (c)Copy of NDDH approval to construct or repair subsurface sewage disposal system.
- ☐ 7-Nature and volume of the material to be placed, removed, or transferred.
- ☐ 8-Topographical contours, proposed and existing.
- ☐ 9-Location and supporting data for proposed drainage.
- ☐ 10-Date, scale (recommend 1"=40') and North arrow.
- ☐ 11-Proposed limits of clearing/disturbance and location of stockpiles during construction.
- ☐ 12-Location of proposed Erosion and Sedimentation controls and other management practices and mitigation measures which may be considered as a condition of issuing a permit for the proposed regulated activity. The erosion and sedimentation control provisions on the site plan must comply with the most current CT DEP edition of the *Connecticut Guidelines for Soil Erosion and Sedimentation Control* and be so noted on the plans.
- ☐ 13 -Location of proposed Stormwater treatment design on the site plan must comply with the most current CT DEP edition of the *Connecticut Stormwater Quality Manual* and be so noted on the plans. It is strongly recommended that low impact development techniques, stormwater management techniques that are designed to approximate the pre-development site hydrology, be utilized in the stormwater system design wherever practical and possible.
- ☐ 14-Location of proposed mitigation or wetland enhancement measures which may be considered as a condition of issuing a permit for the proposed regulated activity.
- ☐ 15-Timing and description of phases of activities, installation of sediment and stormwater control measures and temporary and permanent stabilization methods.

The Wetland Agent will notify you if any additional information is needed in order to properly evaluate your proposal.

8) Is any portion of this property located within the watershed of a water company as defined in section 16-1 of the Connecticut General Statutes? NO If yes, the Applicant is required to provide written notice of the application by certified mail, return receipt requested, to the water company on the same day of filing this permit application with the Thompson Inland Wetlands and Watercourses Commission. Documentation of such notice shall be provided to the Commission.

9) Does any portion of this property contain a Natural Diversity Data Base (NDDB) area of concern as defined on the map of Federal and State Listed Species and Significant Natural Communities, for Thompson, Connecticut, prepared by the Connecticut Department of Environmental Protection? _____ If yes, the Applicant must contact the CT DEP for information regarding the State or Federal Listed Species of Concern.

10) Names and Addresses of Abutters:

K. BOUSQUET 517 BRANDY HILL RD.

(6) OTHERS (SEE ATTACHED SHEET

11) Estimated start date 8/23

Estimated date of completion (all disturbed areas are stabilized 12/23

12) The undersigned hereby consents to necessary and proper inspections of the above mentioned property by the Agents of the Town of Thompson Inland Wetlands Commission, at reasonable times, both before and after the approval in question has been granted by the Agent, including site walks by Commission members and staff for the purpose of understanding existing site conditions, which may be necessary in order to render a decision on this application.

The undersigned swears that the information supplied in this completed application is accurate to the best of her/his knowledge and belief.

ABSOLUTELY NO WORK IS TO BEGIN UNTIL ALL NECESSARY APPROVALS ARE OBTAINED.

Upon Approval the Applicant is responsible for publishing a notice of the approval, at the applicant's expense, in a newspaper having a general circulation in the Town of Thompson. The Agent will provide the necessary notice to the newspaper for public notice, and such notice must be published within ten (10) days of the date of approval.

David J Bae 5-9-23

Signature of Applicant Date

Consent of Landowner if other than applicant Date

Please attach a written consent by the owner if applicant is not the property owner.

From Applicant, file WA417022

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

June 13, 2017

Theodore Renauld Jr.
28 Island View Dr
Thompson, CT 06277
RenauldTed@gmail.com

Project: Septic System Repair on Bove Property located at 511 Brandy Hill Road in Thompson
NDDB Determination No.: 201704525

Dear Theodore Renauld Jr.,

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding the area delineated on the map provided for the proposed septic system repair at 511 Brandy Hill Road in Thompson, Connecticut. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site based upon the information contained within the NDDB. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits. This determination is good for two years. Please re-submit a new NDDB Request for Review if the scope of work changes or if work has not begun on this project by June 13, 2019.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

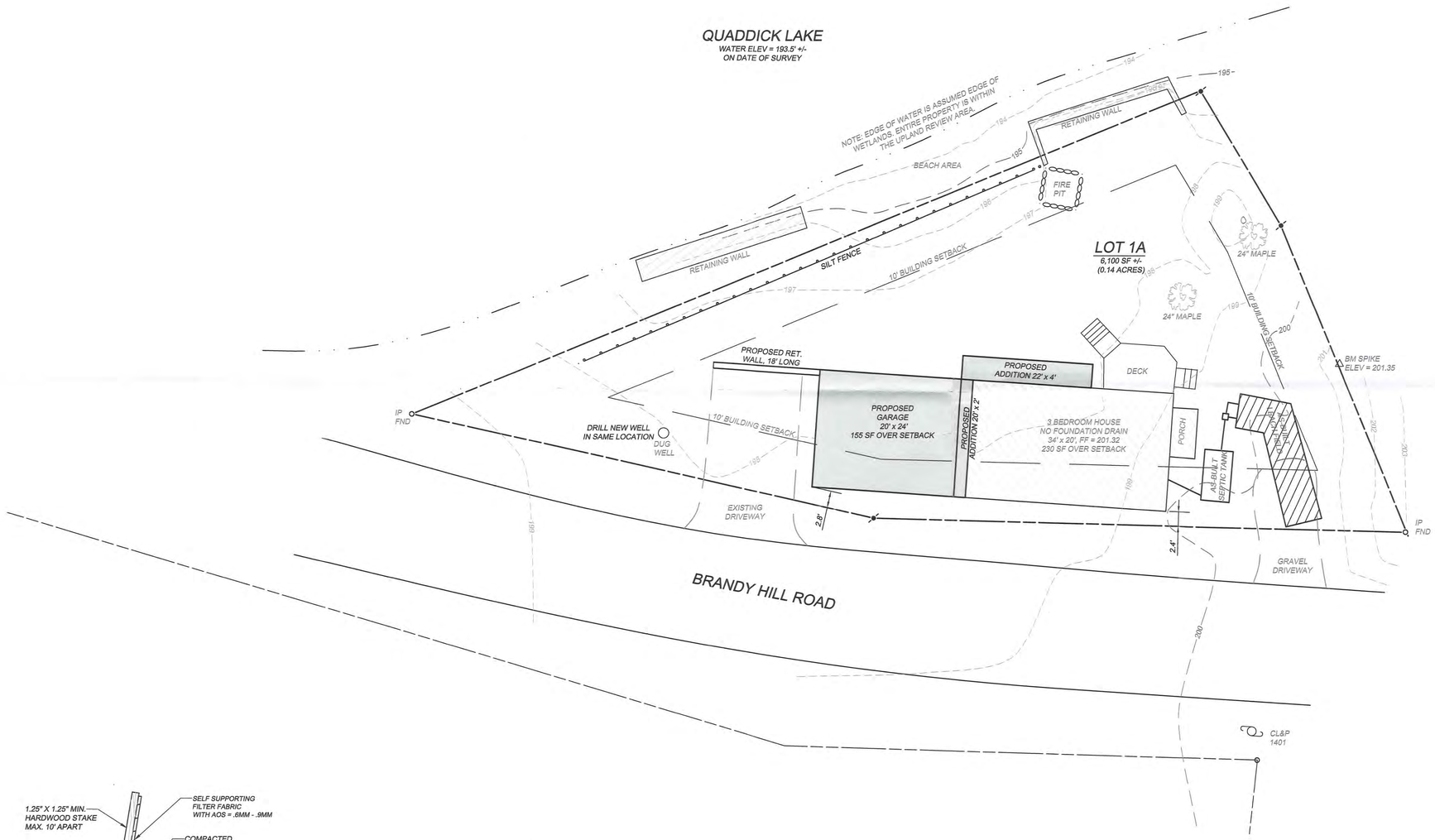
Dawn M. McKay

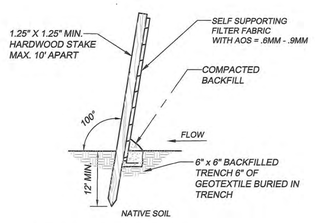
Dawn M. McKay
Environmental Analyst 3

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.





SILT FENCE INSTALLATION
NOT TO SCALE

EROSION AND SEDIMENT CONTROL NOTES:

1. THE PROPOSED ACTIVITY ON THE SITE WILL CONSIST OF THE CONSTRUCTION OF A RESIDENTIAL BUILDING ADDITION.

2. EROSION CONTROL DEVICES MUST BE INSTALLED WHERE INDICATED ON THIS SHEET PRIOR TO THE START OF CONSTRUCTION.

3. DISTURBED AREAS SHALL BE KEPT TO A MINIMUM AND SEEDED OR STABILIZED WITH TEMPORARY MULCH AS SOON AS FINAL GRADES HAVE BEEN ATTAINED.

4. THE OWNER OF RECORD SHALL DESIGNATE THE ON SITE ENVIRONMENTAL AGENT RESPONSIBLE FOR REGULARLY CHECKING THE CONDITION OF THE EROSION CONTROL DEVICES AND REMOVING ACCUMULATED SEDIMENT.

SURVEY NOTES

1. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARD FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT " AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

SURVEY TYPE: GENERAL LOCATION

PURPOSE: TO OBTAIN PERMITS FOR A BUILDING ADDITION

BOUNDARY DETERMINATION CATEGORY: N/A

HORIZONTAL ACCURACY: CLASS B

TOPOGRAPHIC ACCURACY: T-2

PROPERTY LINES DO NOT EXPRESS A BOUNDARY OPINION.

PROPERTY MAY BE SUBJECT TO A 20' ROW IN FAVOR OF HELEN G. BOVE AND SORELS AS REFERENCED IN V 263 P 114.

