CONSULTING ENGINEERS, D.P.C.

MICHAEL J. LAMOREAUX, P.E. (NY, NJ, PA, VT, VA & CT)
MICHAEL W. WEEKS, P.E. (NY, NJ & PA)
LYLE R. SHUTE, P.E., LEED-AP (NY, NJ, PA)
PATRICK J. HINES

Main Office
33 Airport Center Drive
Suite 202
New Windsor, New York 12553

(845) 567-3100
fax: (845) 567-3232
e-mail: mheny@mhepc.com

Principal Emeritus:
RICHARD D. McGOEY, P.E. (NY & PA)

TOWN OF NEWBURGH
PLANNING BOARD
TECHNICAL REVIEW COMMENTS

PROJECT: ZAZON- 11 LOT SUBDIVISION
PROJECT NO.: 04-29
PROJECT LOCATION: SECTION 20, BLOCK 1, LOT 24
REVIEW DATE: 9 APRIL 2021
MEETING DATE: 15 APRIL 2021
PROJECT REPRESENTATIVE: PIETRZAK & PFAU

1. The Orange County Health Department has determined the Subdivision Approval has expired and requested re- approval or extension be applied for.

2. Approval of the road name by the Town of Newburgh Town Board is required.

3. Updated cost estimates for public improvements must be submitted.

4. Long term operation and maintenance of the rain gardens on each of the lots is required. Planning Board Attorney's comments regarding whether maintenance of this can be incorporated into a deed or other legal document should be identified.

5. The Town of Newburgh Town Board has approved a drainage district at the Town Board meeting held 15 September 2008. It is requested that the area containing the stormwater management facility be separated as an independent lot owned and operated by the drainage district. Currently the lot is incorporated into the town road dedication parcel. This will allow for the ownership of the drainage improvements by the actual drainage district. The only change to the subdivision map would be the roadway right of way would be 50ft. and the balance of the stormwater facilities will become a drainage district lot. This is a result of the change in procedures since the project was before the Board in 2008.

6. Updated cost estimates for site improvements including watermain extension, roadway, stormwater facilities should be submitted. A landscaping bond for proposed street trees should also be provided.

7. Approval from the Orange County Department of Public Works for the access road and utility construction should be received.

8. ARB approval of the ten new structures would be required unless deferred to the Building Department.

Respectfully submitted,

McGoey, Hauser and Edsall
Consulting Engineers, D.P.C.

Patrick J. Hines
Principal

PJH/kbw

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC

February 24, 2021

Mr. John Ewasutyn, Chairman
Town of Newburgh Planning Board
21 Hudson Valley Professional Plaza
Newburgh, NY 12550

Re: Lands of Zazon (Ref. No. 2004-29)
P&P No. 23153.01

Dear Mr. Ewasutyn:

In reference to the above project, attached please find fourteen (14) copies of the updated Long Form EAF (with original neg dec and agency letters), as well as a check for escrow in the amount of $2,000.00, as requested.

Thank you for your attention to this matter. Should you have any questions or require anything further, please do not hesitate to contact this office.

Very truly yours,

PIETRZAK & PFAU, PLLC

Caleb Pawelski

Caleb Pawelski, Engineer

CJP/tmp
cc: Client
Pat Hines, w/Long EAF ✓
Dominick Cordisco, Esq., w/Long EAF
Kenneth Wersted, P.E., w/Long EAF
Karen Arent, RLA, w/Long EAF

☐ 262 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(845) 294-0606 · FAX (845) 294-0610

☐ 2 HAMILTON AVENUE
MONTICELLO, NEW YORK 12701
(845) 796-4646 · FAX (845) 796-4092

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC

February 16, 2021

Mr. John Ewasutyn, Chairman
Town of Newburgh Planning Board
308 Gardnertown Road
Newburgh, NY 12550

Re: Lands of Zazon (Ref. No. 2004-29)
P&P No. 23153.01

Dear Mr. Ewasutyn:

In reference to the above project, attached please find fourteen (14) copies of the revised subdivision map, as well as one (1) copy of the revised SWPPP.

Please place this item on the next available Planning Board agenda for consideration of setting a public hearing for final approval.

Thank you for your attention to this matter. Should you have any questions or require anything further, please do not hesitate to contact this office.

Very truly yours,

PIETRZAK & PFAU, PLLC

Caleb Pawelski, Engineer

CJP/tmp
cc: Client
Pat Hines, w/attachments

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Lands of Zazon Subdivision

Town of Newburgh
Orange County, New York

Stormwater Pollution Prevention Plan

Narrative

PIETRZAK & PFAU ENGINEERING & SURVEYING, PLLC
262 GREENWICH AVENUE
GOSHEN, NEW YORK 10924

P&P No. 23153.01
February 2005
Rev. May 2005
Rev. Sept. 2005
Rev. Feb. 2011
Rev. Feb. 2021

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APPENDICES

I. Executive Summary

This report shall serve as a Stormwater Pollution Prevention Plan for the Lands of Zazon Subdivision. The proposed project is located on the northerly side of Fostertown Road, approximately 930 feet northwest of the intersection of Fostertown Road and Frozen Ridge Road. The project is currently identified as Section 20, Block 1, Lot 24 on the Town of Newburgh Tax map. The total site area is approximately 13.56± acres, with multiple existing structures on the site.

The project includes the construction of ten (10) single family houses in addition to one (1) existing dwelling, and approximately 550± feet of new Town Road, with associated improvements. The proposed lots are to be served by a water main extension and individual septic systems.

The drainage area has been taken to include all on-site area within the parcel, contributing approximately 13.56 acres. The remainder of the drainage area consists of 5.59± acres of off-site area tributary to the existing culvert pipe spanning Frozen Ridge Road, near the intersection at Foster Town Road. The total study area was 19.15± acres.

The drainage design for this project has been incorporated to provide the appropriate water quality treatment to the stormwater runoff, utilize proposed runoff reduction practices, and ensure there are no adverse impacts to the downstream areas of the project site. In order to meet these goals, a TR-20 hydraulic analysis of the stormwater runoff has been prepared utilizing HydroCAD Stormwater Modeling software. The software was used to analyze the Channel Protection (1 year), Overbank Flood (10 year), 25 year, and Extreme Storm (100 year) storm events in accordance with the New York State Stormwater Management Design Manual. Based on this analysis, the proposed design provides the required stormwater mitigation to ensure that no adverse impact will occur to downstream areas due to the construction of the proposed project.

II. Existing Conditions

As previously mentioned, the Lands of Zazon Subdivision is located on the northerly side of Fostertown Road, approximately 930 feet northwest of the intersection of Fostertown Road and Frozen Ridge Road. The parcel contains Federal wetlands with all proposed construction and/or disturbances located outside the delineated wetland boundary as delineated by Lawler, Matusky & Skelly.

The site soils have been identified in accordance with the Orange County Soils Survey. The site consists of Mardin, Erie and Swartswood Soils, all of which are in Hydrologic Soils Group C.

For the purposes of the Pre-Developed Conditions HydroCad Analysis, the site has been taken to consist of three (3) distinct subcatchments, with three (3) ultimate design points. The

subcatchments have been defined based upon the ridge line running through the property, and the high point in the drainage system on the northwesterly side of Frozen Ridge Road. The drainage system running along Frozen Ridge Road ultimately drains through the culvert located at the intersection of Frozen Ridge Road and Fostertown Road.

Subcatchment No. 1S has been defined as the on-site area directly tributary to the on-site culvert pipe spanning Fostertown Road. This area consists of approximately 9.2± acres. Land cover within this subcatchment includes 6.37± acres of woodlands, 2.642 acres of grass cover, and 0.188± acres of impervious area. The upstream inverts of the culvert pipe for which Sub-basin 1S is tributary to, has been modeled in HydroCad as Design Point No. 1P (On-site Culvert Pipe).

Subcatchment No. 2S consists of the on and off-site areas directly tributary to the HydroCad Design Point 2P. This area consists of approximately 3.41± acres, of which 0.02± acres is impervious area. This subcatchment also consists of 2.01± acres of woods, 1.38± acres of grasslands. Subcatchment 2S is tributary to Design Point 2P, a theoretic design point.

Subcatchment No. 3S consists of the on and off-site area ultimately tributary to the existing southeasterly culvert pipe spanning Frozen Ridge Road, at the intersection with Fostertown Road. This area consists of approximately 6.54± acres, and is composed 0.58± acres of woodland, 4.99± acres of grassland, and 0.97± acres of impervious surfaces. The upstream invert of the culvert pipe, which Sub-catchment No. 3S is tributary to, has been modeled in HydroCad as Design Point 3P (off-site culvert pipe). Approximately 1/3 of the existing conditions basin 3S flows directly at the back wall of an existing building on the adjoining property N/F Hagar. The rear wall of this building appears to act as a diversion berm, and runoff eventually flows around the building and continues to run down hill to design point 3P. At a site inspection, evidence of water damage was apparent on the rear wall of this building.

III. Proposed Conditions

The proposed development has modified the basins as delineated in the existing conditions. Basin 1S has been reduced in size from 9.2± acres to 7.06± acres in the proposed conditions. The Post Conditions Basin 1S is comprised of 3.79± acres of woods, 0.2± acres of impervious area, with the remaining 3.07± acres being grasslands. Basin 1S is directly tributary to the on-site culvert pipe spanning Fostertown Road modeled in HydroCad as Design Point 1P.

Basin 2S has been reduced in size to comprise approximately 2.97± acres in the proposed conditions of which 0.996± acres is woodland, and 1.794± acres is grasslands, and 0.18± acres is impervious areas. Runoff from this area is tributary to the design point modeled in HydroCad as Design Point 2P.

Basin 3S, being the area flowing directly to Design Point 3P, the existing off-site culvert pipe spanning Frozen Ridge road, has been reduced in size for the proposed conditions. Proposed Basin 3S includes 0.15± acres of woodlands, 0.79± acres of impervious area, and 4.31± acres of grasslands, totaling 5.25± acres.

The majority of the on-site developed area runoff has been captured in the proposed road infrastructure, and conveyed to Type F-5 Bioretention Pond 4P. Bioretention Pond 4P, in turn, outlets to the drainage ditch running along Fostertown Road. The outlet of the Bioretention Pond 4P, and the drainage ditch along Fostertown Road are directly tributary to the upstream invert of the culvert pipe modeled in HydroCad as Pond 3P.

The 3.87± acres of runoff captured in the proposed road infrastructure has been modeled as Basin 4S in the proposed conditions, and includes 1.7± acres of grasslands, 1.07± acres of woodlands, 1.1± acres of impervious surfaces, including the proposed water surface.

The runoff from Basins 4S will be captured and routed into the aforementioned Bioretention Pond, identified in the HydroCad Analysis as Pond 4P. Flows from Pond 4P will be routed via a control structure draining into the road side ditch located along Fostertown Road, and flowing to the culvert spanning Frozen Ridge Road (Design Point 3P). The ditch running along Fostertown Road has been modeled in HydroCad as Reach R5, and is tributary to Design Point 3P.

The outlet from the stormwater pond is being conveyed to the swale running along the northeasterly side of Fostertown Road, in an attempt to reduce the runoff that is directed towards the back of the building on the adjoining lot N/F Hagar. Much of the runoff that was tributary to the back of the adjoining building in existing conditions has, in proposed conditions, been captured in the stormwater pond and conveyed to the existing roadside swale. The roadside swale and all driveway culverts located between the outlet of the stormwater pond and the culvert spanning Frozen Ridge Road (Design Point 3P) have been analyzed in the existing and proposed conditions. The swale along Fostertown Road has been modeled using its maximum and minimum slope, and has been determined to have sufficient capacity to handle the increased flow from the outlet of the stormwater pond. It is proposed to replace the five (5) existing 12" CMP culverts downstream of the outlet with 15" HDPE culvert pipes to accommodate the increase in flow through the roadside swale. The calculations for the five (5) driveway culverts and roadside swale can be found in Appendix 11.

IV. Storm Water Management

The proposed conditions analysis has been performed to ensure that the project will create no downstream detrimental impacts. To meet this goal, one (1) Type F-5 Bioretention Pond will be utilized to collect and treat stormwater runoff and provide peak flow attenuation for the design points studied for this project. A Hydro-Cad TR-20 analysis was performed for both the existing and proposed conditions for the Channel Protection (1 year), Overbank Flood (10 year), and Extreme storm (100 year) storm events to ensure no adverse impacts will occur to downstream areas.

The proposed Type F-5 Bioretention Pond will collect the stormwater runoff from Subcatchment 4S, as defined in the Proposed Conditions above. This basin has been designed in accordance with Section 6.1 of the New York State Stormwater Management Design Manual to provide the required pretreatment volume, Water Quality volume and provide peak flow attentuation. The pretreatment sedimentation basin has been sized to provide 25% of the water

quality volume for Subcatchment 4S. The pond has been designed with 3 horizontal to 1 vertical (3:1) interior side slopes. The pond will have a bottom pond elevation of 417.0' and a pretreatment bottom elevation of 416.0'. The pond will control the overflow stormwater from Subcatchment 4S by utilizing one (1) proposed Outlet Control Structure (OCS-1) and is proposed to outlet via a 18" HDPE pipe into Design Point 3. The outlet control structure is designed to control all design storm events studied by allowing stormwater flow to be released over time. Additionally, a twenty (20) foot wide emergency overflow broad crested weir has been incorporated into the pond design.

Runoff from the roof leaders for all proposed dwellings not tributary to the proposed stormwater pond are proposed to connect to individual rain gardens. These rain gardens are being proposed to provide water quality treatment for the runoff from the roofs of proposed dwellings not tributary to the stormwater pond. Much of the existing conditions runoff flowing to the rear of the building on the adjoining property of N/F of Hagar has, in the post development conditions, been captured in the proposed detention pond. In the proposed conditions, the amount of runoff flowing towards the rear wall of the adjoining building has been reduced, improving an existing drainage problem by outletting the proposed detention pond into the swale running along Fostertown Road. Preliminary correspondence with the Orange County DPW indicated that outletting the stormwater detention pond into the roadside swale would be acceptable, as it is being proposed in an attempt to improve an existing drainage problem.

The tables below indicate the pre and post-development flows at Design Points 1P, 2P and 3P, as well as the net changes in these flow rates. The data presented in these tables represents the results of analysis of the 1, 10, 25 and 100 year storms. As can be seen in these tables, a decrease has been provided for these design points for each of the design storms. The flows to the two (2) existing culverts spanning Fostertown Road and Frozen Ridge Road have both been decreased in the proposed conditions analysis. The decrease in flows to these two (2) culverts provide a significant benefit of reducing any potential flooding conditions over these roads.

Design Point 1				
Storm Event	Pre-Developed Peak Flow (cfs) Q out	Post-Developed Peak Flow (cfs) Q out	Change (cfs)	Change (%)
1 Year	4.61	4.04	-0.57	-12.36
10 Year	16.06	14.23	-1.83	-11.39
25 Year	23.59	20.90	-2.69	-11.40
100 Year	39.6	35.06	-4.54	-11.46

Design Point 2				
Storm Event	Pre-Developed Peak Flow (cfs) Q out	Post-Developed Peak Flow (cfs) Q out	Change (cfs)	Change (%)
1 Year	1.65	1.56	-0.09	-5.45
10 Year	5.75	5.22	-0.53	-9.22
25 Year	8.46	7.60	-0.86	-10.17
100 Year	14.20	12.64	-1.56	-10.99

Design Point 3				
Storm Event	Pre-Developed Peak Flow (cfs) Q out	Post-Developed Peak Flow (cfs) Q out	Change (cfs)	Change (%)
1 Year	4.56	4.17	-0.39	-8.55
10 Year	14.08	12.51	-1.57	-11.15
25 Year	20.14	17.92	-2.22	-11.02
100 Year	32.78	31.31	-1.47	-4.48

Additionally, the table below has been provided showing the water surface elevations in the proposed stormwater ponds. The elevations presented in this table illustrates the results of the analysis for the 1, 10, and 100 year design storms. The elevations indicate that a minimum of one (1) foot of freeboard has been provided in the pond to protect against overtopping.

Proposed Type F-5 Bioretention Pond 4P		
Storm Event	Post-Developed Peak Water Surface Elevation	Freeboard (ft.) (Pond Berm at 422.00')
1 Year	418.42	3.58
10 Year	419.29	2.71
100 Year	420.92	1.08

V. Storm Water Quality

The stormwater water quality and runoff reduction for this project has been designed in accordance with the New York State Department of Environmental Conservation Stormwater Management Design Manual (SMDM) of January 2015. The five-step planning process outlined in the SMDM has been incorporated in the design of this project. These five steps include:

1. Site planning to preserve natural features and reduce impervious cover.
2. Calculation of the Water Quality Volume for the site.
3. Incorporation of Runoff Reduction Techniques and Standard SMPs with Runoff Reduction Volume (RRv) capacity.
4. Use of Standard SMPs, where applicable, to treat the portion of Water Quality Volume not addressed by runoff reduction techniques and Standard SMPs with RRv capacity.
5. Design of volume and peak rate control practices, where required.

Step one of the planning process includes the preservation of natural features and reduction of impervious coverage. Reduction of clearing and grading has been accomplished by the use of clearly delineated disturbance limit lines proposed on the project design plans.

Step two of the planning process was then completed and the Water Quality Volume (WQv) was calculated for the project site using the criteria in Chapter 4 of the Stormwater Management Design Manual. The required Water Quality Volume calculated for this project is 10,187 cubic feet (See Appendix 8 for Calculations and Supporting Data).

Step three of the process involves Runoff Reduction by incorporating the Runoff Reduction Techniques and Standard SMP's with RRv capacity outlined in the Stormwater Management Design Manual. The minimum Runoff Reduction Volume was then calculated utilizing the Specific Reduction Factor of the existing soil types located on the project site using the criteria in Chapter 4 of the design manual. The minimum RRv calculated for this project is 1,513 cubic feet (See Appendix 8 for Calculations and Supporting Data).

Runoff Reduction Technique RR-7 Rain Gardens in accordance with Section 5.3.7 of the SMDM is proposed to capture stormwater runoff from proposed houses not directly tied into the proposed road drainage system. Two 200 square foot rain gardens connected to roof drains are proposed for each house, with 18 proposed rain gardens in total. The two rain gardens per lot have been designed for 1,500 square feet of impervious area and each rain garden provides 180 square feet of Water Quality Volume. Due to the soil type on the project site being Hydrologic Soil Group C and D, 40% of trhe WQv provided by each of the rain gardens has been removed from the Water Qaulity Volume calculations resulting in a remaining WQv of 8,891 cubic feet.