THIS MAP WAS PREPARED FROM RECORD RESEARCH, OTHER MAPS, LIMITED FIELD MEASUREMENTS AND OTHER SOURCES. IT IS NOT TO BE CONSTRUED AS A PROPERTY/BOUNDARY OR LIMITED PROPERTY/BOUNDARY SURVEY AND IS SUBJECT TO SUCH FACTS AS SAID SURVEYS MAY DISCLOSE.

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON .

DENNIS R. BLANCHETTE — DATE — 12107 LICENSE NUMBER

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE

PROPERTY OWNER
KENNETH BOVE
577 CARLE ROAD
WESTBURY, NY 11590

REFERENCE DEED
VOL. 263 PG. 114

ASSESSORS REFERENCE
MAP 143 BLOCK 17 LOT 1A

ZONING INFORMATION

ZONE: LAKE DISTRICT

MINIMUM LOT AREA	4,500 SF
MINIMUM FRONTAGE	50 FT
MINIMUM FRONT YARD	10 FT
MINIMUM SIDE YARD	10 FT
MINIMUM REAR YARD	10 FT

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- EDGE OF LAKE
- WETLAND BUFFER/UPLAND REVIEW AREA
- EROSION CONTROL DEVICES
- TEST PIT
- LEACHING TRENCH
- STONEWALL
- [215.43] AS-BUILT ELEVATION

Received
MAY 09 2023
Thompson Wetlands Office

SITE DEVELOPMENT PLAN
PREPARED FOR
DAVID BOVE
511 BRANDY HILL ROAD - THOMPSON, CT

J&D CIVIL ENGINEERS, LLC
401 RAVENELLE ROAD
N. GROSVENORDALE, CT 06255
860-923-2920

STATE OF CONNECTICUT · DANIEL G. BLANCHETTE JR. · 31338 · LICENSED PROFESSIONAL ENGINEER

DESIGNED: DRB	REVISIONS: 2023-04-24 SILT FENCE
CHECKED: JJB	
JOB NO: 16195	DATE: OCTOBER 24, 2022
SCALE: 1" = 10'	SHEET: 1 OF 1

Appl WAA23012 Copy 1

Agenda Item E) c) Applications Received After Agenda was Published.

None

Agenda Item F) Permit Extensions / Changes - None

Agenda Item G) a) Violations & Pending Enforcement Actions

Notice of Permit Violation VIOL21036, Permit IWA20022, Marc Baer, 1227 Thompson Rd

(Assessor's map 116, block 24, lot 10), grades not as authorized in modified plan approved by the Commission on February 9, 2021 - status.

Agenda Item G) b) Violations & Pending Enforcement Actions

Notice of Violation VIOL22031, Douglas and Roberta Gray, 0 New Road, (Assessors map 154, block 3, lot2J), watercourse alternative causing flooding, issued 11/23/22 - status.

Agenda Item G) c) Violations & Pending Enforcement Actions

Notice of Violation VIOL23007, Kevin Calabro, 117 New Road, (Assessor's map 154, block 3, lot 3H), earthmoving in 100-foot upland review area, issued 3/24/23 - status.

Agenda Item G) d) Violations & Pending Enforcement Actions

Notice of Violation VIOL23013, Wojiech, Sudyka, 1574 Riverside Drive, (Assessor's map 55, block 65, lot 14), grading work exceeded scope of work authorized by Permit IWA 21028, issued 5/22/23 - status.

TOWN OF THOMPSON
Inland Wetlands Commission

815 Riverside Drive
P.O. Box 899
North Grosvenordale, CT 06255
Phone: 860-923-1852, Ext. 1
Email: wetlands@thompsonct.org
Web: https://www.thompsonct.org/

NOTICE OF VIOLATION

May 22, 2023

Wojiech Sudyka
63 Airport Road
Dudley, MA 01571

RE: **Violation VIOL23013**
1574 Riverside Drive
Assessor's Map 55, Block 65, Lot 14

Dear Mr Sudyka,

This is to notify you that grading activities on your property at 1574 Riverside Drive in Thompson, Connecticut have exceeded the scope of work authorized under Thompson Inland Wetlands Permit IWA21028. Specifically, earthmoving activities have occurred within 100 feet of Perry Pond Dam and its associated wetlands. Additionally, erosion and sediment controls have either not been installed or are not being maintained.

On May 18, 2023, I made a site visit with Thompson's Zoning Enforcement Office, Cynthia Dunne, in response to a complaint she received regarding site conditions. I observed extensive earthmoving and grading activities had occurred east of Perry Pond Dam and associate wetlands beginning at the Massachusetts state line south to the proposed internal access driveway. These earthmoving / grading activities were not shown in the site plans approved by Permit IWA21028.

No valid permit exists for this activity in the upland review area. Consequently, this activity is occurring in violation of section 6 of the Inland Wetlands and Watercourses Regulation of the Town of Thompson.

You are requested to cease any further unauthorized grading work on the property and attend the next regularly scheduled meeting of the Thompson Inland Wetlands Commission to discuss these activities on your property. This meeting will be held on June 13, 2023, virtually via ZOOM. If you cannot attend this meeting or wish to discuss this matter with me before the next Inland Wetlands Commission meeting, please contact me at 860-923-1852. I am usually in the office on Monday mornings.

Please be prepared to provide an explanation as to why regulated activities are occurring on this property without the benefit of a valid wetlands permit.

Failure to comply with this notice may result in the issuance of a Cease and Desist Order, which, if issued, would be filed in the permanent land records in the Town of Thompson, and which would encumber your deed until the violation is resolved.

I appreciate your cooperation in this matter.

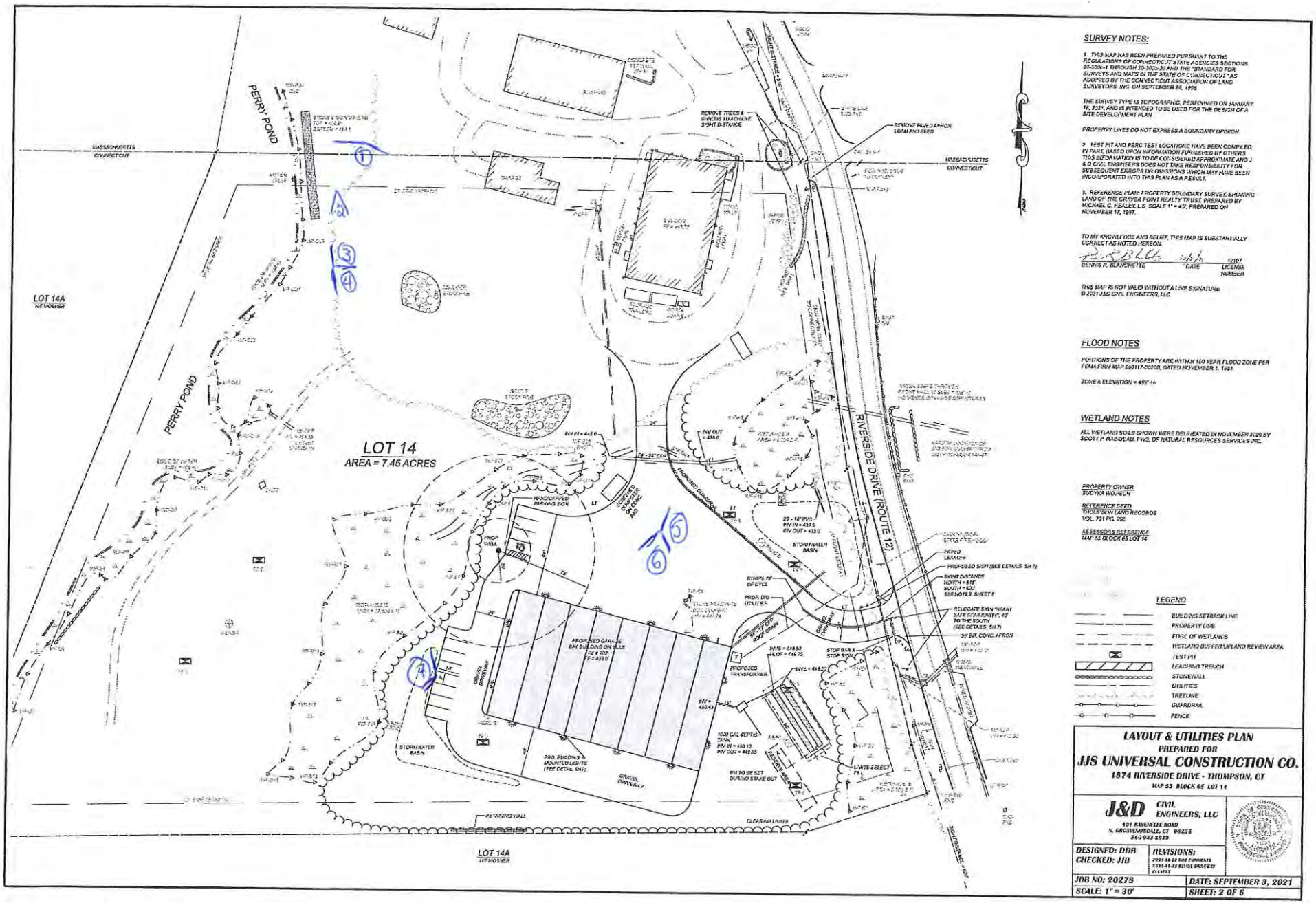
Sincerely

Marla Butts
Wetlands Agent

File: NOV VIOL23013 Sudyka 1574 Riverside Dr

cc: Cynthia Dunne, Thompson ZEO
Thompson Building Official
Daniel Blanchette, J&D Civil Engineers, LLC
Permit File IWA21028

Permit IWA21028, Sudyka, 1574 Riverside Drive Photo Index of Panoramas by Marla Butts, Wetlands Agent taken May 18, 2023



SURVEY NOTES:

1. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARD FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. ON SEPTEMBER 26, 1996.

THE SURVEY TYPE IS TOPOGRAPHIC, PERFORMED ON JANUARY 18, 2021, AND IS INTENDED TO BE USED FOR THE DESIGN OF A SITE DEVELOPMENT PLAN.

PROPERTY LINES DO NOT EXPRESS A BOUNDARY OPINION.

2. TEST PIT AND PERC TEST LOCATIONS HAVE BEEN COMPILED IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. THIS INFORMATION IS TO BE CONSIDERED APPROXIMATE AND J & D CIVIL ENGINEERS DOES NOT TAKE RESPONSIBILITY FOR SUBSEQUENT ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THIS PLAN AS A RESULT.

3. REFERENCE PLAN: PROPERTY BOUNDARY SURVEY, SHOWING LAND OF THE CRIVER POINT REALTY TRUST, PREPARED BY MICHAEL C. HEALEY, L.S. SCALE 1" = 40', PREPARED ON NOVEMBER 17, 1997.

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

DENNIS R. BLANCHETTE — DATE — 12107 LICENSE NUMBER

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE.
© 2021 J&D CIVIL ENGINEERS, LLC

FLOOD NOTES

PORTIONS OF THE PROPERTY ARE WITHIN 100 YEAR FLOOD ZONE PER FEMA FIRM MAP 09017C0208, DATED NOVEMBER 1, 1984.

ZONE A ELEVATION = 459' +/-

WETLAND NOTES

ALL WETLAND SOILS SHOWN WERE DELINEATED IN NOVEMBER 2020 BY SCOTT P. RABIDEAU, FWS, DEP NATURAL RESOURCES SERVICES, INC.

PROPERTY OWNER
SUDYKA WOJCIECH

REFERENCE DEED
THOMPSON LAND RECORDS
VOL. 731 PG. 256

ASSESSOR'S REFERENCE
MAP 55 BLOCK 65 LOT 14

LEGEND

- BUILDING SETBACK LINE
- PROPERTY LINE
- EDGE OF WETLANDS
- WETLAND BUFFER/UPLAND REVIEW AREA
- TEST PIT
- LEACHING TRENCH
- STONEWALL
- UTILITIES
- TREELINE
- GUARDRAIL
- FENCE

LAYOUT & UTILITIES PLAN
PREPARED FOR
JJS UNIVERSAL CONSTRUCTION CO.
1574 RIVERSIDE DRIVE - THOMPSON, CT
MAP 55 BLOCK 65 LOT 14

J&D CIVIL ENGINEERS, LLC
101 RIVERVILLE ROAD
W. GRANVILLE, CT 06255
860-933-2929

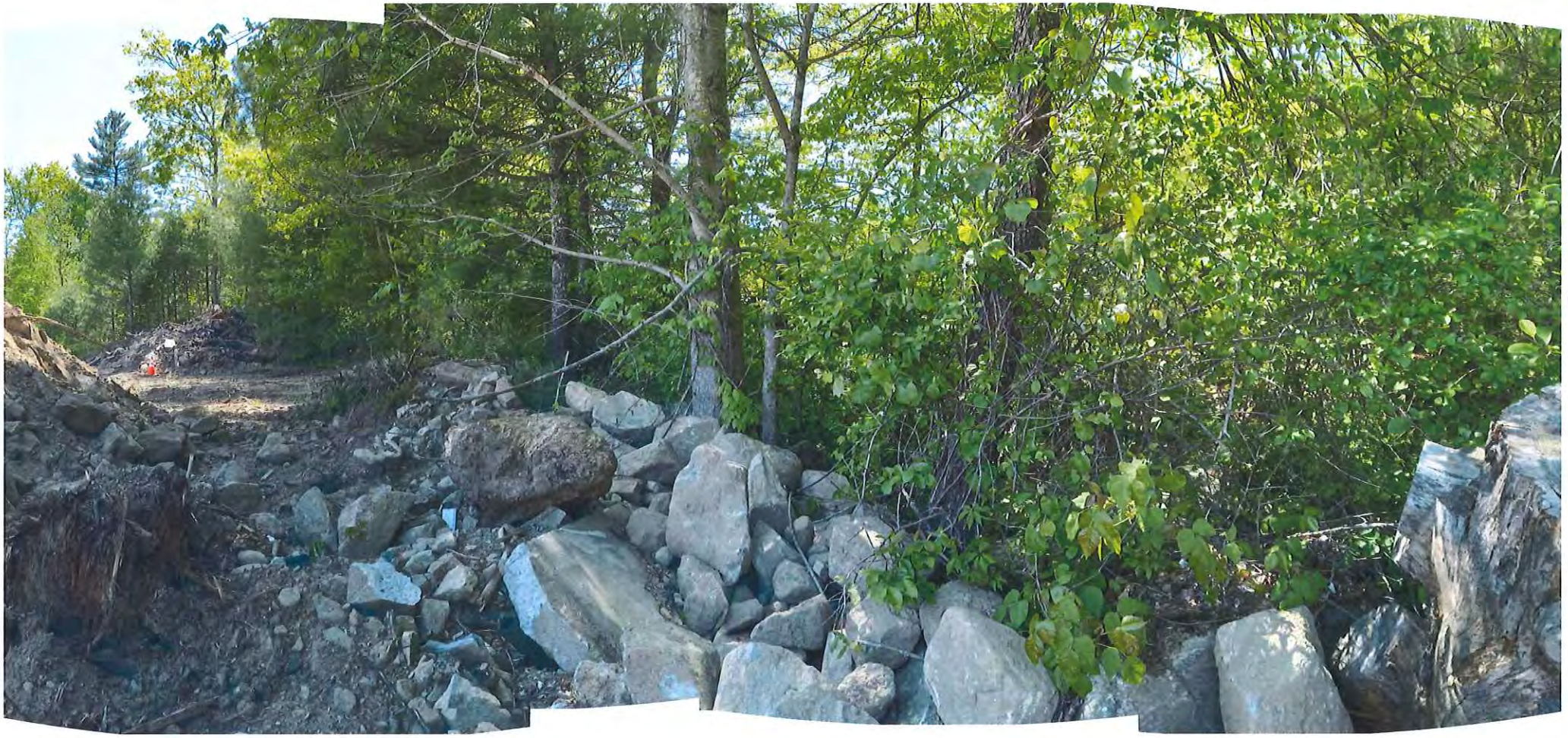
DESIGNED: DDB CHECKED: JJB	REVISIONS: 2021-10-12 DOT COMMENTS 2021-11-22 REVISE DRIVEWAY CLOSET
JOB NO: 20279	DATE: SEPTEMBER 3, 2021
SCALE: 1" = 30'	SHEET: 2 OF 6

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 1 Photos 20230518_140356 to _140422: Taken facing south to west about 40 feet east of dam crest showing conditions between the garage located on the state line and the dam. Note earthmoving activities are within 100 feet of the Dam and Perry Pond, much of which is in Connecticut.

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 2 Photos 20230518_140515 to _140530: Taken facing south about 15 feet east of dam showing conditions just east of the dam in Connecticut. Note earthmoving activities are within 100 feet of the dam and Perry Pond.



Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 3 Photos 20230518_140606 to _140624: Taken facing north to east northeast at the same location as Panorama 4 showing conditions east of Perry Pond Dam. Note Panorama #2 was taken just south of the red truck seen in the center of this panorama and the treed dam embankment is in the left portion of the panorama.

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 4 Photos 20230518_140624 to _140638: Taken facing east northeast to east southeast at the same location as Panorama 3 showing conditions just east of the dam in Connecticut. Note the red /white traffic cone is the same as that seen in left center portion of Panorama 2

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 5 Photos 20230518_141739 to _141755: Taken facing northeast to southeast just south of the 24' cross-culvert installed for the internal access driveway showing conditions in and around the proposed stormwater basin and the access driveway to Riverside Drive. Note the culvert appears to be cantilevered above the wetlands and the stormwater basin has not yet been built.

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 6 Photos 20230518_141755 to _141808: Taken facing southeast to south southwest just south of the 24' cross-culvert installed for the internal access driveway showing conditions in and around the proposed garage. Note this is a continuation of Panorama 5.

Permit IWA21028, Sudyka, 1574 Riverside Drive Photos by Marla Butts, Wetlands Agent taken May 18, 2023

Panorama 7 Photos 20230518_142223 to _142232: Taken facing west near Wetlands Flag # B10 showing conditions near the wetlands. Note the silt fence that was installed has fallen down or been knocked over and is in disrepair.

Agenda Item H) a) Other Business

New FEMA Flood Maps and amendments to Flood Damage Prevention Ordinance

Re: Floodplain Management

Ifkovic, Diane <Diane.Ifkovic@ct.gov>

Mon 6/5/2023 6:57 PM

To:First Selectman <firstselectman@thompsonct.org>

Cc:Marla Butts <wetlands@thompsonct.org>;Planner <planner@thompsonct.org>

Hello First Selectwoman St. Onge,

I apologize for the confusing letters from FEMA (I have heard this many times before) but no need to panic. I am copying Tyra (town planner) and Marla (wetlands) to assist you with a local update.

In a nutshell here is the situation:

- FEMA has been in the process of updating the flood maps in the Quinebaug River watershed for a number of years.
- In Windham County, this includes the municipalities of Brooklyn, Danielson, Killingly, Plainfield, Pomfret, Putnam, Sterling, and **Thompson**. There are also towns in New London County that will be receiving updated maps.
- These communities, including Thompson, will be receiving final revised flood maps on **September 7, 2023**.
- As part of this process Thompson must update its floodplain zoning regulation and/or flood ordinance to adopt these new maps and make other required regulatory changes. **I provided the town a regulation review letter on March 27, 2023 outlining the changes that need to be made.** This letter went to Tyra and Marla.
- It is accurate that **Thompson will be suspended from the NFIP if these maps and regulations are not adopted formally by the town by September 7, 2023.**

I do not know exactly were Thompson is in the update process. Tyra and Marla will have to give you that update. I would also appreciate an update. Once changes have been adopted I need to update a FEMA database in order that Thompson remains in the NFIP and does not get suspended.