The other Stormwater Management Practice with RRv capacity utilized for this project is the Type F-5 Bioretention Pond. The proposed Bioretention Pond captures the new impervious surfaces proposed for the project and has been designed to capture and treat runoff by filtration through a soil mixture. The stormwater is collected and directed to an outlet via a pond underdrain. The Bioretention Pond is located within Hydrologic Soil Group D, therefore 40% of the WQv provided by this practice has been removed from the Runoff Reduction Volume

calculation resulting in a remaining WQv of 6,040 cubic feet. The Bioretention Pond has been designed manage the pre-developed and post-developed peak flow rates for the project.

Utilizing step three of the design process, the Runoff Reduction Volume provided for the project is 8,448 cubic feet, which exceeds the required RRv of 3,940 cubic feet.

Step four of the process involves applying Standard Stormwater Management Practices to address the remaining Water Quality Volume. The Bioretention Pond has been sized to provide the remaining Water Quality Volume for the site, so applying further SMPs is not necessary. The remaining Green Infrastructure Runoff Reduction Techniques and standard SMP's with RRv capacity have been evaluated and determined to be infeasible for use with the proposed project. The existing site topography include poor hydrologic soils and restricted space on-site. This along with cold climate concerns eliminates the possible incorporation of Sheetflow to Riparian Buffers, Disconnection of Rooftop Runoff, Stream Daylighting, Stormwater Planter, Rain Tank/Cisterns and also the use of Porous Pavement as a Runoff Reduction practice.

Step five of the process involves applying Volume and Peak Rate Control Practices. The downstream channel protection has been provided within the proposed pond by providing a release rate of equal to or lesser value specified by the Stream Channel Protection Volume. The outflow from the pond for this storm event has been designed such that runoff will be discharged over a 24 hour period after the design storm event. The Overbank Flood (10 year storm event) and the Extreme Storm (100 year storm event) have been managed as outlined in the Stormwater Management section of this report.

Channel Protection Volume (CPv) Summary Table

Practice	Release Rate Required (cfs)	Release Rate Provided (cfs)
Bioretention Pond 4P	0.14	0.14

VI. Erosion and Sediment Control

Full erosion and sediment control measures will be incorporated into the project construction. These practices will be in accordance with those set forth in the New York State Department of Environmental Conservation publication entitled "Stormwater Management Design Manual".

Erosion Control Measures:

The following erosion control measures will be incorporated to minimize erosion potential:

- Filter fabric silt fence:

Silt fence shall be used to control erosion from sheet flow on slopes not to exceed two horizontal to one vertical. Concentrated flows shall not be directed toward silt fence and spacing shall vary from 50' to 200' depending on slope steepness.

- Permanent and temporary seeding mixtures:
  Permanent and temporary seeding, mulch, fertilizer, soil amendments, and slope stabilization will be used on seeded areas. Land that is stripped of vegetation will be left bare for the shortest time possible. Any area that will remain cleared, but not under construction for 20 days or longer, will be seeded with a temporary mixture. Topsoil shall be stockpiled, stabilized with temporary seeding, and saved for reuse on the site.

- Slope Stabilization:
  All slopes shall be stabilized to minimize erosion. Slopes shall be stabilized with temporary seeding mixtures and straw mulch. Slopes in excess of four horizontal to one vertical shall be stabilized with jute netting and hydro-seed. Existing vegetation, which is not to be removed, will also act as filter strips to protect down-slope areas. Runoff will be diverted from newly graded areas to prevent erosion until a permanent ground cover has been established.

- Dust Control:
  Measures for dust control during construction shall be implemented as needed (daily water sprays will be used during dry conditions and Calcium Chloride will be used only if necessary). In addition to water sprays, temporary plantings will aid in minimizing dust.

- Temporary Diversion Swales:
  Temporary diversion swales shall be constructed to either divert clean storm water runoff from newly graded areas or direct sediment laden runoff to a sediment trapping device.

- Channel Stabilization:
  Drainage channels and temporary diversion swales shall be stabilized with seed, jute netting or riprap, as specified, to minimize deterioration of the channel bed.

- Sediment Traps:
  Sediment traps shall be constructed in the location, and be of size and type specified to collect sediment from sediment laden storm water runoff. Sediment traps shall be constructed downstream of disturbed areas and be in place prior to disturbance within the contributory area.

- Stabilized Construction Entrance:
  Existing roads will be protected by installation of crushed stone blanket for cleaning construction vehicle wheels. Blankets shall be placed at any intersection of a construction road with a paved or publicly owned road. Stabilized construction entrances shall be installed in the location and be of size and type specified.

- Tree Protection:
  Trees to be preserved within areas of construction shall be protected. In areas of concentrated construction activity temporary fencing will be placed around the driplines. In all other areas, construction workers will be directed to avoid the storing of equipment or soil under trees to be preserved, in order to prevent soil compaction. If necessary, trees will be preserved with tree wells in fill areas, and retaining walls in cut areas.

Erosion Control Sequence

Prior to any site disturbance, the developer should thoroughly review and familiarize the approved erosion control plan. The installation of erosion control measures should begin with the most downstream device, then working upstream. When installing erosion control measures, the sequence should generally be as follows:

- Prior to commencing construction activities, the limits of clearing and grading shall be clearly marked. Perimeter silt fence and stabilized construction entrances shall be put in place.

- Upon completion of clearing and grubbing activities, topsoil shall be stripped from all areas to be disturbed and stockpiled. Stockpiled topsoil shall be stabilized by temporary seeding and surrounded with a perimeter silt fence.

- Temporary erosion control devices shall be installed prior to commencing earth moving activities. This includes the installation of sediment traps, diversion swales, and check dams beginning at the most downstream portions of the site and then working upstream.

- Immediately after completion of rough grading, remaining temporary erosion control shall be installed as specified, including additional silt fence, diversion swales, and check dams. Any areas not requiring further earth work shall be fine graded topsoiled and stabilized as early as possible.

Maintenance of Erosion Control Devices

The maintenance of erosion control devices will be the responsibility of the developer. A critical part of an effective erosion control plan is a conscientious maintenance program. All erosion control devices will be cleaned and restored throughout construction to maintain their effectiveness. The Job Superintendent will monitor the condition of all devices and clean or replace them, as conditions require. All erosion control devices shall be installed and maintained in accordance with the approved plans, manufacturer's recommendations, and as directed by town representatives including the town engineer, highway superintendent, and building inspector.

Specific maintenance shall include:

- Maintaining seeded areas including reseeding weak areas, regrading wash outs and fertilizing.
- Maintaining mulched areas including replacement of disturbed mulched areas.
- All devices shall be inspected after each rain and repaired as needed.
- Sediment shall be removed from behind silt fence when bulges start to occur and fencing reset to original condition.
- Outlets in sediment basins shall be free of silt and debris by hand raking and cleaning after each rain storm.
- Construction equipment shall not unnecessarily cross drainage swales. Crossing of drainage channels shall be by means of bridges, culverts or other approved methods.
- Culverts shall be maintained free of silt or debris.
- Tree protection fencing to be inspected daily during grading and finish grading operations.
- Daily water sprays will be used as needed or as directed by the Consulting Engineer or Town representatives. Water sprays will be used to prevent pollution from dust until construction is completed and soil cover is established.

Removal of Erosion Control Devices:

No erosion control structures shall be removed until all work upstream has been completed, stabilized, and approved by the Consulting Engineer and Town Representatives.

The removal of erosion control devices should generally be as follows:

- After construction, the temporary erosion control structures are to be removed in reverse order with the most upstream structure removed first and thence proceeding downstream.
- All hay bales shall be removed and properly disposed of off-site.
- All tree protection fencing shall be removed after adjacent areas have been graded, topsoiled, seeded, and vegetation has been established.
- All temporary construction culverts shall be removed and areas graded, topsoiled, and seeded.
- Any washouts shall be re-topsoiled and seeded.

VII. Storm Water Infrastructure Maintenance:

The responsibility of the long term maintenance of all drainage structures, pipes, and treatment devices located within the proposed roadway parcel will be the responsibility of the developer until such time as the Town accepts dedication of the roadway. The work required will be financed through the creation of a drainage district.

Long term maintenance shall include the following:

Inspection: The drainage infrastructure should be inspected after major storm events to ensure that the orifices, if any, and inlets remain open. Particular attention should be given to:

- Evidence of clogging
- Erosion of the flow path
- Condition of the embankments

- Condition of the spillways
- Accumulation of sediment at the outlets and sumps
- Erosion of bio-swales or riprap aprons
- Sources of erosion in the contributory drainage which should be stabilized.

Debris and Litter Control: Removal of debris and litter should be accomplished during mowing operations. Particular attention should be given to removing debris and trash around outlets to prevent clogging.

Erosion Control: Eroding soils in drainage areas should be stabilized immediately with vegetative practices or other erosion control practices. Potential problems are erosion that may occur on the embankment, slopes, and spillways of grassed bio-swales. Also, attention should be given to repositioning protective riprap where appropriate.

Sediment Removal: Sediment should be removed periodically in order to preserve the available storm water treatment capacity of the infiltration devices, and to prevent outlets or filtering mediums from becoming clogged. Also, unless removed, accumulated sediment may become unsightly. While more frequent cleanout may be needed around outlets, at typical clean-out cycle for the entire storm water infrastructure should range form 5 to 10 years. The following specific items will require more frequent cleaning:

- Catch basins must be cleaned out at least once a year.
- Grass in the designated grassed swales is to be maintained at a height of 4 to 6 inches.
- Sediment is to be removed from the grassed swales upon an accumulated sediment level of 25% of the original swale depth.

X. Stormwater Conveyance System Analysis

Stormwater management for the Lands of Zazon project will be accomplished via a network of pipes, drainage swales, pipe culverts, and treatment and storage facilities. In sizing the drainage pipes and culverts an analysis was performed using the Rational Method to study all drainage areas tributary to the drainage facilities within the site. In performing the Rational Method analysis, the values of the runoff coefficient (C) were taken to be 0.90 for all impervious areas, and 0.3 for pervious areas. Rainfall intensity was taken from the Orange County Rainfall Intensity Curves for the 25 year storm event based upon a calculated time of concentration. A minimum time of concentration of 10 minutes has been utilized. Data and calculations can be found in Appendix 11.

Additionally, calculations have been provided in Appendix 11 showing the analysis of the off-site swale running along Fostertown Road, and the driveway culverts located along this swale. The swale was modeled using the minimum and maximum slopes of the swale, and was found to have sufficient capacity to handle the additional flow being received from the stormwater pond. The driveway culverts along Fostertown Road have been analyzed in both existing and proposed conditions. The proposed conditions analysis verifies that the 15" HDPE culverts being proposed to replace the existing 12" CMP culverts have sufficient capacity to handle the additional flow tributary to these culverts in the proposed conditions.

CJP/tmp
02-03-05
rev. 05-23-05
rev. 09-13-05
rev. 02-01-11
rev. 02-11-21

APPENDIX

APPENDIX 1

Stormwater Pollution Prevention Plan (SWPPP) Certifications

I. Owner/Operator Information:

PROJECT:	Lands of Zazon
LOCATION:	Town of Newburgh Orange County, New York
RECORD OWNER:	S&E Construction
OWNER/APPLICANT ADDRESS:	5 Suhl Lane Monsey, New York 10952
PROJECT SITE ADDRESS:	Fostertown Road Newburgh NY, 12550

II. Certifications:

Contractor and Subcontractor Certification:

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Contractor responsible for project oversight:

Contractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

Subcontractor responsible for onsite construction and maintenance of erosion and sediment control practices and post-construction stormwater management practices included in the SWPPP:

Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

Additional Subcontractors and responsibility:

Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:
Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

APPENDIX 2

MS4 Stormwater Pollution Prevention (SWPPP) Acceptance Form

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	S&E Construction
2. Contact Person:	Joseph Zazon
3. Street Address:	5 Suhl Lane
4. City/State/Zip:	Monsey, New York 10952
II. Project Site Information	
5. Project/Site Name:	Lands of Zazon
6. Street Address:	Fostertown Road
7. City/State/Zip:	Newburgh, NY 12550
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A_____	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

(NYS DEC - MS4 SWPPP Acceptance Form - January 2010)

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).
Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

APPENDIX 3

Draft Notice of Intent (NOI)

0806372691

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR [ ][ ][ ][ ][ ][ ]
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State

Zip -

Phone (Owner/Operator) - -

Fax (Owner/Operator) - -

Email (Owner/Operator)

FED TAX ID - (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street

○ North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street

○ North ○ South ○ East ○ West

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you must go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 4

2. What is the nature of this construction project?

○ New Construction

○ Redevelopment with increase in impervious area

○ Redevelopment with no increase in impervious area

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- O FOREST
- O PASTURE/OPEN LAND
- O CULTIVATED LAND
- O SINGLE FAMILY HOME
- O SINGLE FAMILY SUBDIVISION
- O TOWN HOME RESIDENTIAL
- O MULTIFAMILY RESIDENTIAL
- O INSTITUTIONAL/SCHOOL
- O INDUSTRIAL
- O COMMERCIAL
- O ROAD/HIGHWAY
- O RECREATIONAL/SPORTS FIELD
- O BIKE PATH/TRAIL
- O LINEAR UTILITY
- O PARKING LOT
- O OTHER

Post-Development Future Land Use

- O SINGLE FAMILY HOME
- O SINGLE FAMILY SUBDIVISION — Number of Lots
- O TOWN HOME RESIDENTIAL
- O MULTIFAMILY RESIDENTIAL
- O INSTITUTIONAL/SCHOOL
- O INDUSTRIAL
- O COMMERCIAL
- O MUNICIPAL
- O ROAD/HIGHWAY
- O RECREATIONAL/SPORTS FIELD
- O BIKE PATH/TRAIL
- O LINEAR UTILITY (water, sewer, gas, etc.)
- O PARKING LOT
- O CLEARING/GRADING ONLY
- O DEMOLITION, NO REDEVELOPMENT
- O WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- O OTHER

*Note: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
.	.	.	.

5. Do you plan to disturb more than 5 acres of soil at any one time? O Yes O No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	%

7. Is this a phased project? O Yes O No

8. Enter the planned start and end dates of the disturbance activities.

Start Date ___/___/_____ – End Date ___/___/_____

9: Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

9a. Type of waterbody identified in Question 9?

- O Wetland / State Jurisdiction On Site (Answer 9b)
- O Wetland / State Jurisdiction Off Site
- O Wetland / Federal Jurisdiction On Site (Answer 9b)
- O Wetland / Federal Jurisdiction Off Site
- O Stream / Creek On Site
- O Stream / Creek Off Site
- O River On Site
- O River Off Site
- O Lake On Site
- O Lake Off Site
- O Other Type On Site
- O Other Type Off Site

9b. How was the wetland identified?

- O Regulatory Map
- O Delineated by Consultant
- O Delineated by Army Corps of Engineers
- O Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? O Yes O No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? O Yes O No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? O Yes O No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? O Yes O No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? O Yes O No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ○ No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ○ No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ○ No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ○ No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ○ Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ○ Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ○ Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- O Professional Engineer (P.E.)
- O Soil and Water Conservation District (SWCD)
- O Registered Landscape Architect (R.L.A)
- O Certified Professional in Erosion and Sediment Control (CPESC)
- O Owner/Operator
- O Other

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - Fax - -

Email

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name MI

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- O Preservation of Undisturbed Areas
- O Preservation of Buffers
- O Reduction of Clearing and Grading
- O Locating Development in Less Sensitive Areas
- O Roadway Reduction
- O Sidewalk Reduction
- O Driveway Reduction
- O Cul-de-sac Reduction
- O Building Footprint Reduction
- O Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

O All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

O Compacted areas were considered as impervious cover when calculating the WQv Required, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

			.			
						acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
○ Conservation of Natural Areas (RR-1)	___.___	and/or	___.___
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	___.___	and/or	___.___
○ Tree Planting/Tree Pit (RR-3)	___.___	and/or	___.___
○ Disconnection of Rooftop Runoff (RR-4)	___.___	and/or	___.___

RR Techniques (Volume Reduction)	
○ Vegetated Swale (RR-5)	___.___
○ Rain Garden (RR-6)	___.___
○ Stormwater Planter (RR-7)	___.___
○ Rain Barrel/Cistern (RR-8)	___.___
○ Porous Pavement (RR-9)	___.___
○ Green Roof (RR-10)	___.___

Standard SMPs with RRv Capacity	
○ Infiltration Trench (I-1)	___.___
○ Infiltration Basin (I-2)	___.___
○ Dry Well (I-3)	___.___
○ Underground Infiltration System (I-4)	___.___
○ Bioretention (F-5)	___.___
○ Dry Swale (O-1)	___.___

Standard SMPs	
○ Micropool Extended Detention (P-1)	___.___
○ Wet Pond (P-2)	___.___
○ Wet Extended Detention (P-3)	___.___
○ Multiple Pond System (P-4)	___.___
○ Pocket Pond (P-5)	___.___
○ Surface Sand Filter (F-1)	___.___
○ Underground Sand Filter (F-2)	___.___
○ Perimeter Sand Filter (F-3)	___.___
○ Organic Filter (F-4)	___.___
○ Shallow Wetland (W-1)	___.___
○ Extended Detention Wetland (W-2)	___.___
○ Pond/Wetland System (W-3)	___.___
○ Pocket Wetland (W-4)	___.___
○ Wet Swale (O-2)	___.___

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

. acre-feet

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ Yes ○ No

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

. acre-feet

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ Yes ○ No

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] acre-feet

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? O Yes O No

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

[ ][ ][ ].[ ][ ][ ] acre-feet

CPv Provided

[ ][ ][ ].[ ][ ][ ] acre-feet

36a. The need to provide channel protection has been waived because:

O Site discharges directly to tidal waters or a fifth order or larger stream.

O Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

[ ][ ][ ].[ ][ ][ ] CFS

Post-development

[ ][ ][ ].[ ][ ][ ] CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

[ ][ ][ ].[ ][ ][ ] CFS

Post-development

[ ][ ][ ].[ ][ ][ ] CFS

37a. The need to meet the Qp and Qf criteria has been waived because:

- O Site discharges directly to tidal waters or a fifth order or larger stream.
- O Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? O Yes O No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- O Air Pollution Control
- O Coastal Erosion
- O Hazardous Waste
- O Long Island Wells
- O Mined Land Reclamation
- O Solid Waste
- O Navigable Waters Protection / Article 15
- O Water Quality Certificate
- O Dam Safety
- O Water Supply
- O Freshwater Wetlands/Article 24
- O Tidal Wetlands
- O Wild, Scenic and Recreational Rivers
- O Stream Bed or Bank Protection / Article 15
- O Endangered or Threatened Species(Incidental Take Permit)
- O Individual SPDES
- O SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ]
- O Other [ ]
- O None

41. Does this project require a US Army Corps of Engineers Wetland Permit? O Yes O No
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? O Yes O No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? O Yes O No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name

MI

Print Last Name

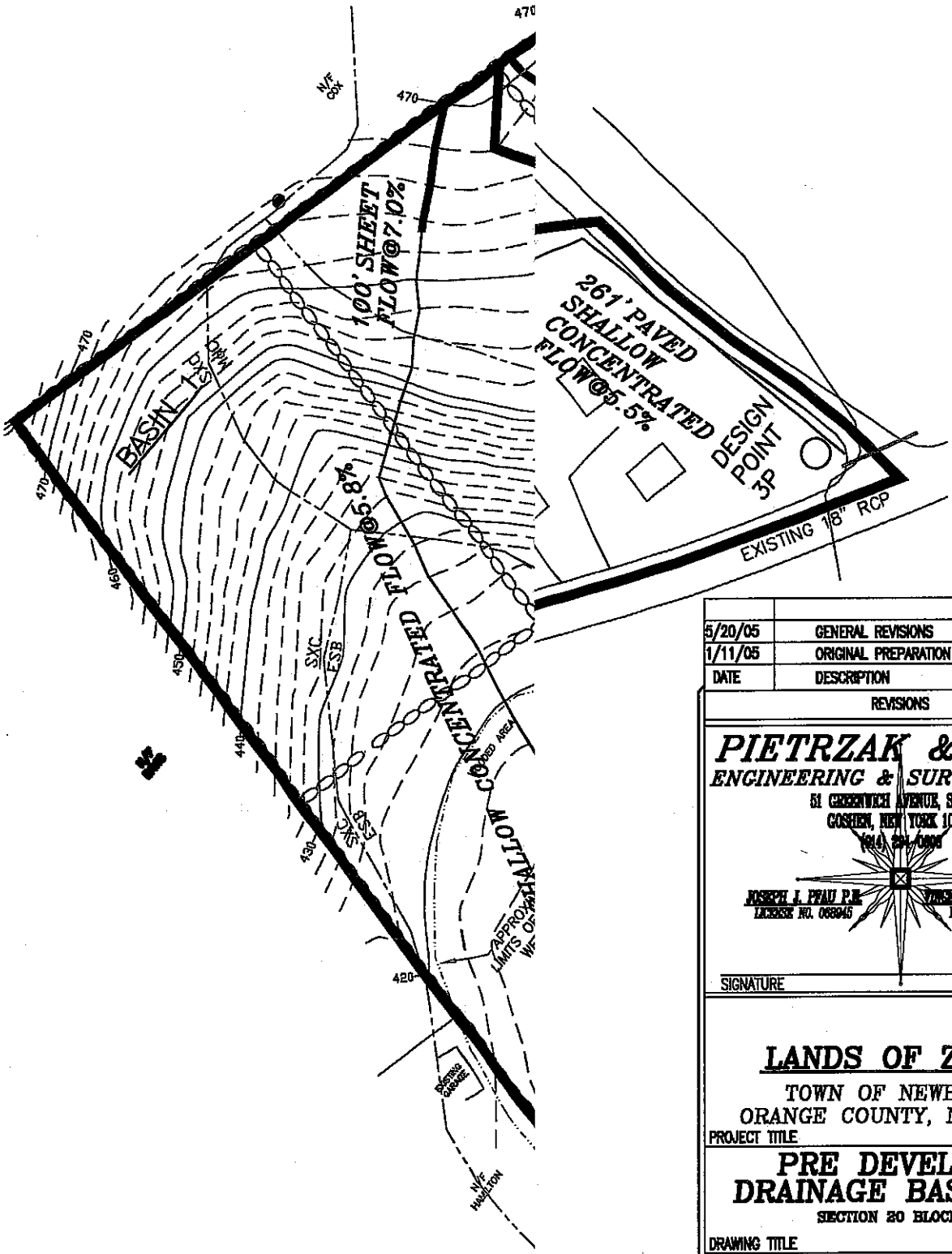
Owner/Operator Signature

Date

/ /

APPENDIX 4

Drainage Basin Maps



± acres

DATE	DESCRIPTION	
5/20/05	GENERAL REVISIONS	TBE
1/11/05	ORIGINAL PREPARATION	TBE

REVISIONS

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
51 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(914) 294-0900
JOSEPH J. PFAU P.E. LICENSE NO. 068945
VINCENT A. PIETRZAK P.L.S. LICENSE NO. 050075

SIGNATURE DATE

LANDS OF ZAZON

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

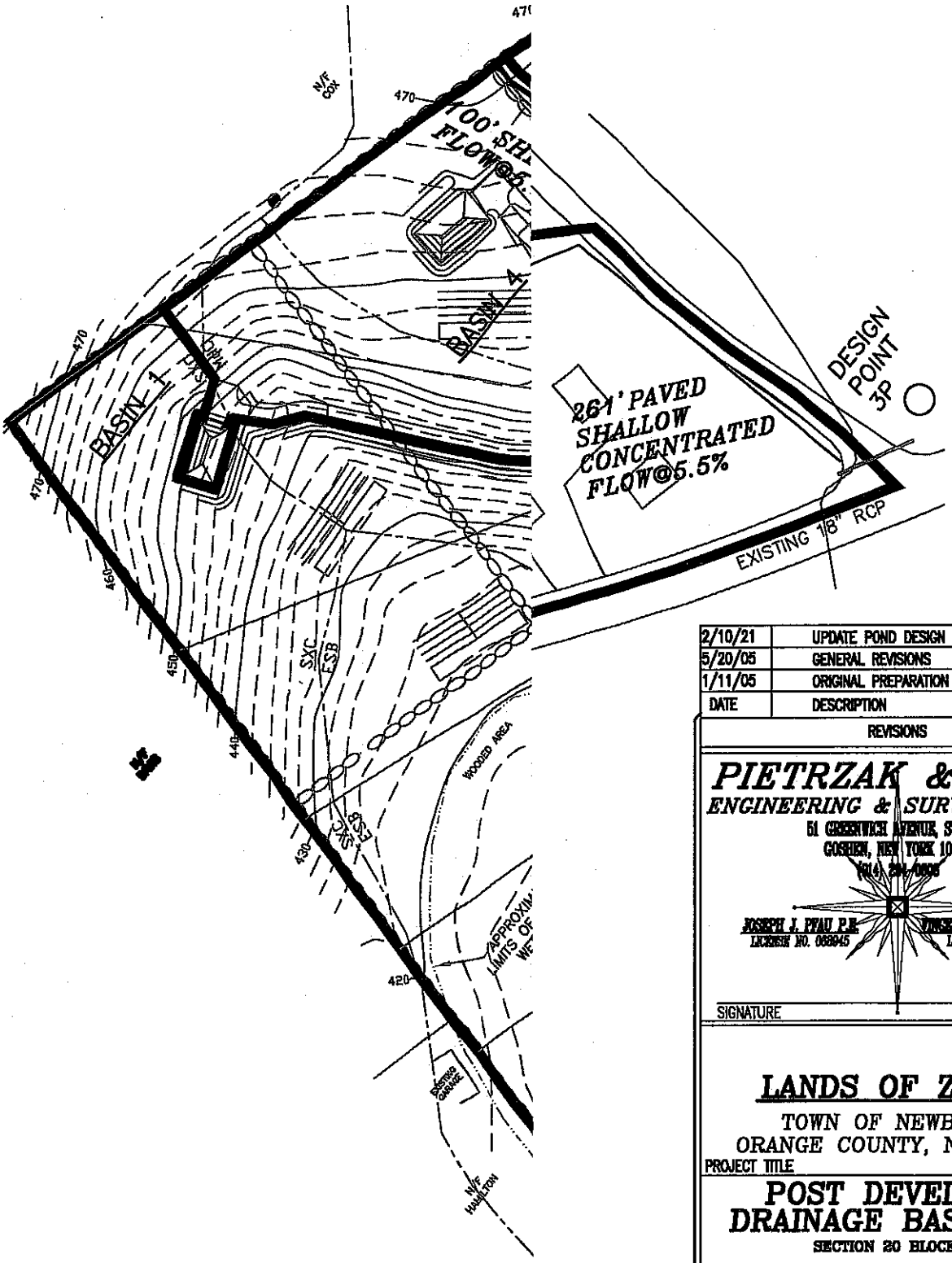
PROJECT TITLE

PRE DEVELOPED DRAINAGE BASIN MAP

SECTION 20 BLOCK 1 LOT 24

DRAWING TITLE

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
N/A OF ___	N/A OF ___	1 OF 2
SCALE	CAD REFERENCE	PROJECT NUMBER
1"=100'	23153DRAIN	23153.01



DATE	DESCRIPTION	
2/10/21	UPDATE POND DESIGN	CJP
5/20/05	GENERAL REVISIONS	TBE
1/11/05	ORIGINAL PREPARATION	TBE

REVISIONS

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
51 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(914) 294-0606
JOSEPH J. PFAU P.E. LICENSE NO. 068945
ROBERT A. PIETRZAK P.L.S. LICENSE NO. 050075

SIGNATURE DATE

LANDS OF ZAZON

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

PROJECT TITLE

POST DEVELOPED DRAINAGE BASIN MAP

SECTION 20 BLOCK 1 LOT 24

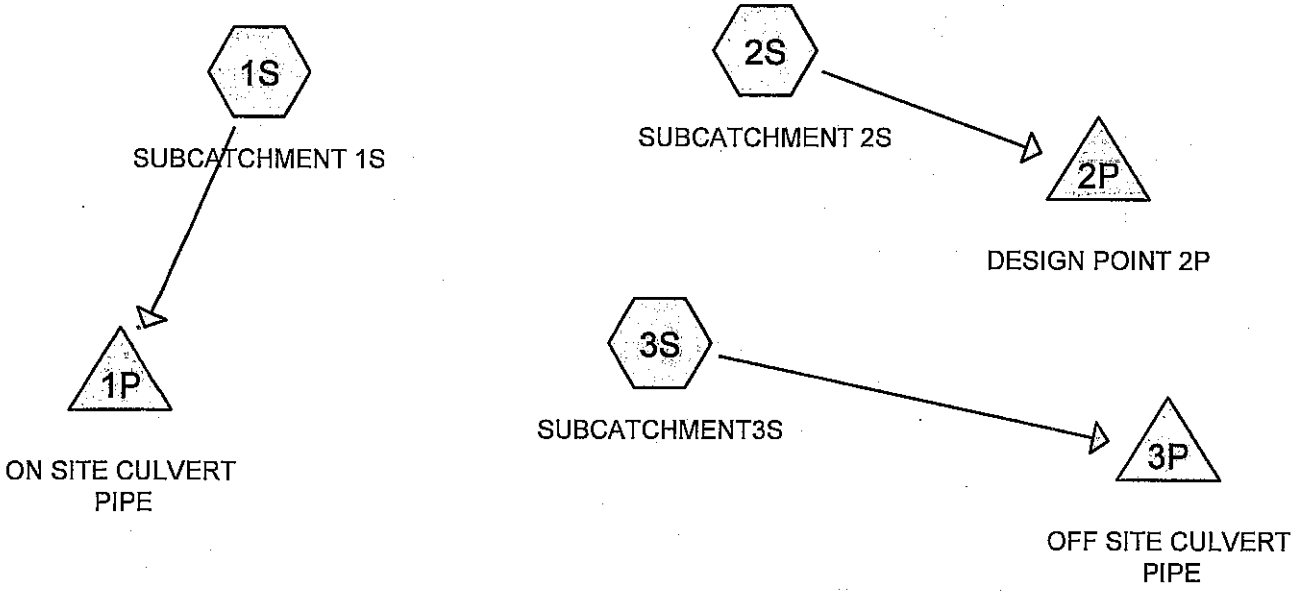
DRAWING TITLE

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
N/A OF ___	N/A OF ___	2 OF 2
SCALE	CAD REFERENCE	PROJECT NUMBER
1"=100'	23153DRAIN	23153.01

acres

APPENDIX 5

TR-20 Hydro-CAD Calculations – Existing Conditions



Subcat Reach Pond Link

Drainage Diagram for Existing Conditions 2021
Prepared by Pietrzak & Pfau Engineering & Surveying PLLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=9.200 ac Runoff Depth=0.60"
Flow Length=976' Tc=16.9 min CN=74 Runoff=4.61 cfs 0.462 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=3.410 ac Runoff Depth=0.60"
Flow Length=745' Tc=18.5 min CN=74 Runoff=1.65 cfs 0.171 af

Subcatchment 3S: SUBCATCHMENT3S Runoff Area=6.540 ac Runoff Depth=0.74"
Flow Length=1,192' Tc=13.2 min CN=77 Runoff=4.56 cfs 0.401 af

Pond 1P: ON SITE CULVERT PIPE Inflow=4.61 cfs 0.462 af
Primary=4.61 cfs 0.462 af

Pond 2P: DESIGN POINT 2P Inflow=1.65 cfs 0.171 af
Primary=1.65 cfs 0.171 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=4.56 cfs 0.401 af
Primary=4.56 cfs 0.401 af

Total Runoff Area = 19.150 ac Runoff Volume = 1.034 af Average Runoff Depth = 0.65"

Subcatchment 1S: SUBCATCHMENT 1S

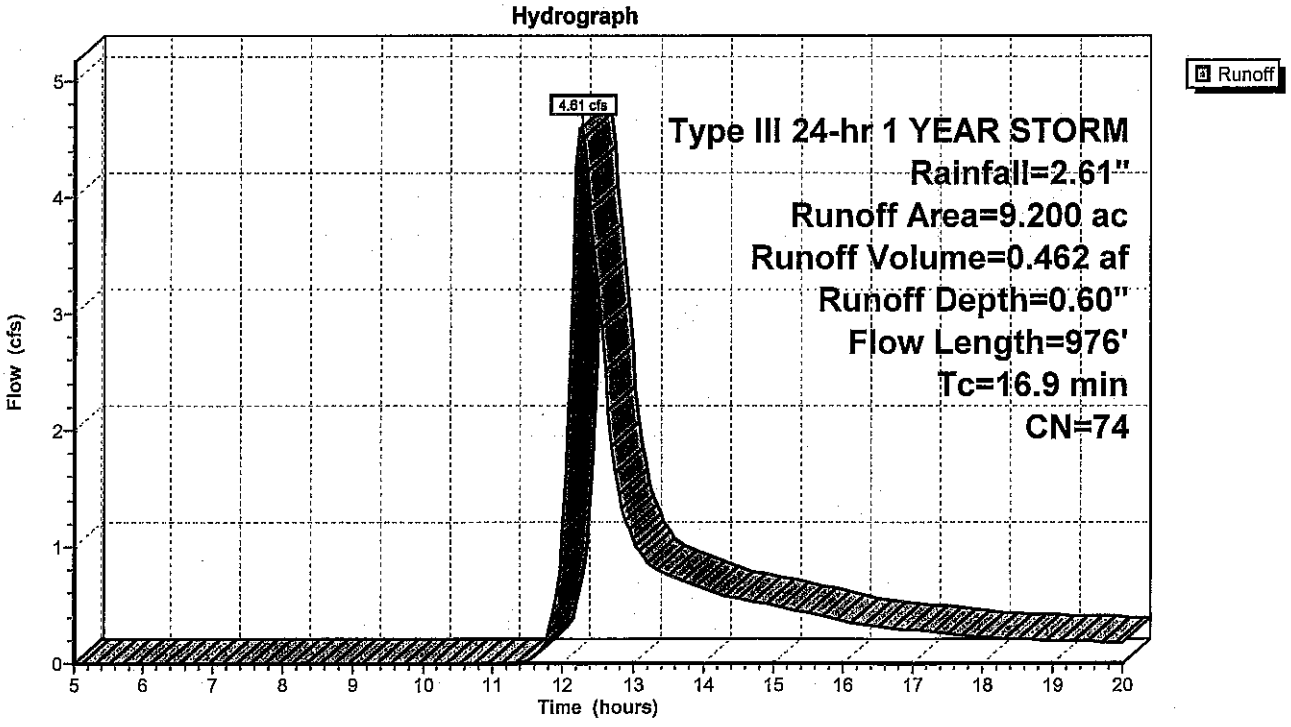
Runoff = 4.61 cfs @ 12.27 hrs, Volume= 0.462 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.188	98	Paved parking & roofs
2.642	74	>75% Grass cover, Good, HSG C
6.370	73	Woods, Fair, HSG C
9.200	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0700	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
3.8	876	0.0580	3.9		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.9	976	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

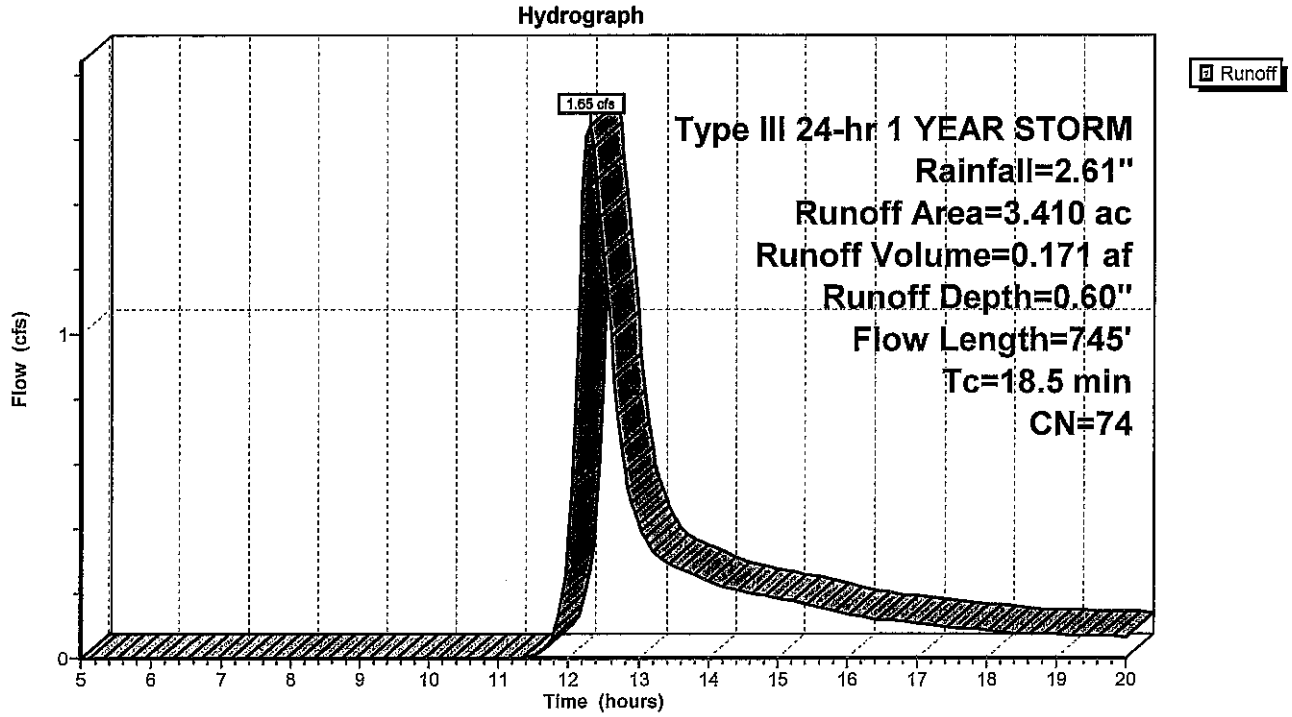
Runoff = 1.65 cfs @ 12.29 hrs, Volume= 0.171 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	76	Woods/grass comb., Fair, HSG C
1.890	73	Woods, Fair, HSG C
1.380	74	>75% Grass cover, Good, HSG C
3.410	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT3S

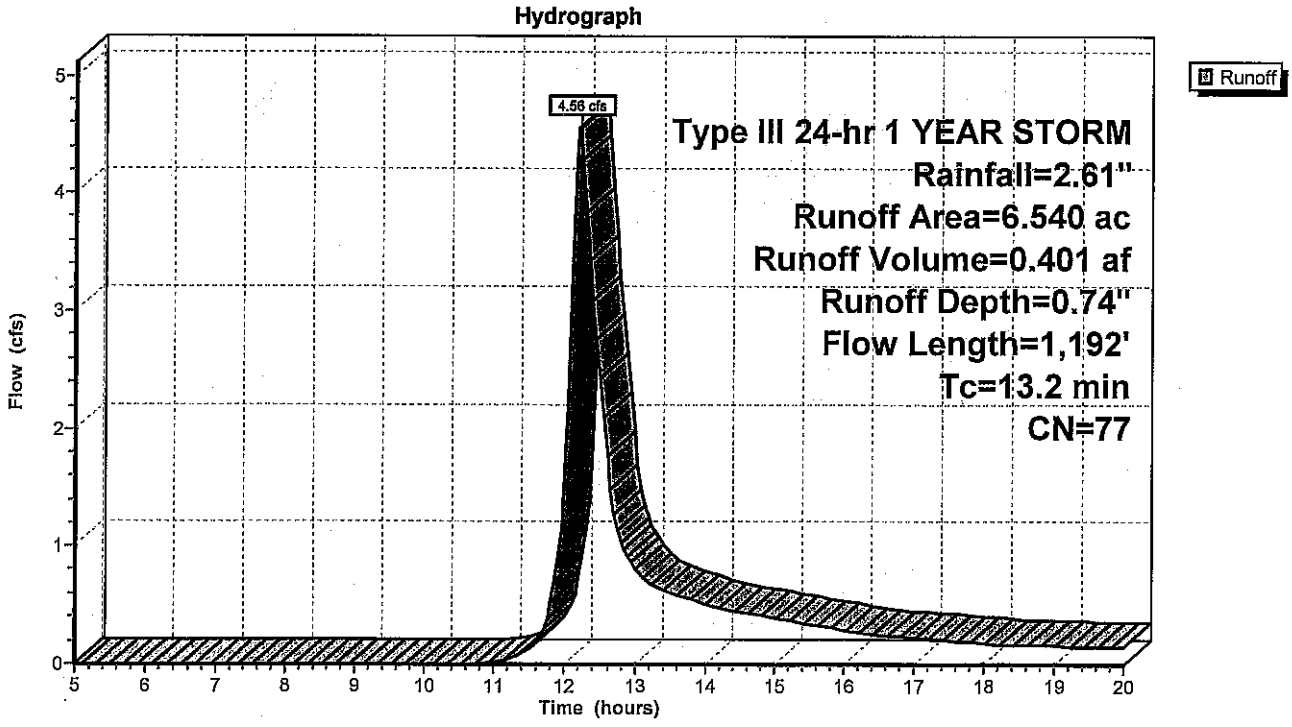
Runoff = 4.56 cfs @ 12.20 hrs, Volume= 0.401 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.580	72	Woods/grass comb., Good, HSG C
4.990	74	>75% Grass cover, Good, HSG C
6.540	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	62	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
4.0	869	0.0510	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.2	1,192	Total			

Subcatchment 3S: SUBCATCHMENT3S

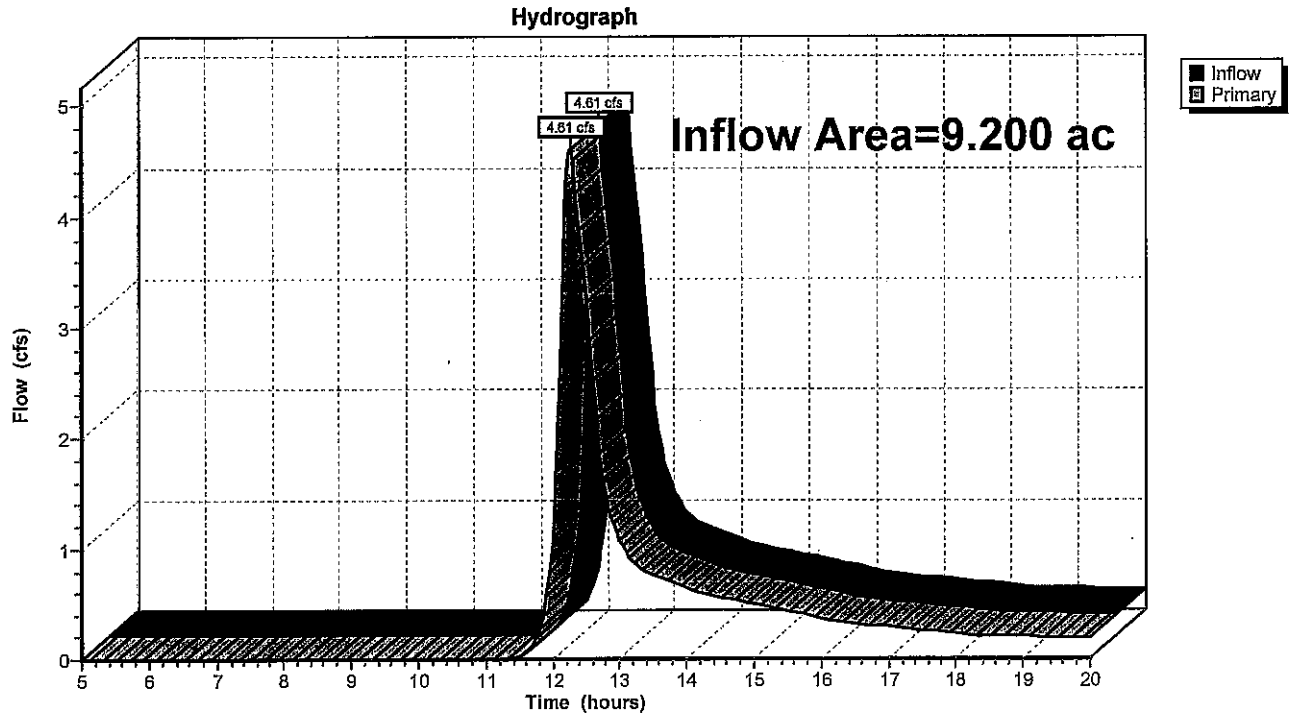


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 9.200 ac, Inflow Depth = 0.60" for 1 YEAR STORM event
Inflow = 4.61 cfs @ 12.27 hrs, Volume= 0.462 af
Primary = 4.61 cfs @ 12.27 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

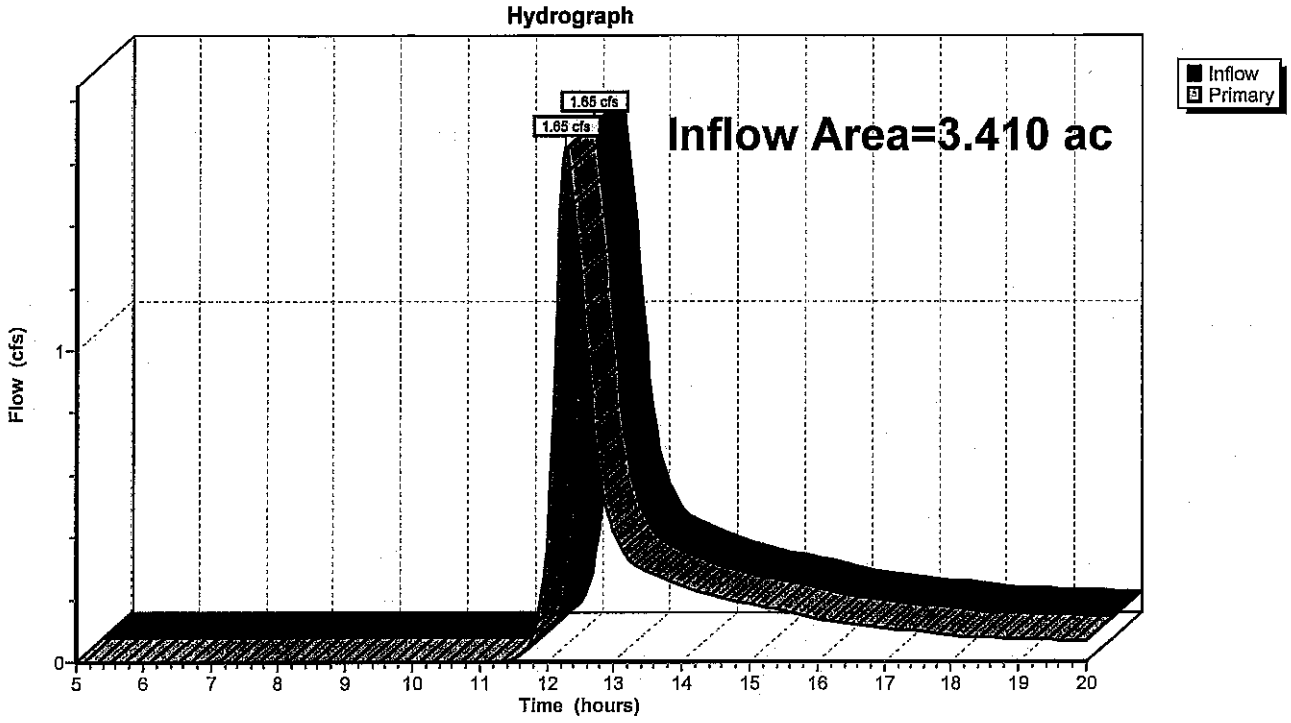


Pond 2P: DESIGN POINT 2P

Inflow Area = 3.410 ac, Inflow Depth = 0.60" for 1 YEAR STORM event
Inflow = 1.65 cfs @ 12.29 hrs, Volume= 0.171 af
Primary = 1.65 cfs @ 12.29 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

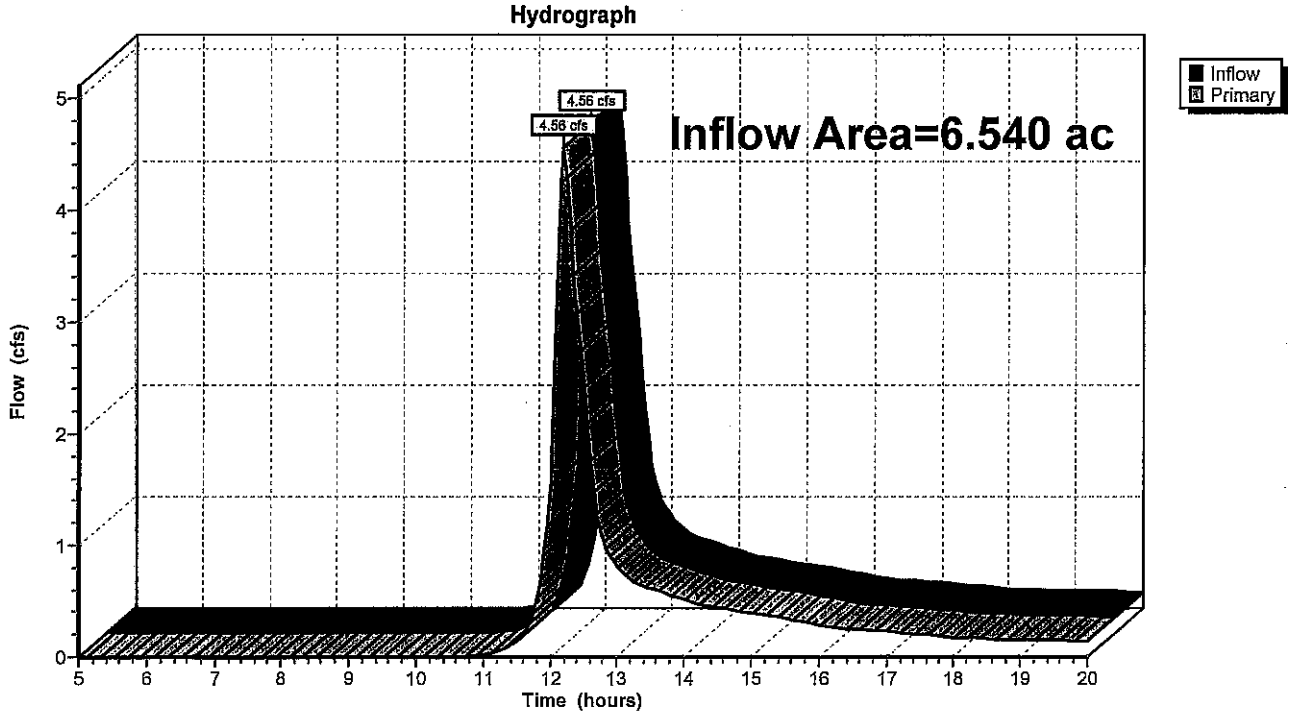


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 6.540 ac, Inflow Depth = 0.74" for 1 YEAR STORM event
Inflow = 4.56 cfs @ 12.20 hrs, Volume= 0.401 af
Primary = 4.56 cfs @ 12.20 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=9.200 ac Runoff Depth=1.93"
Flow Length=976' Tc=16.9 min CN=74 Runoff=16.06 cfs 1.480 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=3.410 ac Runoff Depth=1.93"
Flow Length=745' Tc=18.5 min CN=74 Runoff=5.75 cfs 0.548 af

Subcatchment 3S: SUBCATCHMENT3S Runoff Area=6.540 ac Runoff Depth=2.17"
Flow Length=1,192' Tc=13.2 min CN=77 Runoff=14.08 cfs 1.182 af

Pond 1P: ON SITE CULVERT PIPE Inflow=16.06 cfs 1.480 af
Primary=16.06 cfs 1.480 af

Pond 2P: DESIGN POINT 2P Inflow=5.75 cfs 0.548 af
Primary=5.75 cfs 0.548 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=14.08 cfs 1.182 af
Primary=14.08 cfs 1.182 af

Total Runoff Area = 19.150 ac Runoff Volume = 3.210 af Average Runoff Depth = 2.01"

Subcatchment 1S: SUBCATCHMENT 1S

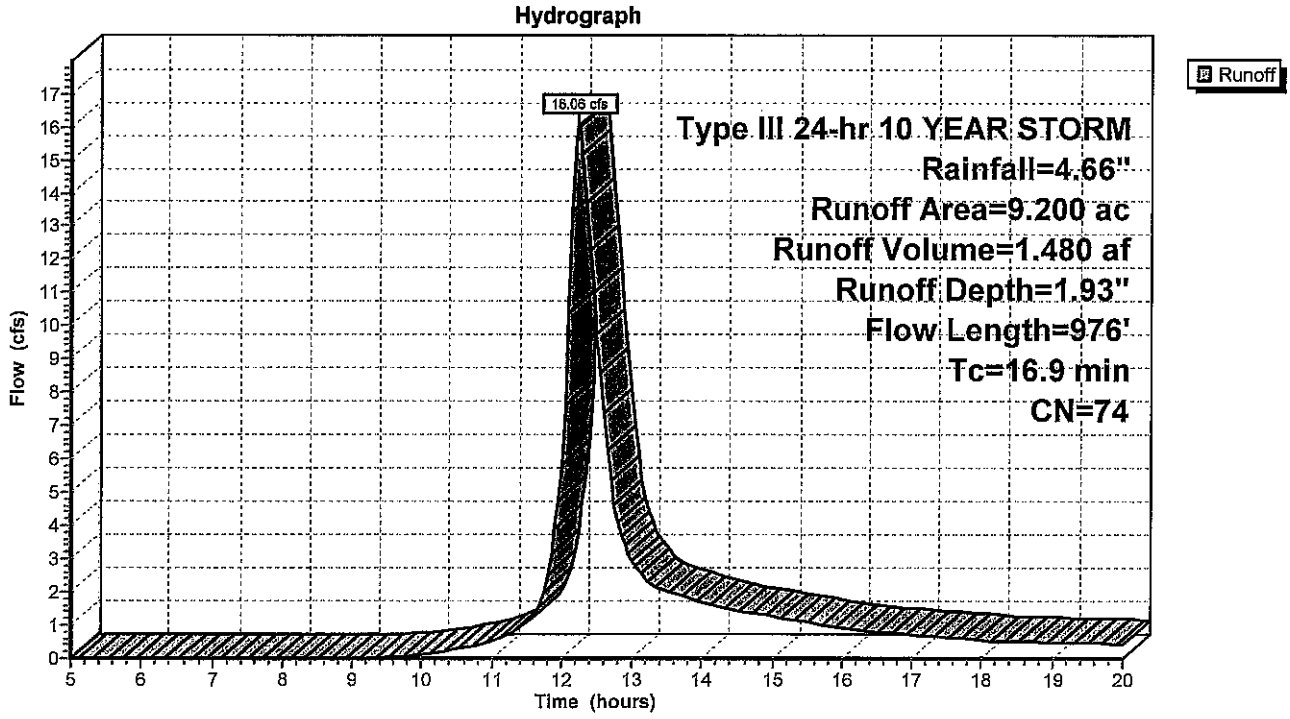
Runoff = 16.06 cfs @ 12.24 hrs, Volume= 1.480 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.188	98	Paved parking & roofs
2.642	74	>75% Grass cover, Good, HSG C
6.370	73	Woods, Fair, HSG C
9.200	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0700	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
3.8	876	0.0580	3.9		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.9	976	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