I hope this helps clarify,

diane

From: First Selectman <firstselectman@thompsonct.org>
Sent: Monday, June 5, 2023 1:28 PM
To: Ifkovic, Diane <Diane.Ifkovic@ct.gov>
Subject: Floodplain Management

Good Afternoon Ms. Ifkovic,

Would you have a moment in the coming weeks to discuss flood plain management measures for the Town of Thompson? I received notice from FEMA, and to be completely honest, I have no idea what my responsibilities are. The letter stated the Town could be suspended from NFIP. Hoping that you could shed light on the requirements so that the Town remains in compliance.

I am available most days from 11am-5pm.

Kind Regards,

Amy St.Onge
First Selectman
Thompson, CT
860-923-9561 Ext. 5111

ORDINANCE NO. 10-055

Ordinance Amending the
FLOOD DAMAGE PREVENTION ORDINANCE
September 29, 1988 Vol. 10, Page 147

Section 1 – Statutory Authorization, Finding of Fact, Purpose, & Objective

1.1 STATUTORY AUTHORIZATION

The Legislature of the State of Connecticut has in Section 7-148(c) (7) of the General Statutes delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the Town Meeting of the Town of Thompson, Connecticut, does ordain as follows:

1.2 FINDINGS OF FACT

1.2.1 The flood hazard areas of the Town of Thompson are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

1.2.2 These flood losses are caused by the cumulative effect of obstructions in floodplains causing increases in flood heights and velocities, and by the occupancy in flood hazard area by uses vulnerable to flood or hazardous to other lands which are inadequately elevated, flood-proofed, or otherwise unprotected from flood damages.

1.3 STATEMENT OF PURPOSE

It is the purpose of this Ordinance to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

1.3.1 Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

1.3.2 Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.

1.3.3 Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters.

1.3.4 Control filling, grading, dredging, and other development which may increase erosion or flood damage, and;

1.3.5 Prevent or regulate the construction of flood barriers which may increase flood hazards to other lands.

1.4 OBJECTIVES

The objectives of this Ordinance are:

1.4.1 To protect human life and health;

1.4.2 To minimize expenditures of public money for costly flood control projects;

1.4.3 To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

1.4.4 To minimize prolonged business interruptions;

1.4.5 To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, streets and bridges located in floodplains.

1.4.6 To help maintain a stable tax base by providing for the sound use and development of flood prone areas in such manner as to minimize flood blight areas, and;

1.4.7 To insure that potential home buyers are notified that property is in a flood area.

Section 2 – Definitions

Unless specifically defined below, words or phrases used in this Ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this Ordinance its most reasonable application.

ADDITION (to an Existing Building): means any walled and roofed expansion to the perimeter of a building in which the addition is connected by a common load-bearing wall other than a fire wall. Any walled and roofed addition which is connected by a fire wall or is separated by independent perimeter load-bearing walls is new construction.

APPEAL: means a request for a review of the Building Official's interpretation f any provision of this Ordinance or a request for a variance.

AREA OF SPECIAL FLOOD HAZARD: is the land in the floodplain within a community subject to one percent (1%) or greater chance flooding in any given year. The Area of Special Flood Hazard is also called the Special Flood Hazard Area (SFHA). SFHAs are determined utilizing the base flood elevations (BFE) provided on the flood profiles in the Flood Insurance Study (FIS) for a community. BFEs provided on Flood Insurance Rate Map (FIRM) are only approximate (rounded up or down) and should be verified with the BFEs published in the FIS for a specific location. SFHAs include, but are not necessarily limited to, the land shown as Zones A, A1-30, AE, AO, AH on a FIRM.

BASE FLOOD: means the flood having a one percent (1%) chance of being equaled or exceeded in any given year. also referred to as the one hundred year (100-year) flood, as published by the Federal Emergency Management Agency (FEMA) as part of a Flood Insurance Study (FIS) and depicted on a Flood Insurance Rate Map (FIRM).

BASE FLOOD ELEVATON (BFE): is the elevation of the crest of the base flood or 100-year flood. The height in relation to mean sea level expected to be reached by the

waters of the base flood at pertinent points in the floodplains of coastal and riverine areas.

BASEMENT: means that portion of a building having its floor subgrade (below ground level) on all sides.

BREAKAWAY WALL: means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

BUILDING: means any structure built for support, shelter, or enclosure for any occupancy or storage.

COST: as related to substantial improvements, the cost of any reconstruction, rehabilitation, addition, alteration, repair or other improvement of a structure shall be established by a detailed written contractor's estimate. The estimate shall include, but not be limited to: the cost of materials (interior finishing elements, structural elements, utility and service equipment); sales tax on materials, building equipment and fixtures, including heating and air conditioning and utility meters; labor; built-in appliances; demolition and site preparation; repairs made to damaged parts of the building worked on at the same time; contractor's overhead; contractor's profit; and grand total. Items to be excluded include: cost of plans and specifications, survey costs, permit fees, outside improvements such as landscaping, sidewalks, fences, yard lights, irrigation systems, and detached structures such as garages, sheds, and gazebos.

DEVELOPMENT: means any man-made change to improved or unimproved real estate, including but not limited to the construction of buildings or other structures; the construction of additions, alterations or substantial improvements to buildings or structures; the placement of buildings or structures; mining, dredging, filling, grading, paving, excavating, drilling operations or storage of equipment;, the storage, deposition, or extraction of materials, and the installation, repair or removal of public or private sewage disposal systems or water supply facilities**.**

ELEVATED BUILDING: means a non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls, or breakaway walls.

EXISTING MANUFACTURED HOME PARK OR SUBDIVISION: is a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, as a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before November 1, 1984, the effective date of the floodplain management regulations adopted by the community.

EXPANSION TO AN EXISTING MANUFACTURED HOME PARK OR SUBDIVISION: is the preparation of additional sites by the construction of facilities for servicing the lots on which the manufacturing homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): is the federal agency that

administers the National Flood Insurance Program (NFIP).

FINISHED LIVING SPACE: as related to fully enclosed areas below the base flood elevation (BFE), a space that is, but is not limited to, heated and/or cooled, contains finished floors, has sheetrock walls that may or may not be painted or wallpapered, and other amenities such as furniture, appliances, bathrooms, fireplaces and other items that are easily damaged by floodwaters and expensive to clean, repair or replace. Unfinished enclosed areas below the BFE should comply with FEMA Technical Bulletin 2, Flood-Damage Resistant Materials Requirements.

FLOOD OR FLOODING: means a general and temporary condition of partial or complete inundation of normally dry land areas from: 1) the overflow of inland water; 2) the unusual and rapid accumulation or runoff of surface waters from any source.

FLOOD INSURANCE RATE MAP (FIRM): means an official map of a community, on which the Federal Emergency Management Agency has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.

FLOOD INSURANCE STUDY (FIS): is the official study of a community in which the Federal Emergency Management Agency (FEMA has conducted an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

FLOODWAY: means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1.0) foot. For the purposes of these regulations, the term "Regulatory Floodway" is synonymous in meaning with the term "Floodway".

FLOOR: means the top surface of an enclosed area in a building (including basement), i.e., top of slab in concrete slab construction or top of wood flooring in wood frame construction. The term does not include the floor of a garage used solely for parking vehicles.

FUNCTIONALLY DEPENDENT USE OR FACILITY: means a use or facility that cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities. The term does not include seafood processing facilities, long-term storage, manufacturing, sales or service facilities**.**

HIGHEST ADJACENT GRADE: means the highest natural elevation of the ground surface, prior to construction, next to the proposed walls of a structure.

HISTORIC STRUCTURE: is any structure that is: (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historic significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) Individually listed on a local inventory of historic places in communities with

historic preservation programs that have been certified either: (1) By an approved state program as determined by the Secretary of the Interior or (2) Directly by the Secretary of the Interior in states without approved programs.

LOWEST FLOOR: means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such an area meets the design requirements specified in Section 5.3.2 of this Ordinance

MANUFACTURED HOME: means a structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. The term also includes park trailers, travel trailers, recreational vehicles and other similar vehicles or transportable structures placed on a site for 180 consecutive days or longer and intended to be improved property.

MANUFACTURED HOME PARK OR SUBDIVISION: means a parcel, or contiguous parcels of land divided into two (2) or more manufactured home lots for rent or sale.

MARKET VALUE: as related to substantial improvement and substantial damage, the market value of the structure shall be determined by the tax assessor's appraised value minus land value prior to the start of the initial repair or improvement, or in the case of damage, the value of the structure prior to the damage occurring.

MEAN SEA LEVEL (MSL): means, the North American Vertical Datum (NAVD) of 1988 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map (FIRM) are referenced**.**

NEW CONSTRUCTION: means structures for which the "start of construction" commenced on or after November 1, 1984, the effective date of this Ordinance, and includes any subsequent improvements to such structures.

NEW MANUFACTURED HOME PARK OR SUBDIVISION: means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after November 1, 1984, the effective date of this Ordinance adopted by the community.

RECREATIONAL VEHICLE: means a vehicle which is: (a) built on a single chassis; (b) four hundred (400) square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as a temporary living quarter for recreational, camping, travel, or seasonal use.

START OF CONSTRUCTION: for other than new construction or substantial improvements under the Coastal Barrier Resources Act (P.L. 97-348), includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, or improvement was within 180 days of the permit date. The actual start means the first placement or permanent construction of a structure (including a manufactured home) on a site, such as the pouring of slabs or footings, installation of piles, construction of

columns, or any work beyond the stage of excavation or placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement footings, piers, or foundations, or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STRUCTURE: means a walled and roofed building that is principally above ground, including a manufactured home, a gas or liquid storage tank, or other man-made facilities or infrastructures.

SUBSTANTIAL DAMAGE: means damage of any origin sustained by a structure, whereby the cost of restoring the structure to its pre-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT: means any combination of repairs, reconstruction, alteration, rehabilitation, additions or other improvements to a structure, taking place during the life of a structure in which the cumulative cost equals or exceeds fifty percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial damage", regardless of the actual repair work performed. The market value of the structure should be (1) the tax assessor's appraised value of the structure prior to the start of the initial repair or improvement, or (2) in the case of damage, the value of the structure prior to the damage occurring. For the purposes of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not the alternation affects the external dimensions of the structure. The term does not, however, include either: (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been previously identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or (2) Any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure".

VARIANCE: is a grant of relief from the requirements of this Ordinance which permits construction in a manner otherwise prohibited by this Ordinance where specific enforcement would result in unnecessary hardship.

VIOLATION: means a failure of a structure or other development to be fully compliant with the community's floodplain management Ordinance. A structure or other development without required permits, lowest floor elevation documentation, flood-proofing certificates or required floodway encroachment calculations is presumed to be in violation until such time as that documentation is provided.

WATER SURFACE ELEVATION: means the height, in relation to the North American Vertical Datum (NAVD) of 1988, (or other datum where specified) of floods of various magnitudes and frequencies in the floodplains of coastal or river-line areas.

Section 3 – General Provisions

3.1 LANDS TO WHICH THIS ORDINANCE APPLIES

This Ordinance shall apply to all areas of special flood hazards within the jurisdiction of the Town of Thompson.

3.2 BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD

The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in its scientific and engineering report entitled Flood Insurance Study (FIS) for New London County, Connecticut, dated September 7, 2023, and accompanying Flood Insurance Rate Maps (FIRM), dated September 7, 2023, and other supporting data applicable to the Town of Thompson, and any subsequent revisions thereto adopted by reference and declared to be part of this Ordinance. Since mapping is legally adopted by reference into this regulation it must take precedence when more restrictive until such time as a map amendment or map revision is obtained from FEMA.

The areas of special flood hazard include any area shown on the FIRM as Zones A, AE, AO, and AH, including areas designated as a floodway on a FIRM. Areas of special flood hazard are determined utilizing the base flood elevations (BFE) provided on the flood profiles in the Flood Insurance Study (FIS) for a community. BFEs provided on Flood Insurance Rate Map (FIRM) are only approximate (rounded up or down) and should be verified with the BFEs published in the FIS for a specific location. Also included are areas of potential, demonstrable or historical flooding, including any area contiguous with but outside the areas of special flood hazard identified by FEMA, and where the land surface elevation is lower than the base flood elevation (BFE) as shown in the FIS, and the area is not protected from flooding by a natural or man-made feature. The FIRM and FIS are file at the office of the Thompson Town Clerk, Thompson Municipal Building, North Grosvenordale, Connecticut.

3.3 ESTABLISHING OF FLOODPLAIN MANAGEMENT ADMINISTRATION

A development Permit shall be required in conformance with the provisions of this Ordinance prior to the commencement of any development activities.

3.4 COMPLIANCE

No structure or land shall hereafter be located, extended, converted, or structurally altered without full compliance with the terms of this Ordinance and other applicable regulations.

3.5 ABROGATION AND GREATER RESTRICTIONS

This Ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Ordinance and another conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

3.6 INTERPRETATION

In the interpretation and application of this Ordinance all provisions shall be (1) considered as minimum requirements; (2) liberally construed in favor of the governing body, and (3) deemed neither to limit nor repeal any other powers

granted under state statutes.

3.7 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this Ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This Ordinance does not imply that land outside the areas or special flood hazard or uses permitted within such areas will be free from flooding or flood damages. This Ordinance shall not create liability on the part of the Town of Thompson or by any officer or employee thereof for any flood damages that result from reliance on this Ordinance or any administrative decision lawfully made thereunder.

Section 4 – Administration

4.1 DESIGNATION OF THE ORDINANCE ADMINISTRATION

The Building Official is hereby appointed to administer and implement the provisions of this Ordinance.

4.2 PERMIT PROCEDURES

Application for a Development Permit shall be made to the Building Official on forms furnished by him or her prior to any development activities, and may include, but not be limited to, the following plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information is required:

4.2.1 APPLICATION STAGE

a) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures (Section 5.3.1.(a));

b) Elevation in relation to mean sea level to which any nonresidential structure will be flood-proofed (Section 5.3.1(b) (2));

c) Description of the extent to which any watercourses will be altered or related as a result of proposed development;

d) A statement as to whether or not the proposed alterations to an existing structure meets the criteria of the substantial improvement definition;

e) A statement as to whether there will be a dry access to the structure during the 100-year storm event.

Where applicable the following certifications by a registered engineer or architect are required, and must be provided to the Building Official. The design and method of construction must be certified to be in accordance with accepted standards of practice.

f) Non-residential Flood Proofing – must meet the provisions of Section 5.3.1 (b);

g) Enclosed areas below the Base Flood Elevation – if the mini design criteria in Section 5.3.2 (a) – 5.3.2 (c) is not used, then the design and

construction methods must be certified as explained in Section 5.3.2 (a);

h) No increase in floodway heights may be allowed. Any development in a floodway must meet the provisions of Section 5.3.3;

i) Breakaway Walls – non supporting breakaway wall, lattice work, or mesh screening shall be allowed below the base flood elevation provided it is not part of the structural support of the building and is designed so as to breakaway under abnormally high tides or wave action, without damage to the structural integrity of the building on which it is to be used and provided the following design specifications are met;

1) Design safe loading resistance of each wall shall not be less than ten (10) or more than twenty (20) pounds per square foot, or

2) If more than twenty (20) pounds per square foot, a registered professional engineer or architect shall certify that the design wall collapse would result from a water load less than that which would occur during base flood event, and the elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components during the base flood event. Maximum wind and water loading values to be used in this determination shall each have one (1%) percent chance of being equaled or exceeded in any given year, (100-year mean recurrence interval).

If breakaway walls, lattice work, or screening are utilized, the resulting enclosed space shall not be designed to be used for human habitation, but shall be designed to be used only for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises.

Prior to construction, plans for any structures that will have breakaway walls, lattice work, or screening must be submitted to the Building Official for approval.

Any alterations, repair, reconstruction, or improvement to a structure shall not enclose the space below the lowest floor except with breakaway walls, lattice work, or screening.

j) Structural Anchoring; all new construction or substantial improvement shall be securely anchored on pilings or columns.

All pilings and columns and the attached structures shall be anchored to resist flotation, collapse, and lateral movement due to the effect of wind and water loads acting simultaneously on all building components. The anchoring and support system shall be designed with wind and water loading values which equal or exceed the 100-year mean recurrence interval (one (1%) percent annual chance floods and winds).

A registered professional engineer or architect shall review and/or develop structural design specifications and plans for the construction, and shall certify that the design, specifications, and plans for construction are in accordance with acceptable standards.

k) A fee shall be charged as set by the Board of Selectmen in the Code of Ordinance Fee and/or Fine Schedule.

4.2.2 CONSTRUCTION STAGE

Upon completion of the applicable portion of construction, the applicant shall provide verification to the Building Official of the following as applicable: *LOWEST FLOOR ELEVATION*

The elevation to be verified for:

a) A structure in a numbered A zone is the top of the lowest floor (including basement), (Section 5.3.1(a);

b) A structure which has been flood-proofed is the elevation to which the flood-proofing is effective (Section 5.3.1(b);

4.2.4 Deficiencies detected by the review of the above listed shall be corrected by the permit holder immediately and prior to further progressive work being permitted to proceed. Failure to submit the survey or failure to make said corrections required hereby, shall be cause to issue a stop-work order on the project.

4.3 DUTIES AND RESPONSIBILITIES OF THE BUILDING OFFICIAL

4.3.1 Duties of the Building Official shall include, but not be limited to:

a) Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding;

b) Review all development permits to assure that the permit requirements of this Ordinance have been satisfied.

c) Advise permittee that additional Federal or State permits may be required, and if specific Federal or State permit requirements are known, require that copies of such permits be provided and maintained on file with the development permit. Possible required permits include but are not limited to: Coastal Area Management Permit, Water Diversion, Dam Safety, and Corps of Engineers 404;

d) Notify the Council of Governments/Regional Planning Agency and the affected municipality at least 35 days prior to public hearing if any change of regulation or use of a flood zone will affect an area within 500 feet of another municipality;

e) Notify adjacent communities and the Department of Environmental Protection, Land and Water Resources Division to alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency.

f) Assure that maintenance is provided within the altered or relocated portion of said watercourse so that flood carrying capacity is not diminished;

g) Record the elevation (in relation to mean sea level) of lowest floor (including basement) of all new or substantially improved structures, in accordance with Section 5.3.1(a);

h) Record the elevation (in relation to mean sea level) to which the new or substantially improved structures have been flood-proofed, in accordance with Section 5.3.1(b);

i) When flood-proofing is utilized for a particular structure, the Building Official shall obtain certification from a registered professional engineer or architect, in accordance with Section 5.3.1(b);

j) Where interpretation is needed as to the exact location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the Building Official shall make the necessary interpretation. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in this article;

k) When base flood elevation data or floodway data have not been provided then the Building Official shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source in order to administer the provisions of Section 5, and;

l) All records pertaining to the provisions of the Ordinance shall be maintained in the office of the Building Official.

Section 5 – Provisions for Flood Hazard Reduction

5.1 GENERAL STANDARDS

In an area of special flood hazard the following provisions are required:

5.1.1 New construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

5.1.2 New construction substantial improvements, and structures that have sustained substantial damage shall be constructed with materials and utility equipment that are flood-damage resistant and conform to the provisions of FEMA Technical Bulletin 2, Flood Damage-Resistant Material Requirements. This includes, but is not limited to, flooring, interior and exterior walls, wall coverings and other materials installed below the base flood elevation plus one (1.0) foot.