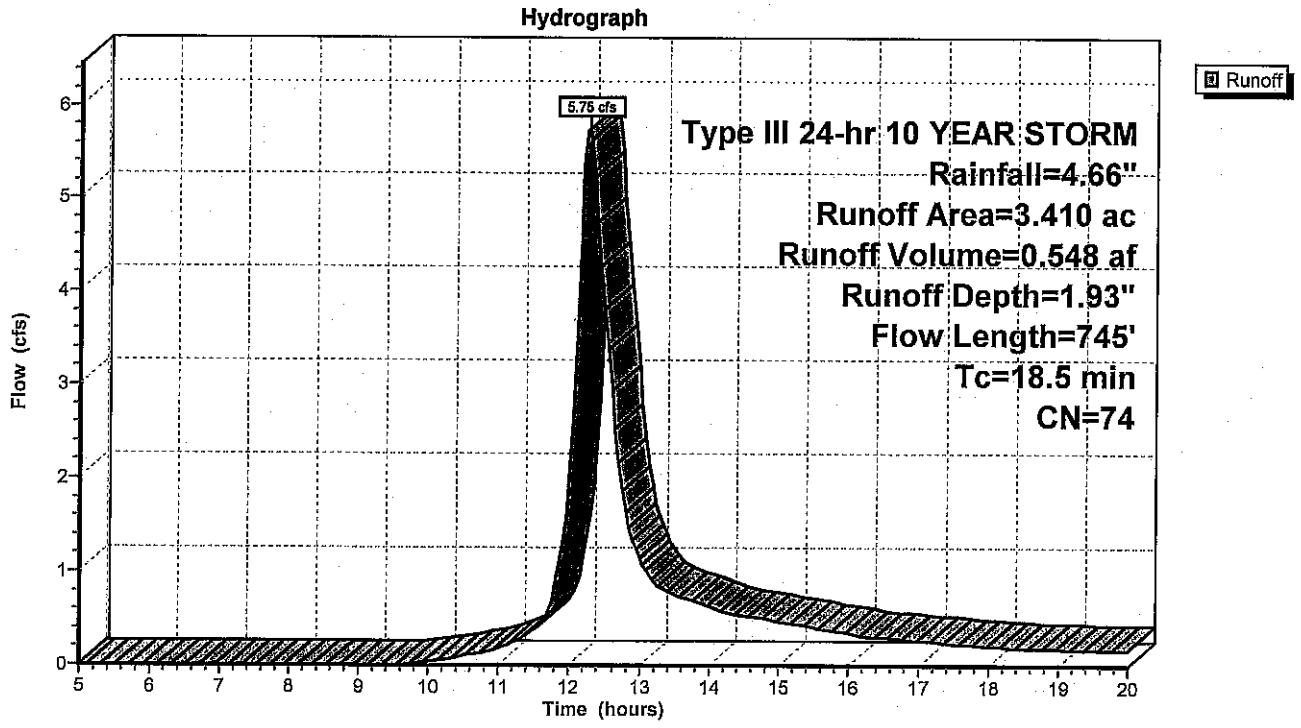
Runoff = 5.75 cfs @ 12.26 hrs, Volume= 0.548 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	76	Woods/grass comb., Fair, HSG C
1.890	73	Woods, Fair, HSG C
1.380	74	>75% Grass cover, Good, HSG C
3.410	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT3S

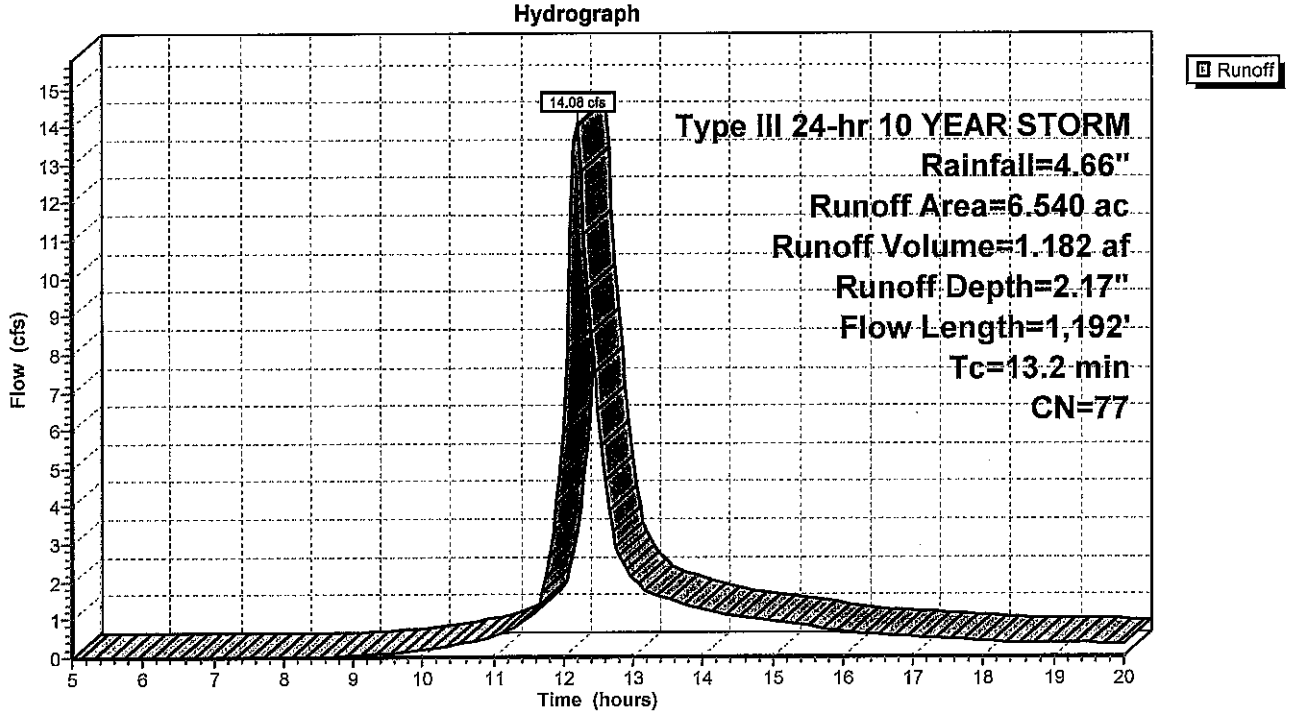
Runoff = 14.08 cfs @ 12.19 hrs, Volume= 1.182 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.580	72	Woods/grass comb., Good, HSG C
4.990	74	>75% Grass cover, Good, HSG C
6.540	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	62	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
4.0	869	0.0510	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.2	1,192	Total			

Subcatchment 3S: SUBCATCHMENT3S

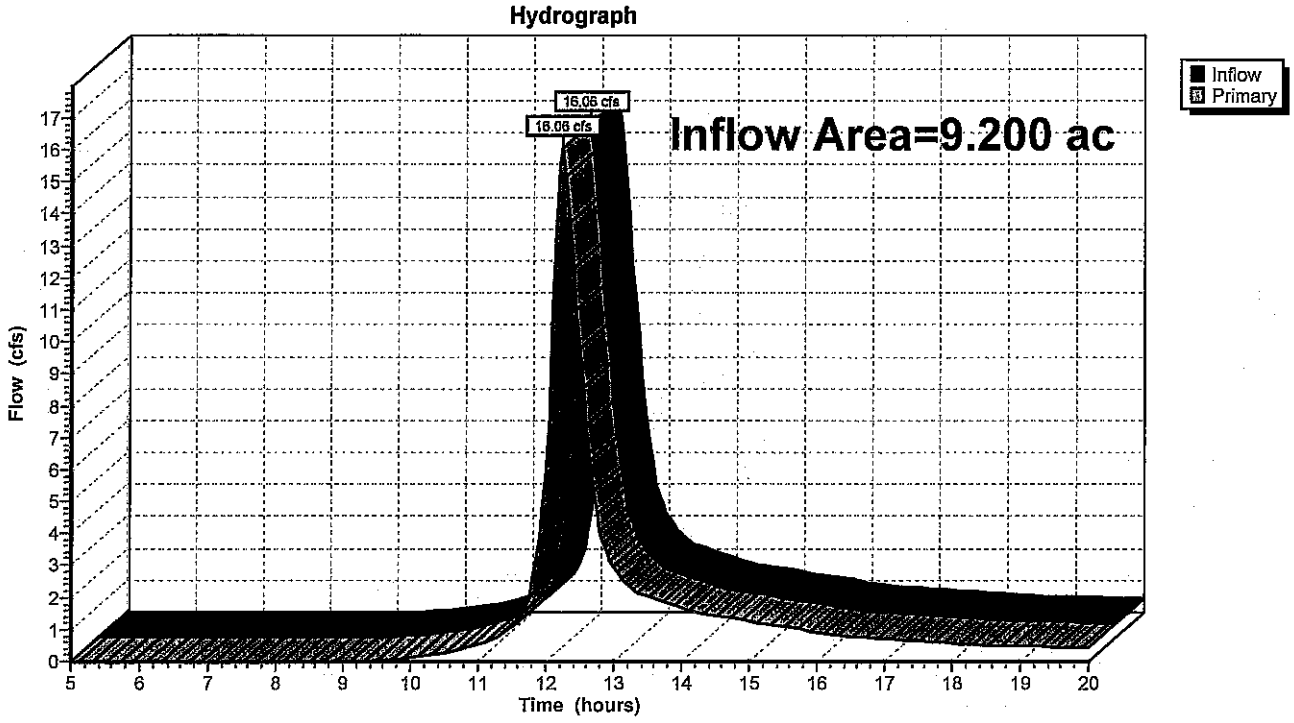


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 9.200 ac, Inflow Depth = 1.93" for 10 YEAR STORM event
Inflow = 16.06 cfs @ 12.24 hrs, Volume= 1.480 af
Primary = 16.06 cfs @ 12.24 hrs, Volume= 1.480 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

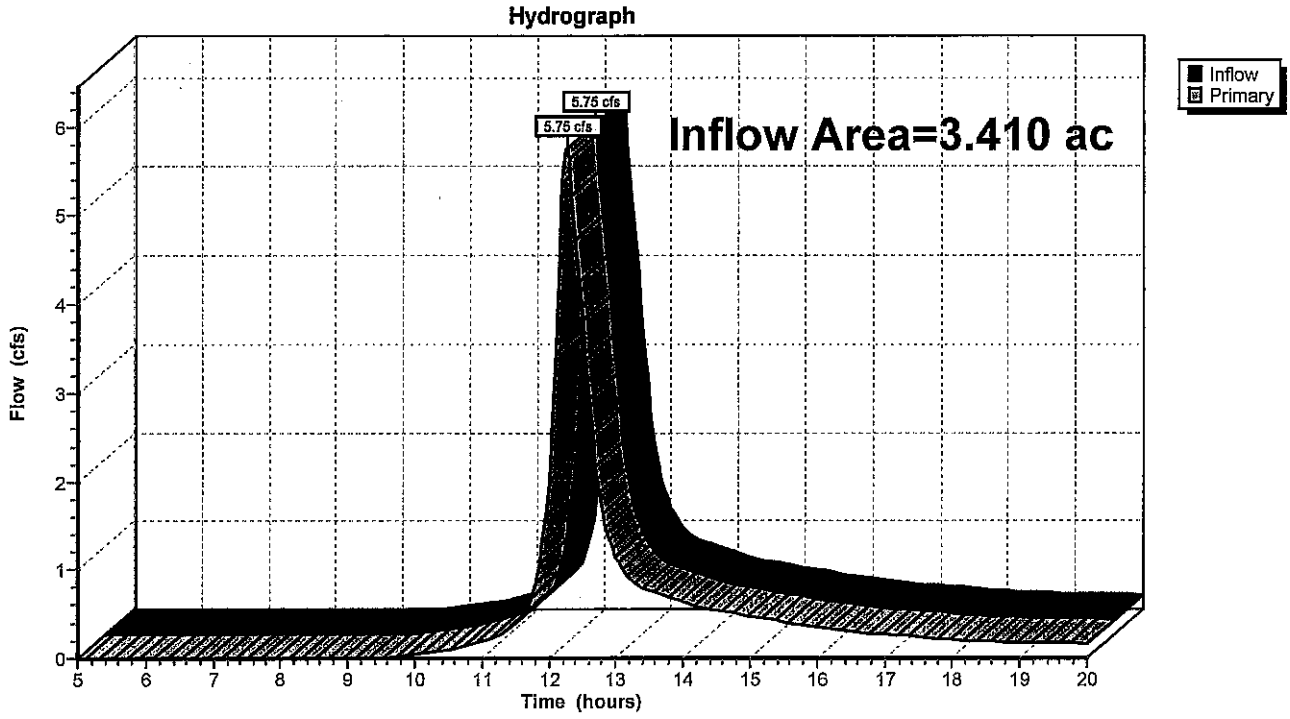


Pond 2P: DESIGN POINT 2P

Inflow Area = 3.410 ac, Inflow Depth = 1.93" for 10 YEAR STORM event
Inflow = 5.75 cfs @ 12.26 hrs, Volume= 0.548 af
Primary = 5.75 cfs @ 12.26 hrs, Volume= 0.548 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

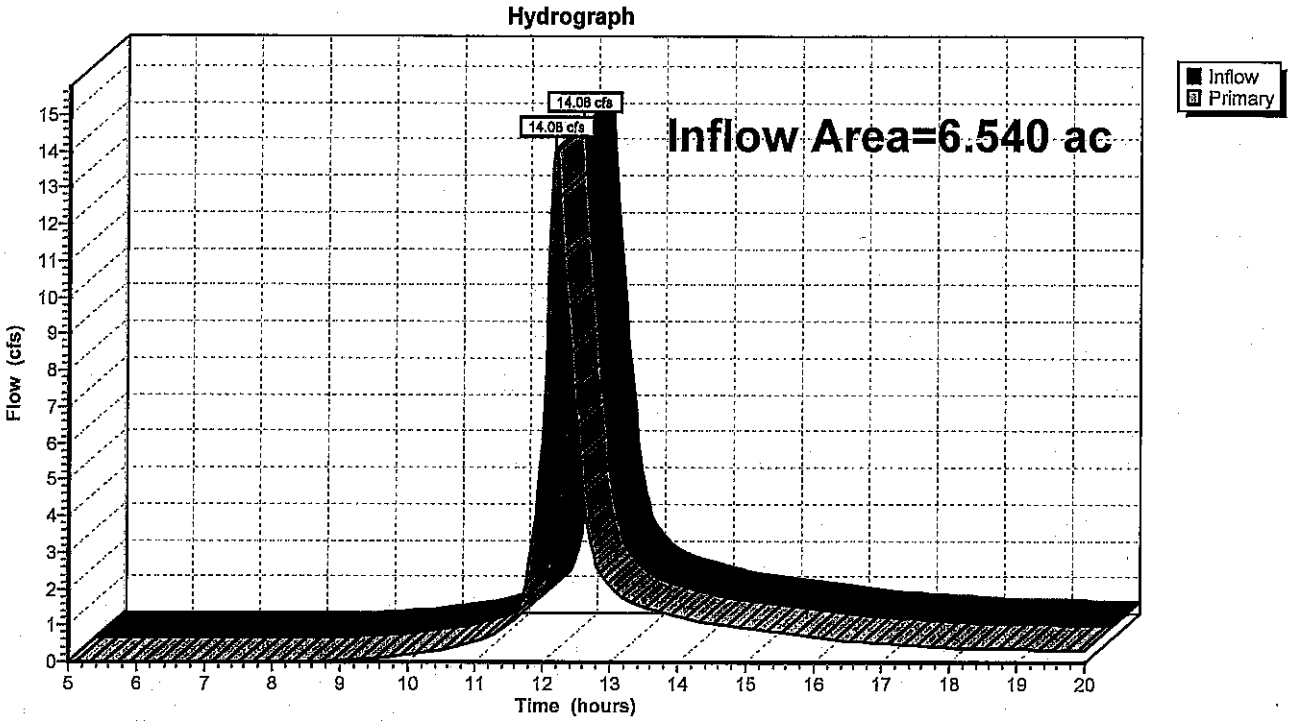


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 6.540 ac, Inflow Depth = 2.17" for 10 YEAR STORM event
Inflow = 14.08 cfs @ 12.19 hrs, Volume= 1.182 af
Primary = 14.08 cfs @ 12.19 hrs, Volume= 1.182 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=9.200 ac Runoff Depth=2.83"
Flow Length=976' Tc=16.9 min CN=74 Runoff=23.59 cfs 2.168 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=3.410 ac Runoff Depth=2.83"
Flow Length=745' Tc=18.5 min CN=74 Runoff=8.46 cfs 0.803 af

Subcatchment 3S: SUBCATCHMENT3S Runoff Area=6.540 ac Runoff Depth=3.11"
Flow Length=1,192' Tc=13.2 min CN=77 Runoff=20.14 cfs 1.695 af

Pond 1P: ON SITE CULVERT PIPE Inflow=23.59 cfs 2.168 af
Primary=23.59 cfs 2.168 af

Pond 2P: DESIGN POINT 2P Inflow=8.46 cfs 0.803 af
Primary=8.46 cfs 0.803 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=20.14 cfs 1.695 af
Primary=20.14 cfs 1.695 af

Total Runoff Area = 19.150 ac Runoff Volume = 4.666 af Average Runoff Depth = 2.92"