5.1.3 New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;

5.1.4 The bottom of all electrical, heating, plumbing, ventilation and air conditioning equipment, appliances, fixtures and components, HVAC duct work and duct systems, and any other utility service equipment, facilities, machinery, or connections servicing a structure shall be elevated at least one foot (1.0 ft) above the base flood elevation (BFE). This includes, but is not limited to, furnaces, oil or propane tanks, air conditioners, heat pumps, hot water heaters, ventilation duct work, washer and dryer hook-ups, electrical junction boxes, and circuit breaker boxes. Connections or other equipment that must be located below the BFE plus one foot (1.0 ft) elevation are permitted only when no other elevation alternative is available and provided they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and

hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of the base flood event. Electrical wiring systems that must be located below the BFE plus one foot (1.0 ft) shall conform to the standards for wet locations.

5.1.5 New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

5.1.6 New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from the system into flood waters.

5.1.7 On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

5.1.8 MANUFACTURED HOMES AND RECREATIONAL VEHICLES

a) In areas of special flood hazard, all manufactured (mobile) homes to be newly placed, undergoing a substantial improvement or repaired as a result of substantial damage, shall be elevated so that the bottom of the frame is located one (1.0) foot above the base flood elevation (BFE). The manufactured home must also meet all the construction standards per Section 5.1. The foundation and anchorage of manufactured homes to be located in floodways shall be designed and constructed in accordance with ASCE24. This includes areas of special flood hazard outside a manufactured home park or subdivision, in a new manufactured home park or subdivision, in an existing manufactured home park or subdivision, in an expansion to an existing manufactured home park or subdivision, or on a site in an existing park which a manufactured home has incurred substantial damage as a result of a flood

b) All manufactured (mobile) homes within areas of special flood hazard shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement and hydrostatic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties to ground anchors

c) All manufactured (mobile) homes within an area of special flood hazard shall be installed using methods and practices which minimize flood damage. Adequate access and drainage should be provided. Elevation construction standards include piling foundations placed no more than ten (10) feet apart, and reinforcement is provided for piers more than six (6) feet above ground level.

d) Recreational vehicles placed on sites within an area of special flood hazard shall either (i) be on the site for fewer than 180 consecutive days, and (ii) be fully licensed and ready for highway use, OR (iii) meet all the general standards of Section 5.1 and the elevation and anchoring requirement of Section 5.1.8 a), b), and c) listed above. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security

devices, and has no permanently attached additions.

5.1.9 Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. The bottom of above-ground storage tanks which are located outside or inside a structure must be elevated one (1.0) foot above the base flood elevation or shall be securely anchored to prevent flotation, collapse or lateral movement under conditions of the base flood. Where elevated on platforms, the platforms shall be cantilevered from or knee braced to the building or shall be supported on elevated foundations that conform to the standards for the particular flood zone as described in Section 5.3. Anchored tanks must have the top of the fill pipe located at least one (1.0) foot above the BFE and have a screw fill cap that does not allow for the infiltration of flood water.

5.1.10 New construction, substantial improvements and repair to structures that have sustained substantial damage cannot be constructed or located entirely or partially over water unless they are a functionally dependent use or facility.

5.1.11 If any portion of a structure lies within the area of special flood hazard, the entire structure is considered to be located within the area of special flood hazard and must meet the construction requirements of the flood zone. The structure includes any structurally attached additions, garages, decks, porches, sunrooms, patios or any other structure attached to the main structure.

5.1.12 If a structure lies within two or more flood zones, the construction standards of the most restrictive zone apply to the entire structure (i.e., structure must be built to the highest base flood elevation). The structure includes any structurally attached additions, garages, decks, porches, patios, sunrooms, or any other structure attached to the main structure.

5.1.13 Compensatory Storage. The water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain. Storage shall be provided on-site, unless easements have been gained from adjacent property owners; it shall be provided within the same hydraulic reach and a volume not previously used for flood storage; it shall be hydraulically comparable and incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Compensatory storage can be provided off-site if approved by the municipality.

5.1.14 Equal Conveyance. Within the floodplain, except those areas which are tidally influenced, as designated on the Flood Insurance Rate Map (FIRM) for the community, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure, are prohibited unless the applicant provides certification by a registered professional engineer demonstrating, with supporting hydrologic and

hydraulic analyses performed in accordance with standard engineering practice, that such encroachments shall not result in any (0.00 feet) increase in flood levels (base flood elevation). Work within the floodplain and the land adjacent to the floodplain, including work to provide compensatory storage shall not be constructed in such a way so as to cause an increase in flood stage or flood velocity.

5.2 STANDARDS FOR STREAM WITHOUT ESTABLISHED BASE FLOOD ELEVATIONS AND/OR FLOODING

Obtain, review, and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, including data developed pursuant to Section 4.3.1(k) of this Ordinance, as criteria for requiring that new construction or substantial improvements, or other development in Zone A on the Community's FIRM meet the standards in Section 5.3 and Section 6.

5.2.1 In Zone AE or A where base flood elevations have been determined, but before a floodway is designated, require that no new construction, substantial improvement, or other development (including fill) be permitted which will increase base flood elevations more than one (1) foot at any point along the watercourse when all anticipated development is considered cumulatively with the proposed development.

5.2.2 Should data be requested and/or provided, adopt a regulatory floodway based on the principal that the floodway must be able to convey the waters of the base flood without increasing the water surface elevation more than one (1) foot at any point along the watercourse.

5.3 SPECIFIC STANDARDS

5.3.1 In all areas of special flood hazard, Zones AE and A, where base flood elevation data has been provided, as set forth in 3.2 or 4.3.1(k), the following provisions are required:

a) Residential Construction: New construction or substantial improvement of any residential structure shall have the lowest floor, including basement, elevated at least to one (1.0) foot above the base flood elevation.

b) Non-Residential Construction:

1) New construction or substantial improvement of any commercial, industrial, or non-residential structure located in Zones AE and A, shall have the lowest floor, including basement, elevated at least to one (1.0) foot above the base flood elevation; or

2) Non-residential structures located in Zones AE and A may be dry flood-proofed to one foot (1.0) above the base flood elevation in lieu of being elevated, provided that together with all attendant utilities and sanitary facilities, the area of the structure below the required elevation are water tight with walls substantially impermeable to the passage of water, and use structural components having the capacity resisting hydrostatic and hydrodynamic loads and the effect of

buoyance. A registered professional engineer or architect shall review and/or develop structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with acceptable standards of practice for meeting the provisions of this subsection. Such certification shall be provided to the Official as set forth in Section 4.2.1(f).

5.3.2 ELEVATED BUILDINGS

All new construction, substantial improvements, or repair to structures that have sustained substantial damage, whether residential or non-residential, that include fully enclosed areas formed by a foundation and other exterior walls shall have the lowest floor elevated to one (1.0) foot above the base flood elevation (BFE). The elevated building shall be designed to preclude finished living space below the lowest floor and be designed to allow for the entry and exit of flood waters to automatically equalize hydrostatic flood forces on exterior walls (wet flood-proofing). Designs for complying with this requirement must either be certified by a registered professional engineer or architect as meeting the requirements of ASCE 24 Section 2.6.2.2, or meet the following minimum criteria listed in sections (a)-(h) below:

a) Provide a minimum of two (2) openings (hydraulic flood vents) having a total net area of not less than one square inch for every one square foot of enclosed area subject to flooding. The enclosed area is measured on the exterior of the enclosure walls. These hydraulic openings must be located on at least two different exterior walls of each enclosed area. If the structure has more than one enclosed area, openings must be installed in the exterior walls of each enclosed area so that flood waters can enter directly from the outside;

b) The bottom of all openings shall be no higher than one (1.0) foot above the higher of either the final interior grade or floor elevation, or the finished exterior grade adjacent to the outside of the foundation wall. At least one side of the structure's fully enclosed area must be at or above grade. Fill placed around the foundation walls must be graded so that the elevation inside the enclosed area is equal to or higher than the adjacent outside elevation on at least one side of the building. The finished floor of the enclosed area shall be no lower than the bottom of the foundation openings. The foundation slab of a residential structure, including the slab or a crawlspace, must be set equal to the outside finished grade on at least one side of the building;

c) The openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic entry and exit of flood waters in both directions without any external influence or control such as human intervention, including the use of electrical and other non-automatic mechanical means. These coverings must not block or impede the automatic flow of floodwaters into and out of the enclosed area. Other coverings may be designed and certified by a registered professional engineer or approved by the Building Official;

d) Openings shall not be less than three (3) inches in any direction in the plane of the wall;

e) The area cannot be used as finished living space. Use of the enclosed area shall be the minimum necessary and shall only be used for the parking of vehicles, building access or limited storage. Access to the enclosed area shall be the minimum necessary to allow for the parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator). The enclosed area shall not be used for human habitation;

f) All interior walls, floor, and ceiling materials located below the base flood elevation plus one (1.0) foot elevation shall be unfinished and resistant to flood damage-resistant in accordance with FEMA Technical Bulletin 2, Flood Damage-Resistant Requirements.

g) Electrical, plumbing, HVAC ductwork, machinery or other utility equipment and connections that service the structure (including, but not limited to, furnaces, oil or propane tanks, air conditioners, heat pumps, hot water heaters, ventilation, washers and dryer hook-ups, electrical junction boxes, circuit breaker boxes and food freezers) are prohibited in the fully enclosed area below the base flood elevation plus one (1.0) foot elevation. Utilities or service equipment located in this enclosed area, even if elevated one (1.0) foot above the base flood elevation in the space, will subject the structure to increased flood insurance rates.

h) A residential building with a structurally attached garage having the floor slab below the base flood elevation is considered an enclosed area below the base flood elevation and must meet the standards of Sections 5.3.2 (a)-(g). A garage attached to a residential structure, constructed with the garage floor slab below the base flood elevation, must be designed to allow for the automatic entry and exit of floodwaters in both directions. Flood openings or vents are required in the exterior walls of the garage or in the garage doors. Garage doors that must be manually opened do not meet the flood vent opening requirements in Section 5.3.2 (a)-(c). In addition to the automatic entry of floodwaters, the areas of the garage below the base flood elevation plus one (1.0) foot must be constructed with flood damage-resistant materials per the requirements of FEMA Technical Bulletin 2. Garages attached to non-residential structures must also meet the aforementioned requirements or be dry floodproofed as per the requirements of Section 5.3.1. b).

5.3.3 FLOODWAYS

Located within areas of special flood hazard are areas designated as floodways on the community's Flood Insurance Rate Maps (FIRM). Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles and has erosion potential, no encroachments, including fill, new construction, substantial improvements, repairs to substantially damaged

structures and other developments shall be permitted unless certification, with supporting technical data, by a registered professional engineer is provided demonstrating, through hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that encroachments shall not result in any (0.00 feet) increase in flood levels during occurrence of the base flood discharge published by FEMA. Buildings and structures meeting the standard above and located in whole or in part in the floodway shall be designed and constructed in accordance with ASCE 24. Fences in the floodway must be aligned with the flow and be of an open design. A permit may be given which allows encroachments resulting in increases in base flood elevations provided the community first obtains a conditional floodway revision by meeting the requirements of C.F.R. 44, Chapter 1, Subsection 65.12.

Section 6 – Standards for Subdivision Proposals

In all special flood hazard areas the following requirements shall apply:

6.1 All subdivision proposals shall be consistent with the need to minimize flood damage;

6.2 All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

6.3 All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards, and;

6.4 The Building Official shall require the applicant to provide base flood elevation data for all subdivision proposals, including manufactured home parks and subdivisions. In all areas of special flood hazard where base flood elevation data is not available (Zone A), the applicant shall provide a hydrologic and hydraulic engineering analysis performed by a registered professional engineer that generates BFEs for all subdivision proposals and other proposed development, including manufactured home parks and subdivisions.

Section 7 – Variance Procedures

7.1 THE INLAND WETLANDS COMMISSION

The Inland Wetlands Commission as established by the Town of Thompson shall hear and decide appeals and requests for variances from the requirements of this Ordinance.

7.2 The Inland Wetlands Commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the Building Official in the enforcement or administration of this Ordinance.

7.3 Any person aggrieved by the decision of the Inland Wetlands Commission or any person owning land which abuts or is within a radius of one hundred (100) feet of the land in question may appeal within fifteen (15) days after such

decision to the State Superior Court as provided in Section 8-8 of the General Statutes.

7.4 SPECIFIC SITUATION VARIANCES

7.4.1 BUILDINGS ON AN HISTORIC REGISTER

Variances "may" be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places without regard to the procedures set forth in the remainder of this section, except for Section 7.5.3(a) – 7.5.3.(d), and provided the proposed reconstruction, rehabilitation, or restoration will not result in the structure losing its historical character.

7.4.2 PRE-EXISTING, SMALL LOT LOCATION

Variances "may" be issued by a community for new construction and substantial improvements to be erected on a lot of one-half (1/2) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with Section 7.5.3(a) – 7.5.3(d).

7.4.3 FUNCTIONALLY DEPENDENT USES

Variances "may" be issued for new construction and substantial improvements and other development necessary for the conduct of a functionally dependent use provided the structure or other development is protected by methods that minimize flood damage create no additional threat to public safety and meet the requirements of Section 7.5.3(a) – 7.5.3.(d).

7.4.4 FLOODWAY PROHIBITION

Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

7.5 CONSIDERATIONS FOR GRANTING OF VARIANCES

7.5.1 In passing upon such applications, the Inland Wetlands Commission shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this Ordinance, and

a) The danger that materials may be swept onto other lands to the injury of others;

b) The danger to life and property due to flooding or erosion damage;

c) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

d) The importance of the services provided by the proposed individual owner;

e) The necessity of the facility to waterfront location, in the case of a functionally dependent facility;

f) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;

g) The compatibility of the proposed use with existing and anticipated development;

h) The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

i) The safety of access to the property in times of flood for ordinary and emergency vehicles;

j) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, and the effect of wave action, if applicable, expected at the site, and;

k) The cost of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

7.5.2 Upon consideration of the factors listed above, and the purposes of the Ordinance, the Inland Wetlands Commission shall attach such conditions to the granting of variances as it deems necessary to further the purposes of this Ordinance.

7.5.3 CONDITIONS FOR VARIANCES

Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief, and in the instance of a historical building, a determination that the variance is the minimum necessary so as not to destroy the historic character and design of the building.

a) Variances shall only be issued upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship, and (iii) a determination the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisance, cause fraud on a victimization of the public, or conflict with existing local laws or ordinances.

b) Any applicant to who a variance is granted shall be given written notice specifying the difference between the base flood elevation and the elevation to which the structure is to be built and stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation up to amounts as high as $25.00 for $100.00 of insurance coverage.

c) The Building Official shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency upon request.

7.6 PENALTIES FOR VIOLATION

Violations of the provisions of this Ordinance or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with granting of variance of special exceptions, shall constitute a misdemeanor. Any person who violates this Ordinance or fails to comply

with any of its requirements shall, upon conviction thereof, be fined not more than

$250.00 per day if proven done willfully and $100.00 per day if not, or imprisoned for not more than ten (10) days for each day of violation, or both, and in addition, shall pay all costs and reasonable legal fees involved in the case. Nothing herein contained shall prevent the Town of Thompson from taking such other legal action as if necessary to prevent or remedy any violation.

Section 8 – Validity

8.1 If any section, subsection, clause, or phrase of this Ordinance is, for any reason, found to be invalid by a Court of complete jurisdiction, such decision shall not affect the validity of remaining portions of this Ordinance.

8.2 This Ordinance shall become effective fifteen (15) days after publication as provided by law.

Agenda Item H) b) Other Business

North Grosvenordale Pond Dam Status/Concerns

6 Inundation Areas

6.1 Residents, Businesses and Infrastructure at Risk

A major flood caused by a breach of the dam is estimated to inundate approximately 100 homes and businesses, 5 roadway bridges, 5 roadways, 1 railroad, and 1 dam within the study area. It should be noted that additional businesses, roadways, and residents may be impacted downstream of the study area during a wet weather event, but are not likely to be significantly impacted by the additional flow released during a wet weather dam breach. Addresses of properties impacted by a wet weather dam breach are listed in the table below.

Table 4 provides addresses for areas with potential for impact, and Table 5 provides an estimate for the depth and timing of flooding at bridges and other infrastructure if a breach were to occur. Section 7.6 describes notification procedures established to contact residents and businesses.

Table 4
List of Potential Inundated Areas

Street Numbers	Street Name	Property Type	Number of Properties
12, 14, 16	Buckley Hill Road	Residential, Commercial	3
4, 8, 12, 16, 24, 26, 30	Central Street	Residential, Commercial	7
12-26, 13, 15, 17, 19, 21, 27, 37, 39, 45, 47, 51, 53, 57, 61, 65, 69, 71, 87, 88, 90, 91, 98	Main Street	Residential, Religious, Commercial	23
2, 6, 8, 12, 14, 16, 22, 24, 30, 35	Marshall Street	Residential, Commercial	10
1, 3, 5	Park Street	Residential	3
67, 257	Reardon Road	Residential	2
46, 50	River St	Residential	2
274, 292, 382, 420, 454, 460, 470, 542, 550, 590, 592, 596, 598, 611, 613, 615, 619, 621, 623, 625, 629, 630, 631, 633, 639, 643, 647, 653, 655, 661, 663, 667, 669, 673, 682, 686, 687, 690, 694, 697, 700, 706, 831, 835, 910, 915, 929, 934, 681-683	Riverside Drive	Residential, Commercial	49
2	Thompson Road	Commercial	1

Table 5
Floodwater Information for Potential Impact Areas

Location	Distance from Dam, miles	Type	Incremental Increase[1], feet	Time to peak flow after breach[2], hr:min	Description of Est. Max. Water Depth Relative to Infrastructure
Buckley Hill Road	0.31	Bridge	0.1	0:10	4.5 feet above bridge deck
Riverside Drive (State Route 12)	0.55	Bridge	0.0	0:10	7.8 feet above bridge deck
Marshall Street	0.66	Street	1.6	0:20	9.1 feet above road
Central Street	0.66	Street	1.6	0:20	9.1 feet above road
Main Street at School Street	0.71	Street	1.5	0:20	8.0 feet above road
Main Street	1.08	Bridge	0.2	0:20	4.6 feet above bridge deck
Railroad #1	1.52	Railroad	1.4	0:25	5.0 feet above bridge deck
Riverside Drive (State Route 12) at Thatcher Road	1.61	Street	2.6	0:35	5.9 feet above road
Belden Dam	1.95	Dam	1.0	1:00	6.9 feet above spillway
Blaine Road	1.96	Bridge	0.0	1:00	2.9 feet below bridge deck
Riverside Drive (State Route 12) at Rachel Drive	2.28	Street	1.2	1:30	2.6 feet above road
West Thompson Road End of Required Modeling Extent	3.86	Bridge	1.3	2:00	1.7 above bridge deck

[1] Estimated incremental increase in water depth due to dam breach above the wet-weather no breach elevation.

[2] Estimated time for the peak of the breach flood wave to travel from the dam to downstream locations. Breach flooding will occur before the arrival of the peak of the flood wave.

6.2 Dam Breach Inundation Maps

Figure 4 and 5 present areas that are expected to be inundated in the event of a dam breach as well as estimated peak flood wave arrival times and incremental increase in peak water surface elevations above baseline (no breach) conditions at potential impact areas.

Note:

1. The Spillway Design Flood (SDF) Inundation areas calculated using unsteady HEC-RAS model for the 24-hour 1/2 Probable Maximum Flood (PMF).
2. The arrival time is the time to peak flood water elevations from the initiation of the breach at the North Grosvenordale Pond Dam.
3. The incremental increase is the difference in peak flood water elevation from the baseline SDF (without breach) with the SDF with Breach.
4. All elevations in NAVD88.
5. Actual peak water surface elevations, peak flows, and times of flood wave arrival will depend on actual failure conditions and may differ from mapping.
6. The town boundary was digitized off the ESRI World Topographic Map and is approximate.