Subcatchment 1S: SUBCATCHMENT 1S

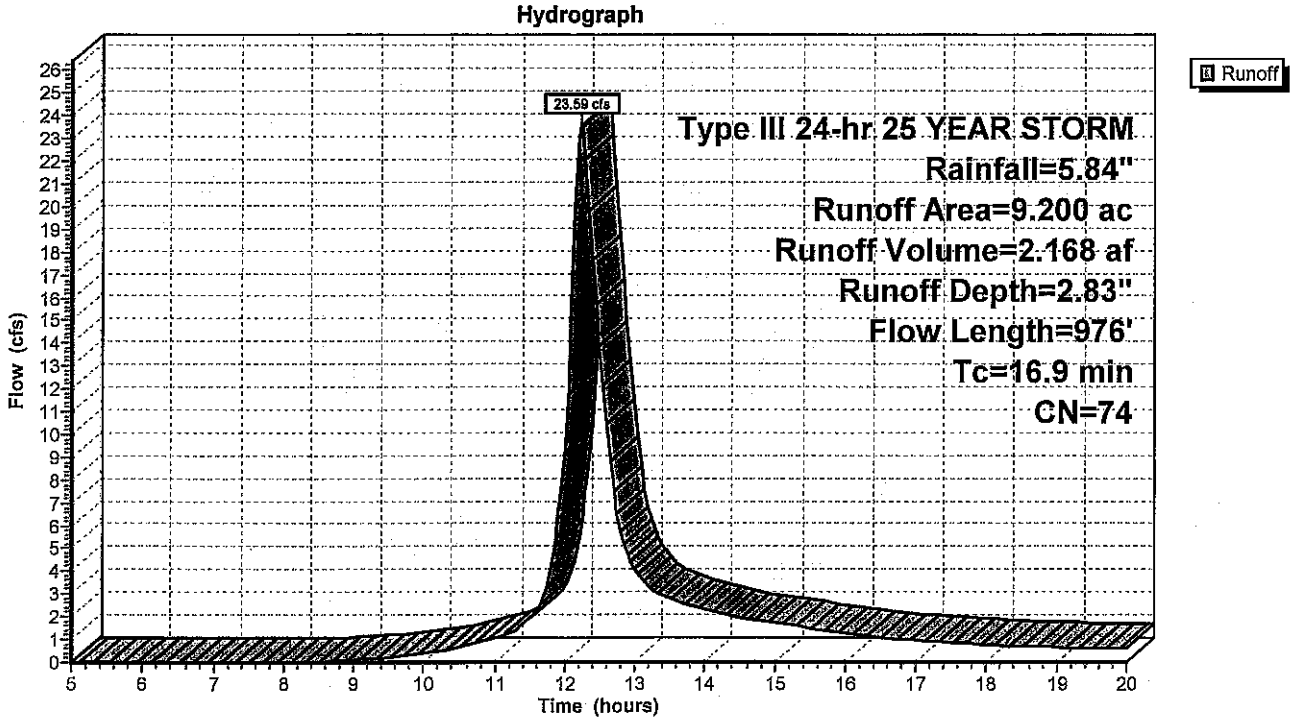
Runoff = 23.59 cfs @ 12.24 hrs, Volume= 2.168 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.188	98	Paved parking & roofs
2.642	74	>75% Grass cover, Good, HSG C
6.370	73	Woods, Fair, HSG C
9.200	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0700	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
3.8	876	0.0580	3.9		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.9	976	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

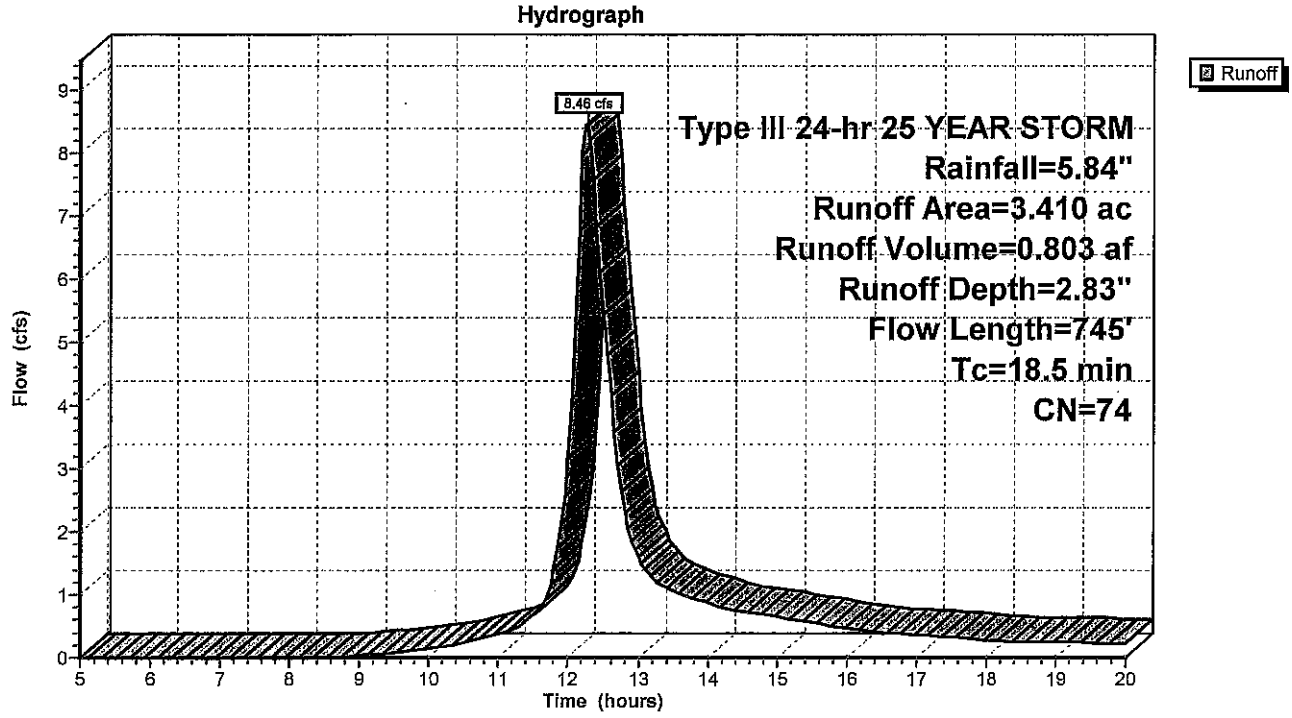
Runoff = 8.46 cfs @ 12.26 hrs, Volume= 0.803 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	76	Woods/grass comb., Fair, HSG C
1.890	73	Woods, Fair, HSG C
1.380	74	>75% Grass cover, Good, HSG C
3.410	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT3S

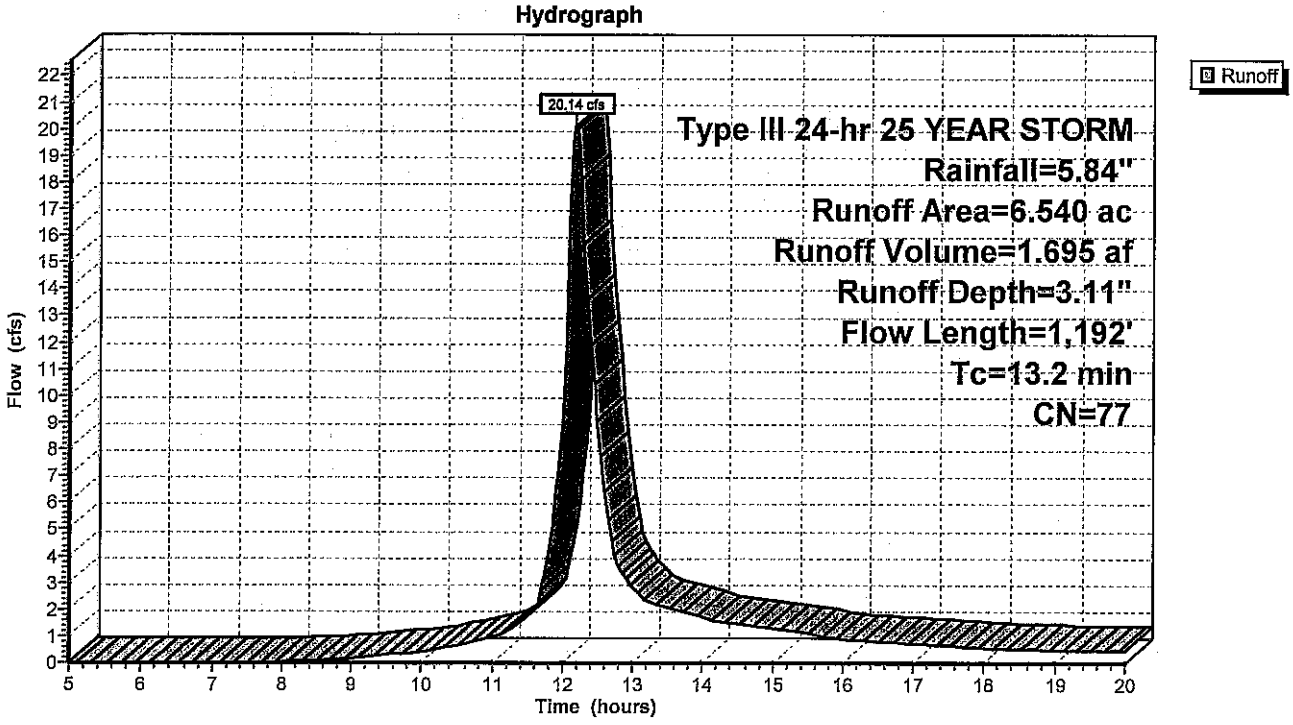
Runoff = 20.14 cfs @ 12.19 hrs, Volume= 1.695 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.580	72	Woods/grass comb., Good, HSG C
4.990	74	>75% Grass cover, Good, HSG C
6.540	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	62	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
4.0	869	0.0510	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.2	1,192	Total			

Subcatchment 3S: SUBCATCHMENT3S

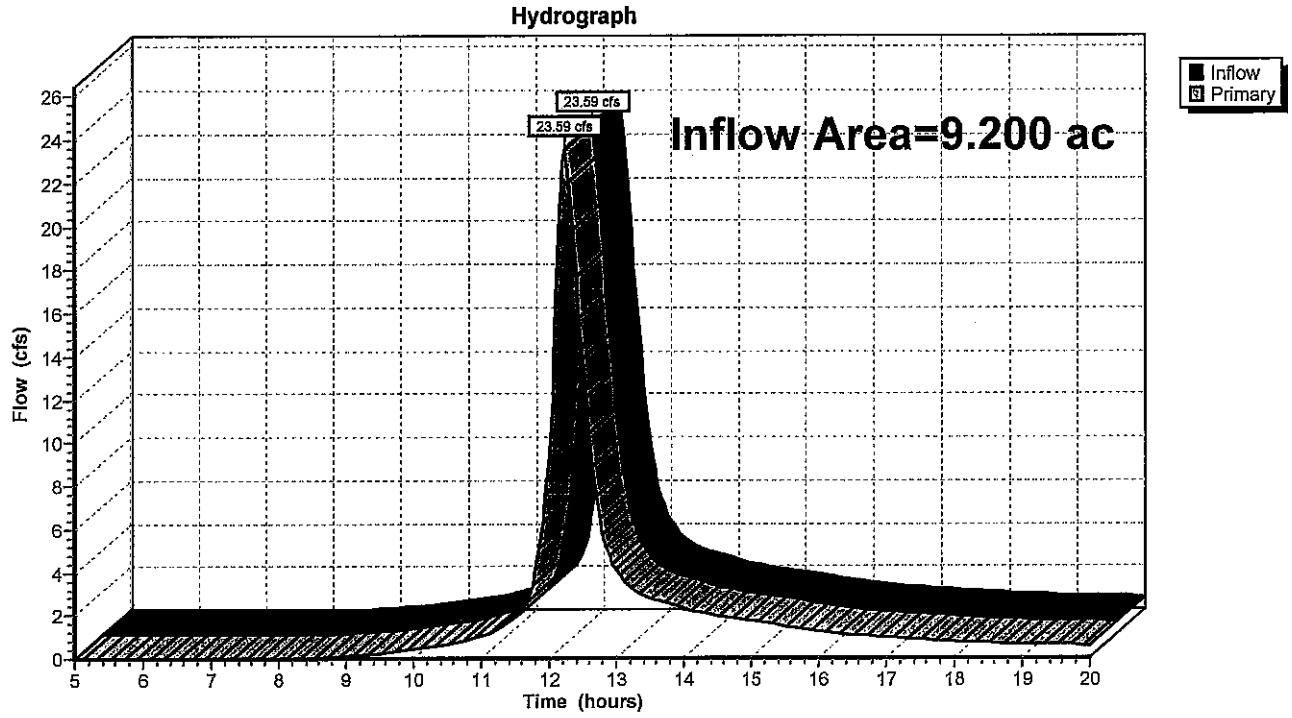


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 9.200 ac, Inflow Depth = 2.83" for 25 YEAR STORM event
Inflow = 23.59 cfs @ 12.24 hrs, Volume= 2.168 af
Primary = 23.59 cfs @ 12.24 hrs, Volume= 2.168 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

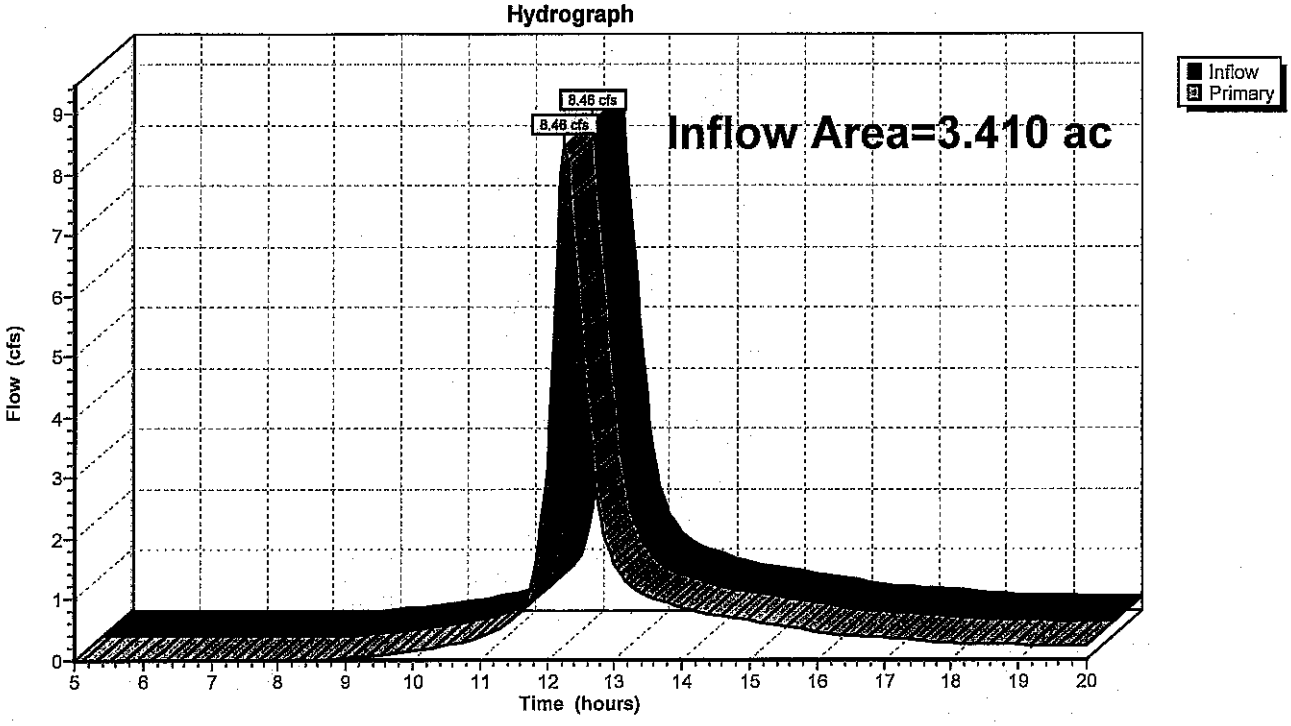


Pond 2P: DESIGN POINT 2P

Inflow Area = 3.410 ac, Inflow Depth = 2.83" for 25 YEAR STORM event
Inflow = 8.46 cfs @ 12.26 hrs, Volume= 0.803 af
Primary = 8.46 cfs @ 12.26 hrs, Volume= 0.803 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

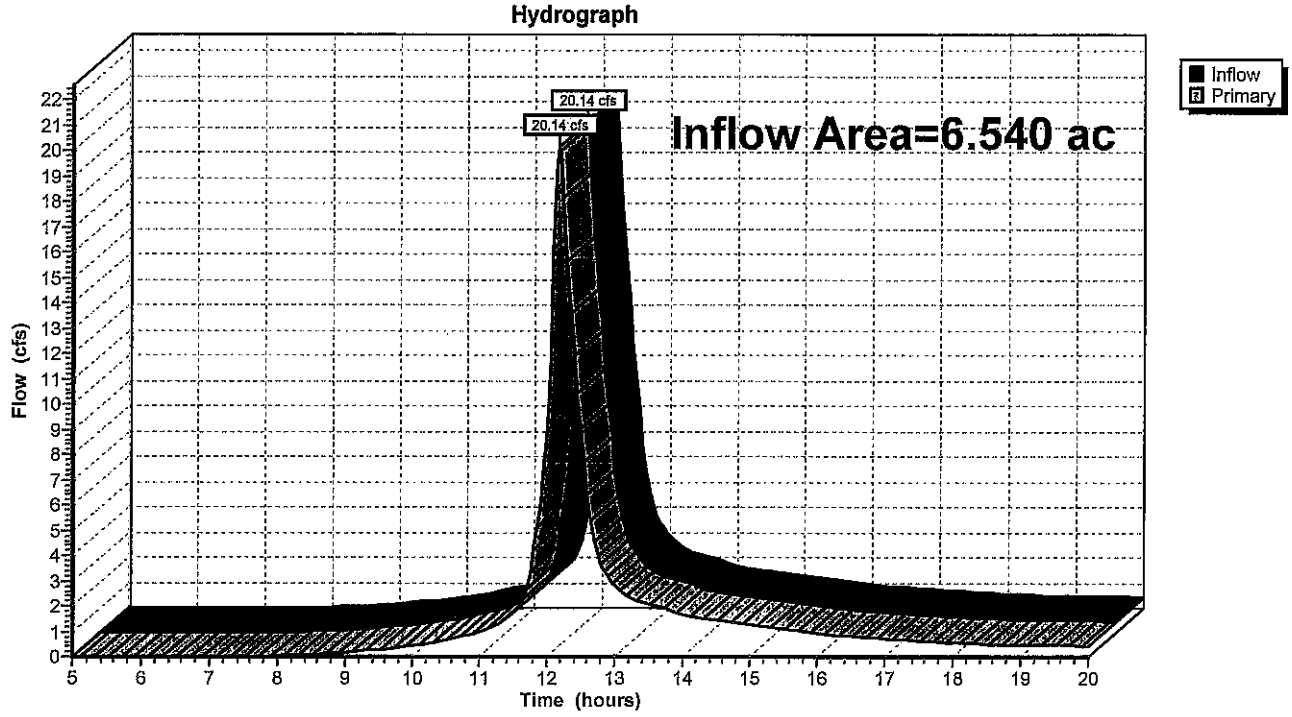


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 6.540 ac, Inflow Depth = 3.11" for 25 YEAR STORM event
Inflow = 20.14 cfs @ 12.19 hrs, Volume= 1.695 af
Primary = 20.14 cfs @ 12.19 hrs, Volume= 1.695 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=9.200 ac Runoff Depth=4.78"
Flow Length=976' Tc=16.9 min CN=74 Runoff=39.60 cfs 3.667 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=3.410 ac Runoff Depth=4.78"
Flow Length=745' Tc=18.5 min CN=74 Runoff=14.20 cfs 1.359 af

Subcatchment 3S: SUBCATCHMENT3S Runoff Area=6.540 ac Runoff Depth=5.13"
Flow Length=1,192' Tc=13.2 min CN=77 Runoff=32.78 cfs 2.798 af