Providence/Worcester Railroad - Flood Wave Characteristics
Peak Arrival Time: 0 hr 0 min
Water Level: 375.15 feet NAVD88
Maximum Depth: 8.1 feet above bridge deck
Incremental Increase: 0.0 feet

North Grosvenordale Pond Dam
CT#14103

Buckley Hill Road Bridge - Flood Wave Characteristics
Peak Arrival Time: 0 hr 10 min
Water Level: 363.7 feet NAVD88
Maximum Depth: 4.5 feet above bridge deck
Incremental Increase: 0.1 feet

Main Street at School Street Flood Wave Characteristics
Peak Arrival Time: 0 hr 20 min
Water Level: 359.0 feet NAVD88
Maximum Depth: 8.0 feet above road
Incremental Increase: 1.5 feet

Riverside Drive (Route 12) - Flood Wave Characteristics
Peak Arrival Time: 0 hr 10 min
Water Level: 362.8 feet NAVD88
Maximum Depth: 7.8 feet above road
Incremental Increase: 0 feet

Central Street - Flood Wave Characteristics
Peak Arrival Time: 0 hr 20 min
Water Level: 359.1 feet NAVD88
Maximum Depth: 9.1 feet above road
Incremental Increase: 1.6 feet

Marshall Street - Flood Wave Characteristics
Peak Arrival Time: 0 hr 20 min
Water Level: 359.1 feet NAVD88
Maximum Depth: 9.1 feet above road
Incremental Increase: 1.6 feet

Main Street - Flood Wave Characteristics
Peak Arrival Time: 0 hr 20 min
Water Level: 355.4 feet NAVD88
Maximum Depth: 4.6 feet above road
Incremental Increase: 0.2 feet

Mary R. Fisher Elementary School
Thompson Middle School
Tourtellotte Memorial High School
Not Anticipated to be Inundated

Providence/Worcester Railroad Bridge #1 - Flood Wave Characteristics
Peak Arrival Time: 0 hr 25 min
Water Level: 353.0 feet NAVD88
Maximum Depth: 5.0 feet above bridge deck
Incremental Increase: 1.4 feet

Riverside Drive (State Route 12) at Thatcher Road Flood Wave Characteristics
Peak Arrival Time: 0 hr 35 min
Water Level: 348.9 feet NAVD88
Maximum Depth: 5.9 feet above bridge deck
Incremental Increase: 2.6 feet

LEGEND

- Model Cross Sections (label indicates miles downstream of dam)
- SDF Inundation Area (No Breach)
- SDF Breach Inundation Area
- Municipal Boundary
- Flow Direction
- MatchLines

Tighe&Bond
Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography, Courtesy of CTECO.

1 in = 600 ft

0 200 400 600
Feet

FIGURE 4
HALF PROBABLE MAXIMUM FLOOD INUNDATION AREAS MAP 1 OF 2

North Grosvenordale Pond Dam
CT Dam #14103
Hazard Class: "C"
Thompson, Connecticut

March 2021

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Note:

1. The Spillway Design Flood (SDF) Inundation areas calculated using unsteady HEC-RAS model for the 24-hour 1/2 Probable Maximum Flood (PMF).
2. The arrival time is the time to peak flood water elevations from the initiation of the breach at the North Grosvenordale Pond Dam.
3. The incremental increase is the difference in peak flood water elevation from the baseline SDF (without breach) with the SDF with Breach.
4. All elevations in NAVD88.
5. Actual peak water surface elevations, peak flows, and times of flood wave arrival will depend on actual failure conditions and may differ from mapping.
6. The town boundary was digitized off the ESRI World Topographic Map and is approximate.

Belden Dam CT #14108 - Flood Wave Characteristics
Peak Arrival Time: 1 hr 0 min
Water Level: 335.0 feet NAVD88
Maximum Depth: 6.9 feet above bridge deck
Incremental Increase: 1.0 feet

Blaine Road Bridge - Flood Wave Characteristics
Peak Arrival Time: 1 hr 0 min
Water Level: 330.2 feet NAVD88
Maximum Depth: 2.9 feet below bridge deck
Incremental Increase: 0.0 feet

Riverside Drive (State Route 12) at Rachel Drive Flood Wave Characteristics
Peak Arrival Time: 1 hr 30 min
Water Level: 328.9 feet NAVD88
Maximum Depth: 2.9 feet above road
Incremental Increase: 1.2 feet

West Thompson Road Bridge - Flood Wave Characteristics
Peak Arrival Time: 2 hr 0 min
Water Level: 312.7 feet NAVD88
Maximum Depth: 1.7 feet above bridge deck
Incremental Increase: 1.3 feet
END OF REQUIRED MODELING EXTENT

1.66 miles, 1.74 miles, 1.8 miles, 1.84 miles, 1.88 miles, 1.92 miles, 1.98 miles, 1.99 miles, 2.01 miles, 2.02 miles, 2.07 miles, 2.14 miles, 2.21 miles, 2.28 miles, 2.37 miles, 2.43 miles, 2.54 miles, 2.65 miles, 2.78 miles, 2.85 miles, 2.93 miles, 3.07 miles, 3.17 miles, 3.3 miles, 3.4 miles, 3.46 miles, 3.52 miles, 3.6 miles, 3.67 miles, 3.75 miles, 3.83 miles, 3.88 miles, 3.91 miles, 3.96 miles, 4.03 miles, 4.1 miles

Mason Jar, Reardon Rd, Riverside Dr, Whittemore Ave, Beattie Ave, Circuit Ct, Blain Rd, Reardon Road Connector, Park St, Buckley Hill Rd, Murolo Rd, Hurolo Rd, Thompson Hill Rd, West St, Rachel Dr, Marcy Ln, Laporte St, Klondike St, Seastrand Rd, Plum Rd, Westside Dr, Campground Dr, Reardon Rd, Ramp, Riverside Dr, Putnam Ave, Exit 98, Old West Thompson Rd, Thompson Rd

LEGEND

- Model Cross Sections (label indicates miles downstream of dam)
- SDF Inundation Area (No Breach)
- SDF Breach Inundation Area
- Municipal Boundary
- Flow Direction
- MatchLines

1 in = 700 ft

0 350 700
Feet

Based on 2016 Statewide Leaf-Off Orthophotography, Courtesy of CTECO.

Tighe&Bond
Engineers | Environmental Specialists

FIGURE 5
HALF PROBABLE MAXIMUM FLOOD INUNDATION AREAS MAP 2 OF 2

North Grosvenordale Pond Dam
CT Dam #14103
Hazard Class: "C"
Thompson, Connecticut

March 2021

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W-5081

Agenda Item I
Citizens Comments on Agenda Items

Agenda Item J Reports

a) Budget & Expenditures

b) Wetlands Agent Report

Agenda Item K, Correspondence

Flood Risk Open House Flier for wanting information on new flood maps for Thompson and FEMA flood insurance

Flood Risk Open House

Do You Know Your Flood Risk?

Find Out More!

Join FEMA, State and Local officials for an opportunity to view the updated flood maps for the Quinebaug Watershed Floodplain Mapping Study

FEMA

Public Open House Meeting

Wednesday, June 28, 2023, 4:00-7:00 PM

Plainfield Central School (Cafeteria)

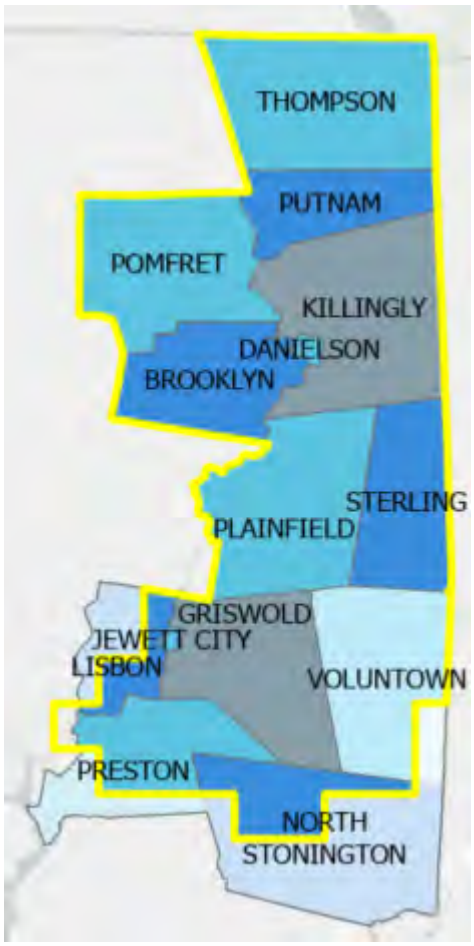
75 Canterbury Road, Plainfield, CT

This is an opportunity to chat one on one with FEMA, State and Local officials. Get assistance with:

- Finding your property on new flood maps
- Understanding your flood risk
- Flood Insurance

There is no formal presentation. You may arrive at any time.

Can't make it to the meeting? For more information and to compare current and pending maps, please visit: https://arcg.is/0Hzvqv0



For residents of*:

Brooklyn
Danielson
Griswold
Jewett City
Killingly
Lisbon
North Stonington
Plainfield
Pomfret
Preston
Putnam
Sterling
Thompson
Voluntown

*Note that for some towns only part of the town has updated maps. Please see the yellow line in map at right for study area boundary.

CONNECTICUT ENERGY & ENVIRONMENT

NATIONAL FLOOD INSURANCE PROGRAM

Agenda Item L, Signing of Mylars

"Hillside Town Homes prepared for Lavallee Construction, LLC, Riverside Drive and Azud Road, Thompson, Connecticut" prepared by J&D Civil Engineers dated January 31, 2023, (Sheets 1, 2, 4, 6, 7, 8, and 10, revised 5/1/23, Sheet 5 revised 3/28/23 and Sheet 11 revised 3/2/23). Approved by Wetlands Permit IWA32002.

Agenda Item M, Comments by Commissioners

Agenda Item N, Adjournment