Pond 1P: ON SITE CULVERT PIPE Inflow=39.60 cfs 3.667 af
Primary=39.60 cfs 3.667 af

Pond 2P: DESIGN POINT 2P Inflow=14.20 cfs 1.359 af
Primary=14.20 cfs 1.359 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=32.78 cfs 2.798 af
Primary=32.78 cfs 2.798 af

Total Runoff Area = 19.150 ac Runoff Volume = 7.824 af Average Runoff Depth = 4.90"

Subcatchment 1S: SUBCATCHMENT 1S

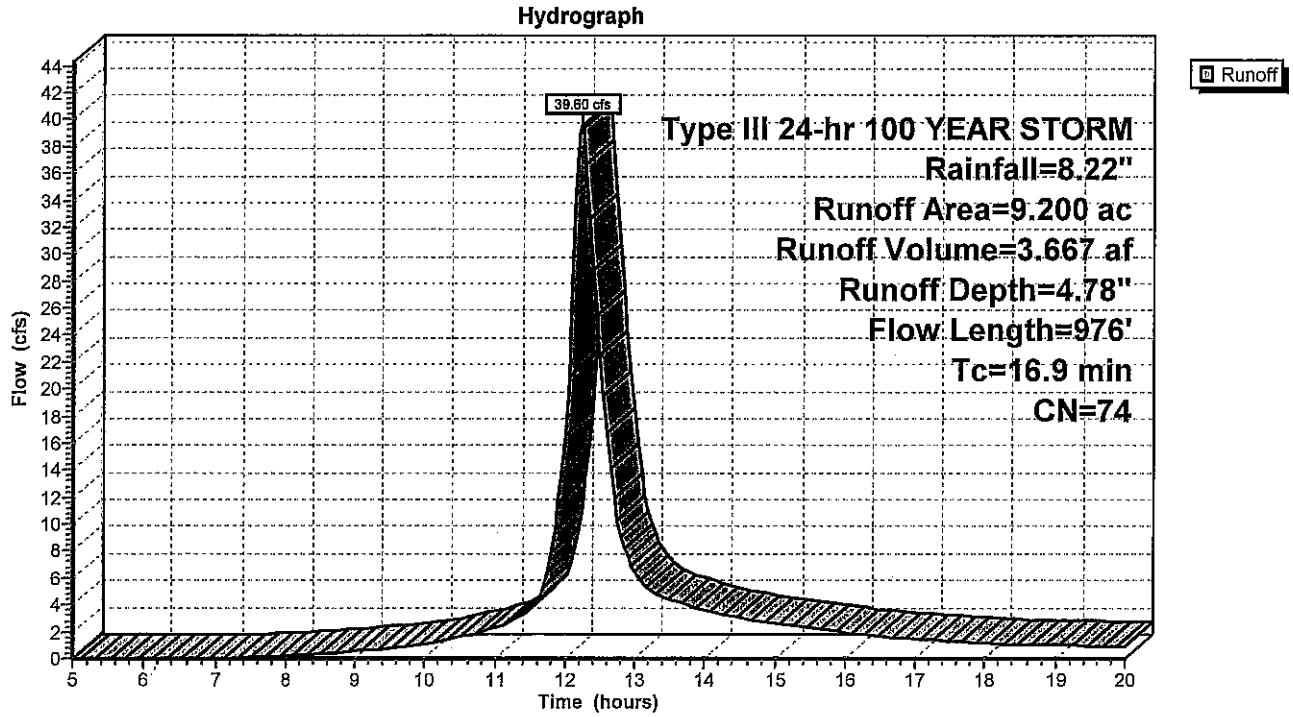
Runoff = 39.60 cfs @ 12.23 hrs, Volume= 3.667 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.188	98	Paved parking & roofs
2.642	74	>75% Grass cover, Good, HSG C
6.370	73	Woods, Fair, HSG C
9.200	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0700	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
3.8	876	0.0580	3.9		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.9	976	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

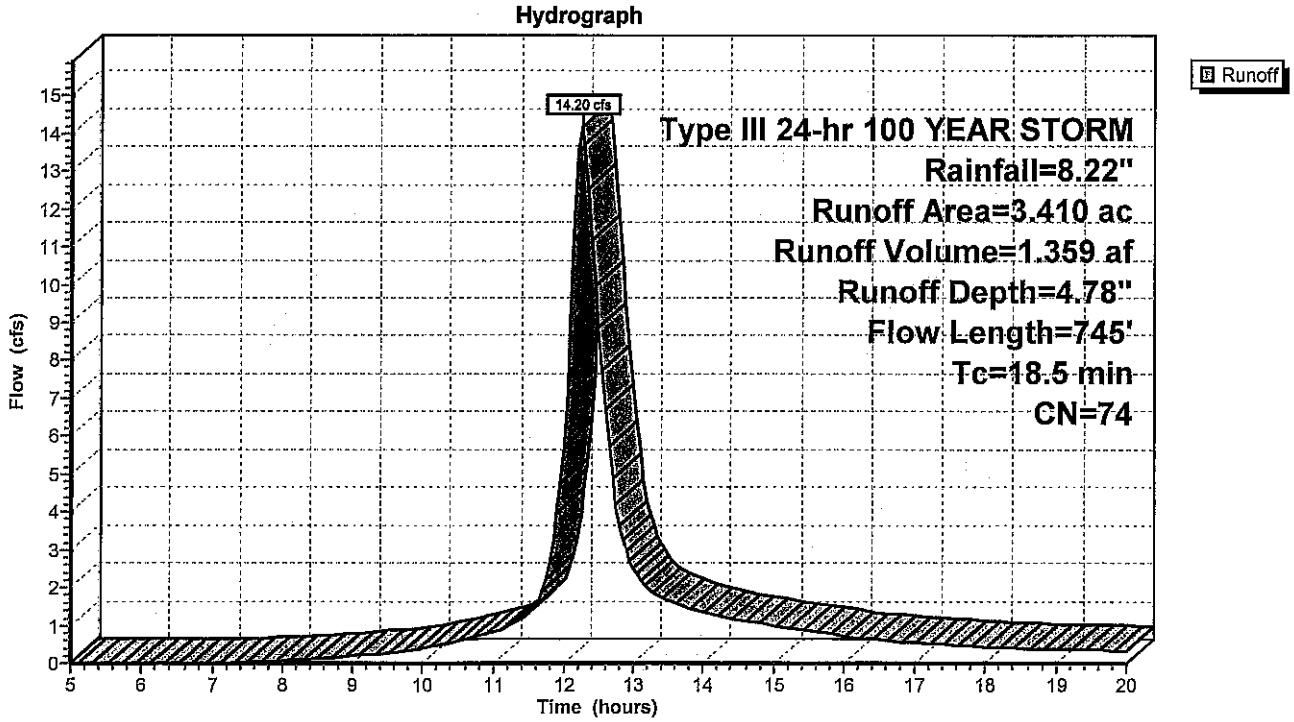
Runoff = 14.20 cfs @ 12.25 hrs, Volume= 1.359 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	76	Woods/grass comb., Fair, HSG C
1.890	73	Woods, Fair, HSG C
1.380	74	>75% Grass cover, Good, HSG C
3.410	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT3S

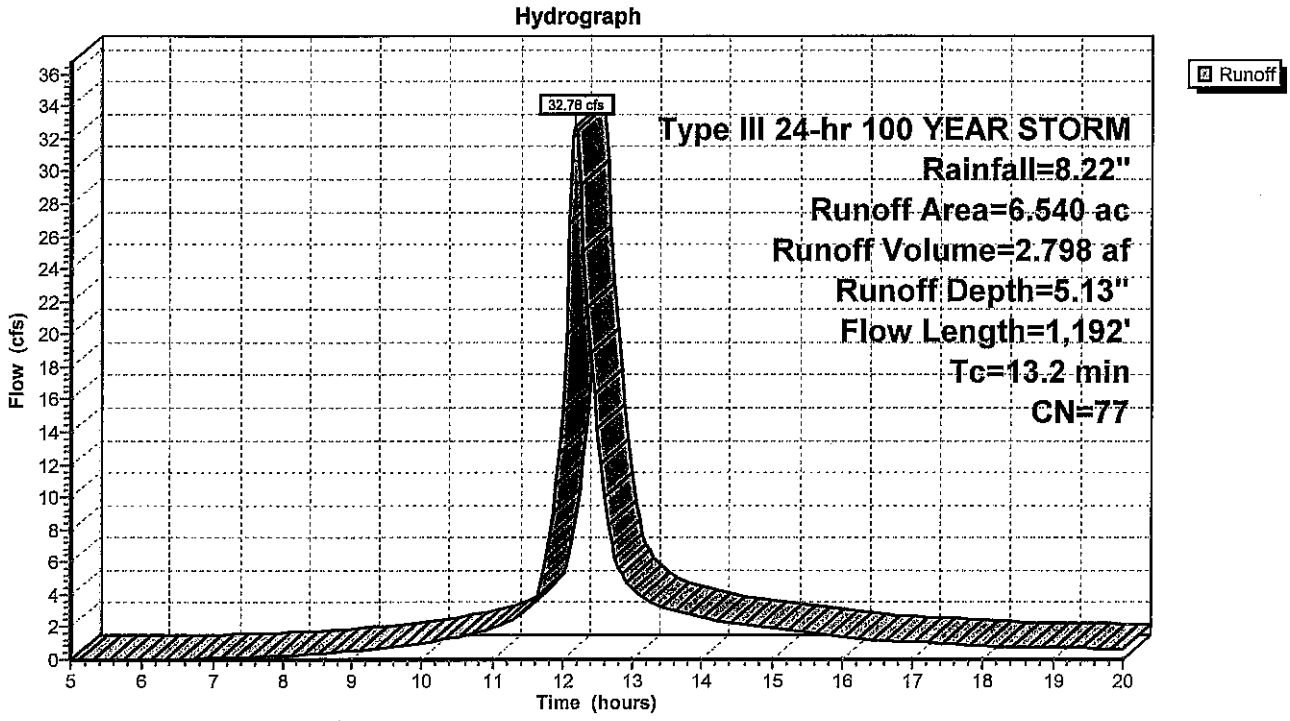
Runoff = 32.78 cfs @ 12.18 hrs, Volume= 2.798 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.580	72	Woods/grass comb., Good, HSG C
4.990	74	>75% Grass cover, Good, HSG C
6.540	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	62	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
4.0	869	0.0510	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.2	1,192	Total			

Subcatchment 3S: SUBCATCHMENT3S

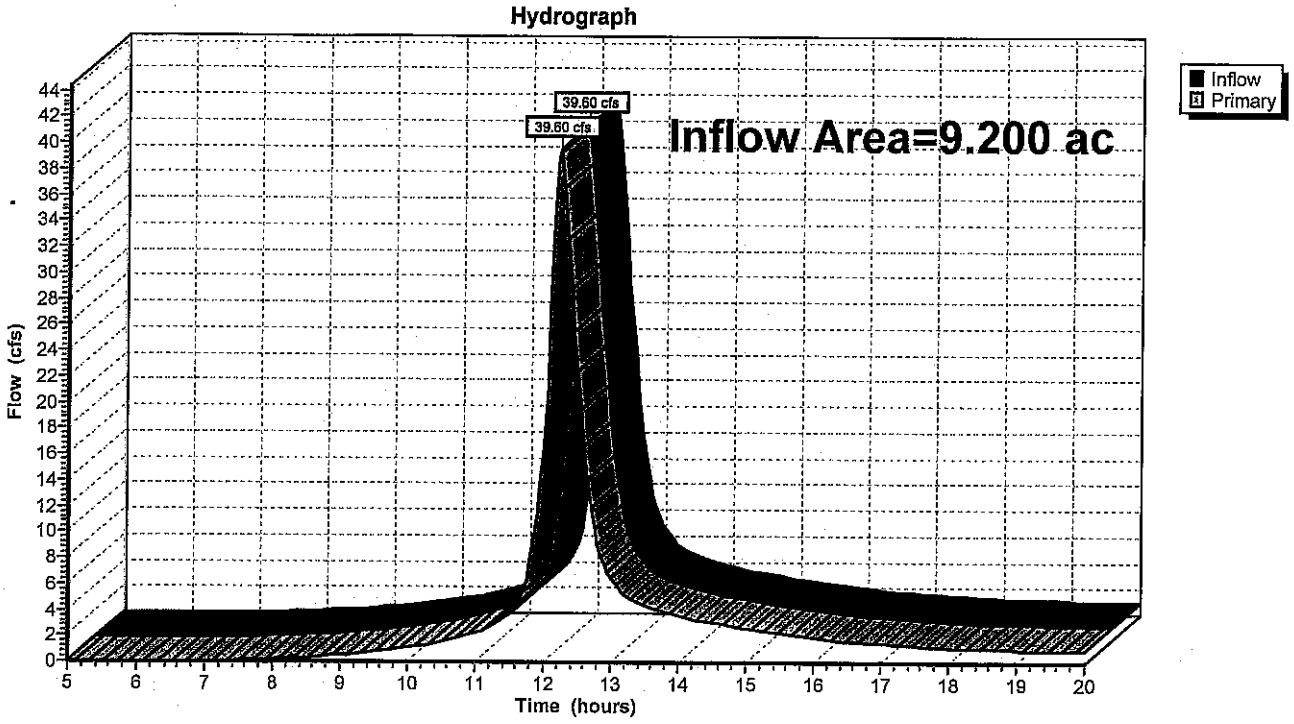


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 9.200 ac, Inflow Depth = 4.78" for 100 YEAR STORM event
Inflow = 39.60 cfs @ 12.23 hrs, Volume= 3.667 af
Primary = 39.60 cfs @ 12.23 hrs, Volume= 3.667 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

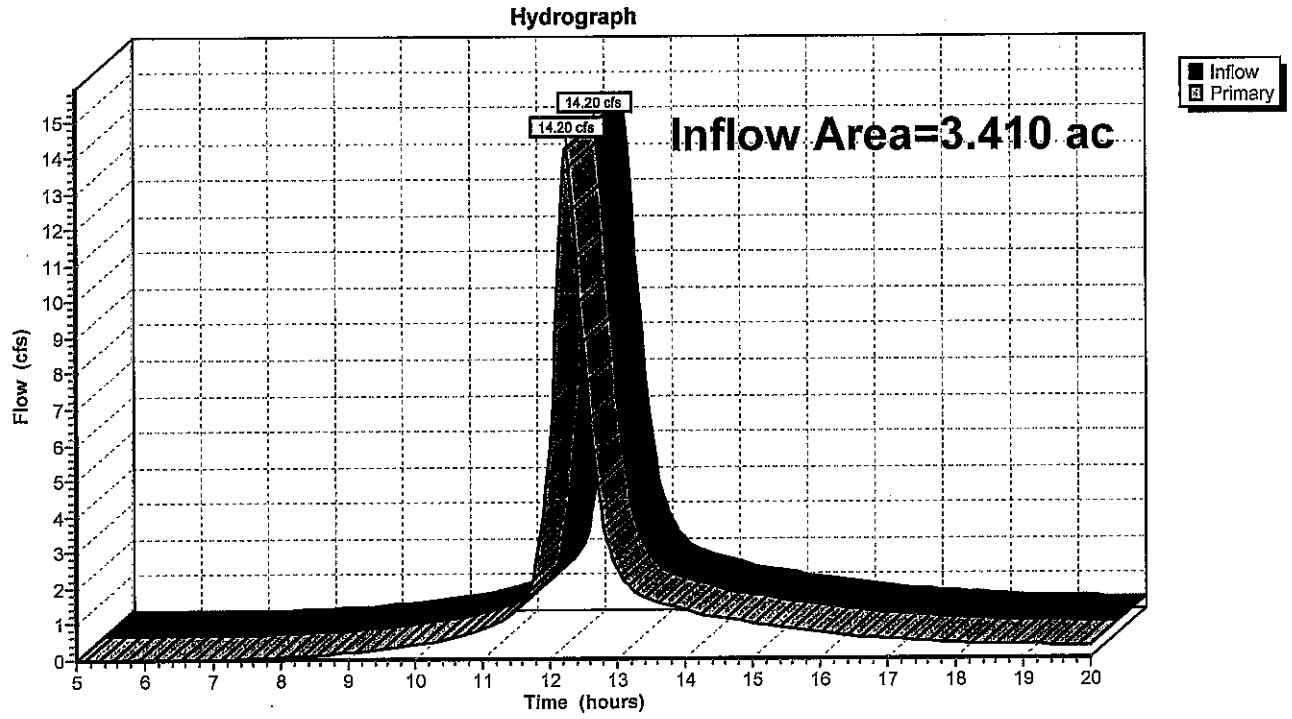


Pond 2P: DESIGN POINT 2P

Inflow Area = 3.410 ac, Inflow Depth = 4.78" for 100 YEAR STORM event
Inflow = 14.20 cfs @ 12.25 hrs, Volume= 1.359 af
Primary = 14.20 cfs @ 12.25 hrs, Volume= 1.359 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

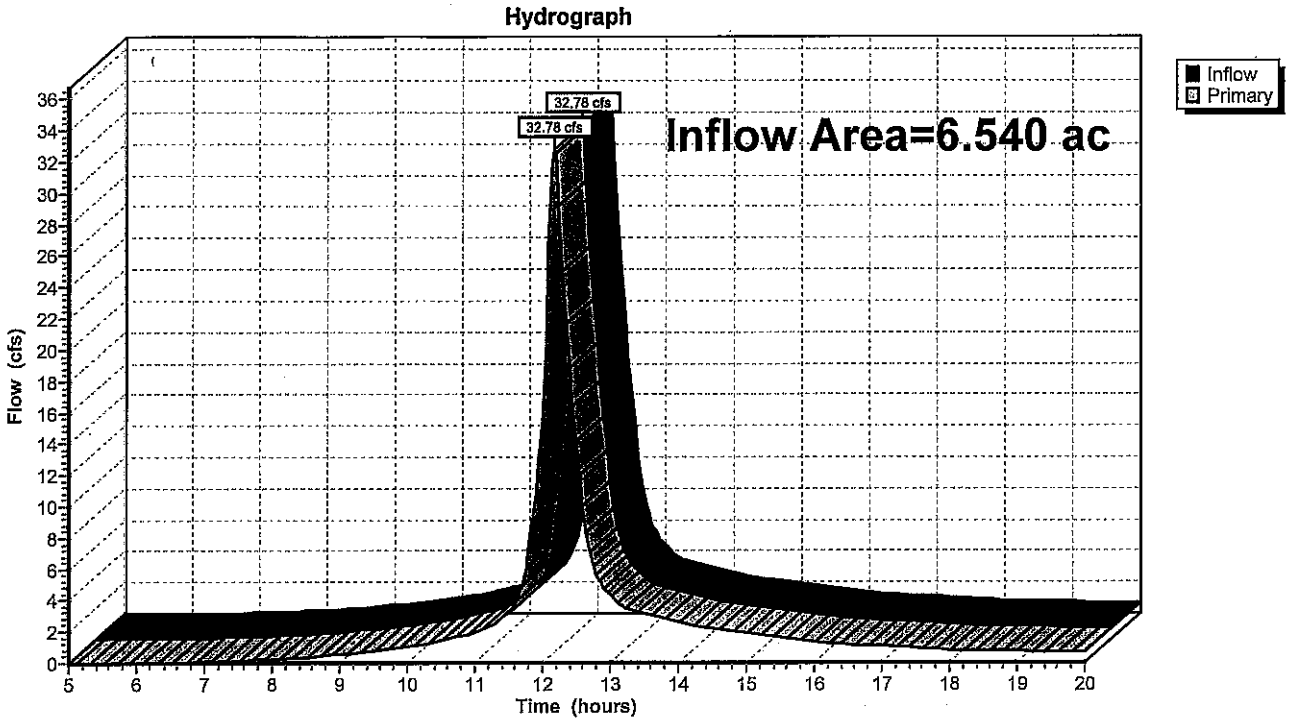


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 6.540 ac, Inflow Depth = 5.13" for 100 YEAR STORM event
Inflow = 32.78 cfs @ 12.18 hrs, Volume= 2.798 af
Primary = 32.78 cfs @ 12.18 hrs, Volume= 2.798 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=9.200 ac Runoff Depth=0.09"
Flow Length=976' Tc=16.9 min CN=74 Runoff=0.39 cfs 0.072 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=3.410 ac Runoff Depth=0.09"
Flow Length=745' Tc=18.5 min CN=74 Runoff=0.14 cfs 0.027 af

Subcatchment 3S: SUBCATCHMENT3S Runoff Area=6.540 ac Runoff Depth=0.14"
Flow Length=1,192' Tc=13.2 min CN=77 Runoff=0.56 cfs 0.078 af

Pond 1P: ON SITE CULVERT PIPE Inflow=0.39 cfs 0.072 af
Primary=0.39 cfs 0.072 af

Pond 2P: DESIGN POINT 2P Inflow=0.14 cfs 0.027 af
Primary=0.14 cfs 0.027 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=0.56 cfs 0.078 af
Primary=0.56 cfs 0.078 af

Total Runoff Area = 19.150 ac Runoff Volume = 0.177 af Average Runoff Depth = 0.11"

Subcatchment 1S: SUBCATCHMENT 1S

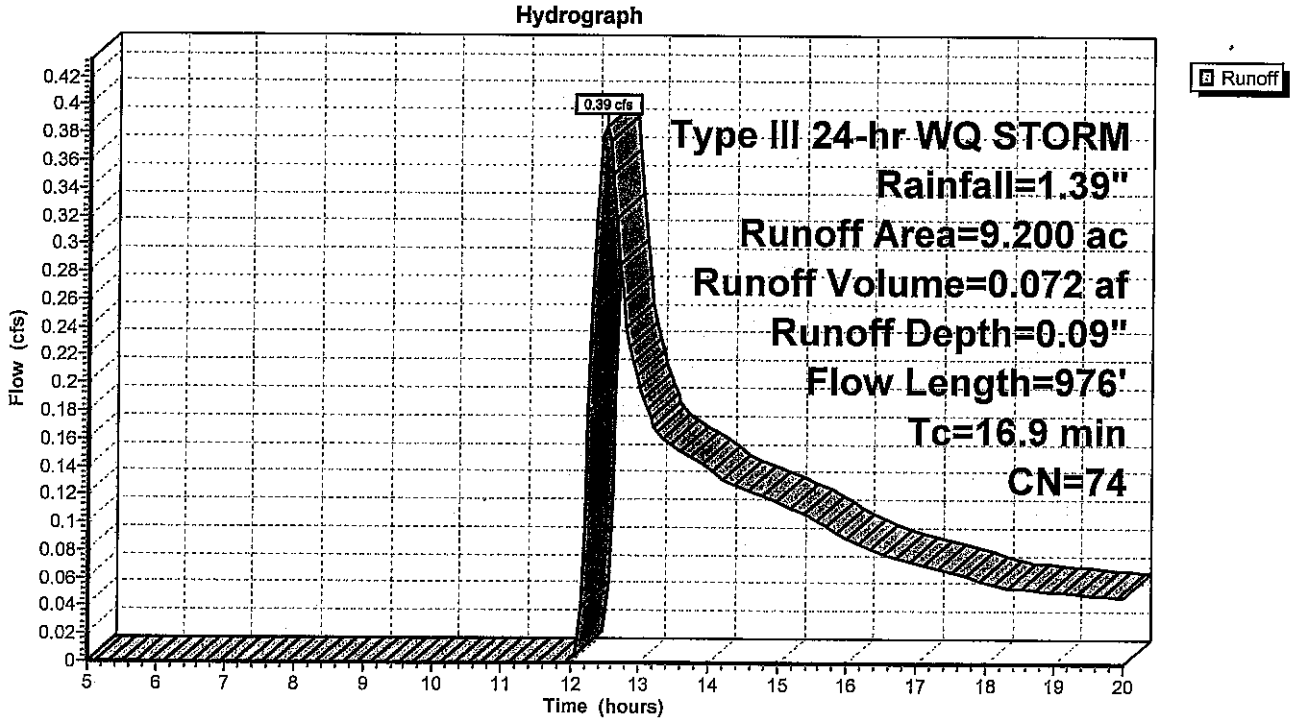
Runoff = 0.39 cfs @ 12.49 hrs, Volume= 0.072 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.188	98	Paved parking & roofs
2.642	74	>75% Grass cover, Good, HSG C
6.370	73	Woods, Fair, HSG C
9.200	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0700	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
3.8	876	0.0580	3.9		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.9	976	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

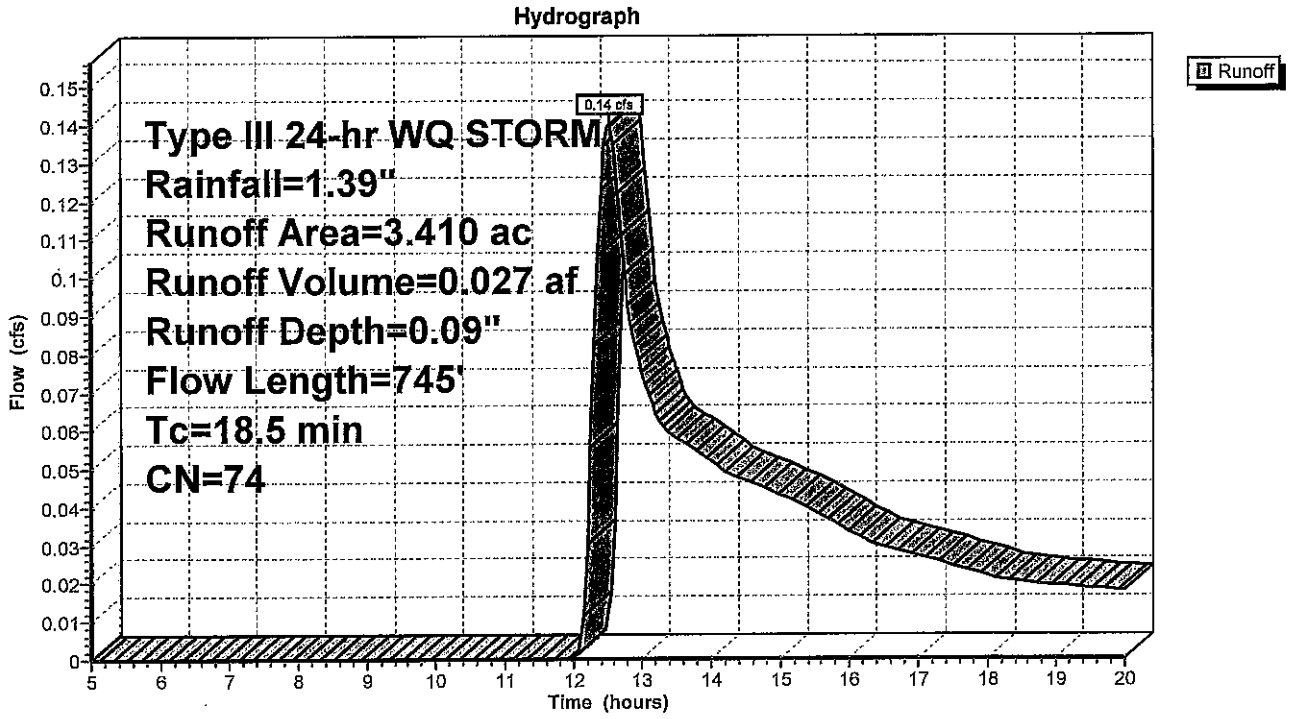
Runoff = 0.14 cfs @ 12.52 hrs, Volume= 0.027 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	76	Woods/grass comb., Fair, HSG C
1.890	73	Woods, Fair, HSG C
1.380	74	>75% Grass cover, Good, HSG C
3.410	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT3S

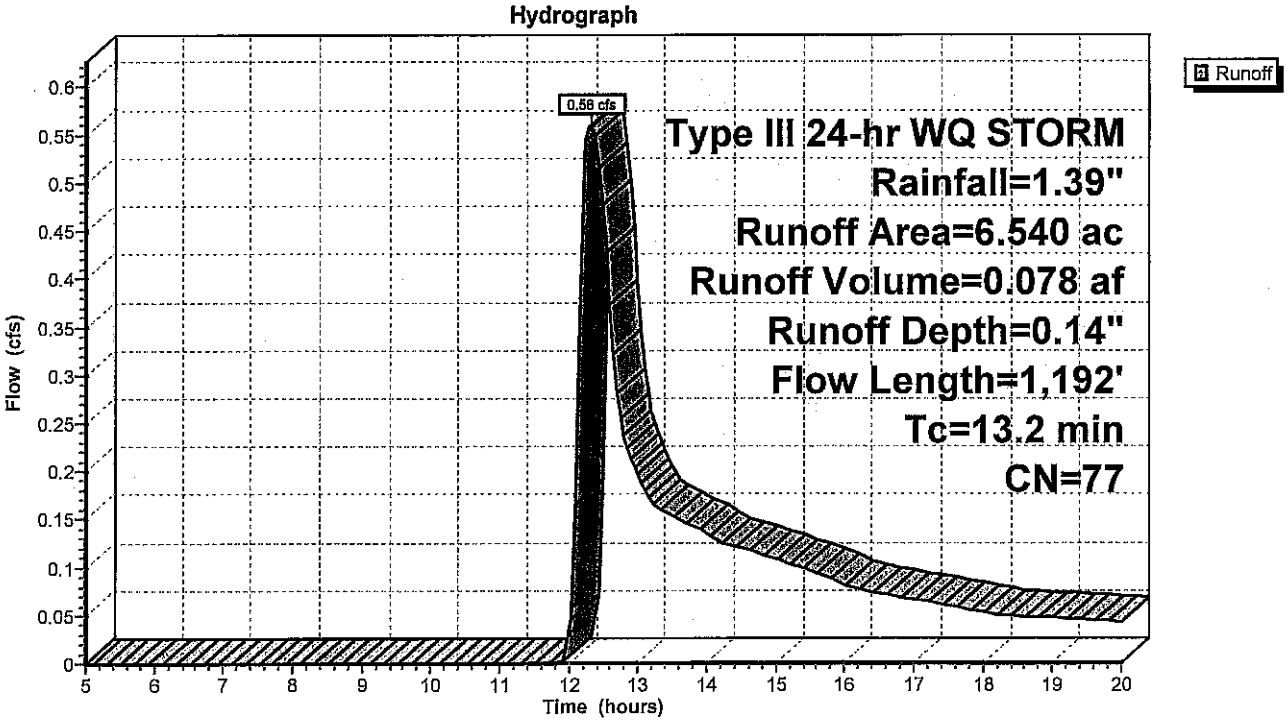
Runoff = 0.56 cfs @ 12.32 hrs, Volume= 0.078 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.970	98	Paved parking & roofs
0.580	72	Woods/grass comb., Good, HSG C
4.990	74	>75% Grass cover, Good, HSG C
6.540	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	62	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
4.0	869	0.0510	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.2	1,192	Total			

Subcatchment 3S: SUBCATCHMENT3S

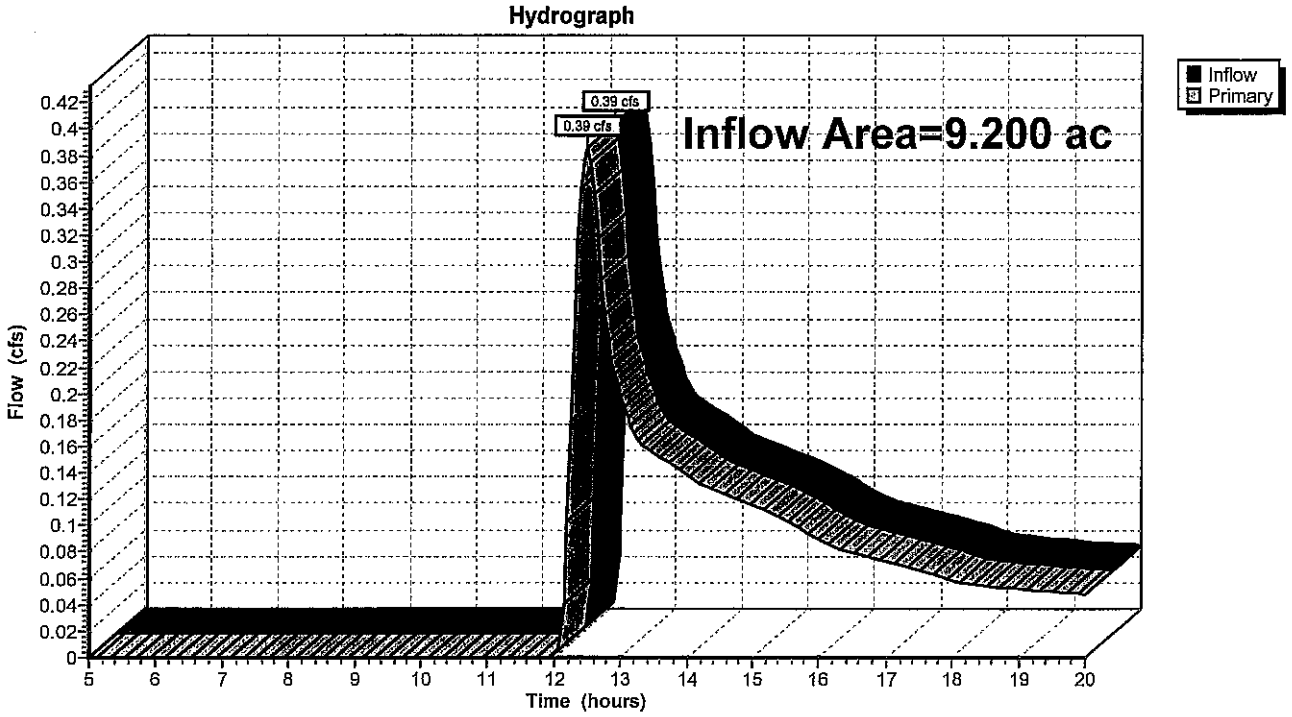


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 9.200 ac, Inflow Depth = 0.09" for WQ STORM event
Inflow = 0.39 cfs @ 12.49 hrs, Volume= 0.072 af
Primary = 0.39 cfs @ 12.49 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

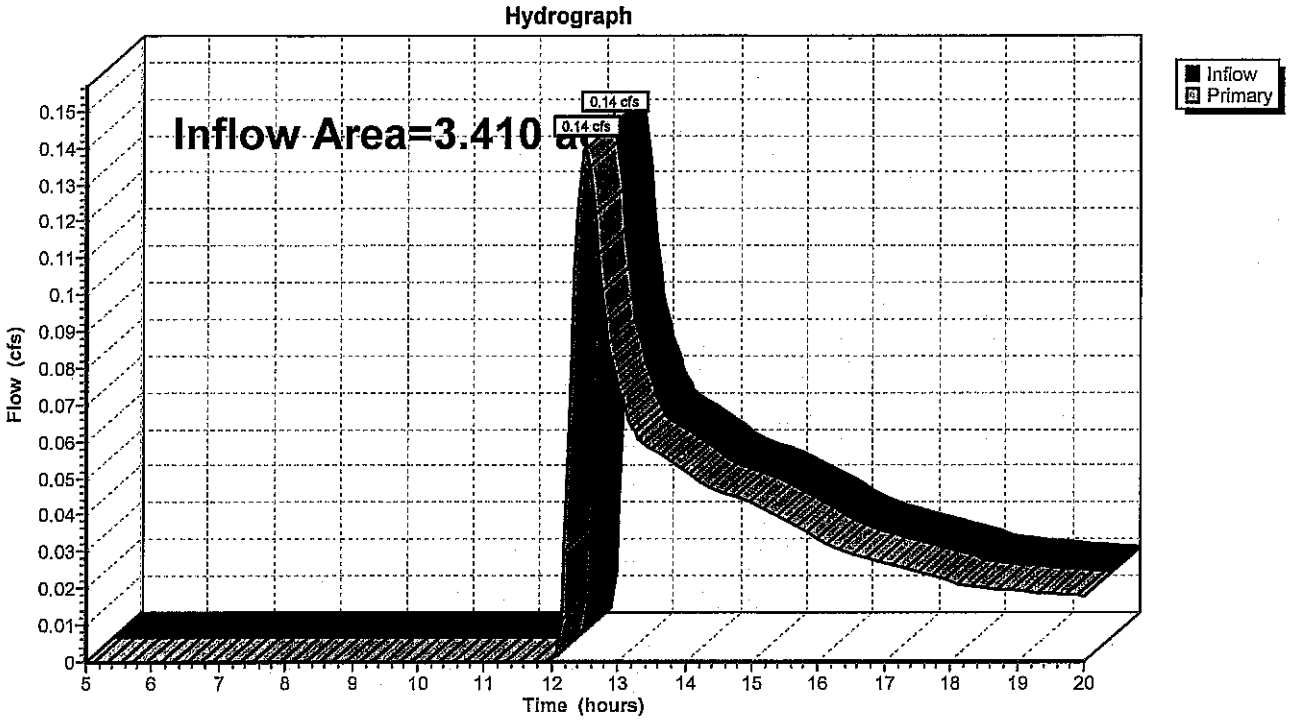


Pond 2P: DESIGN POINT 2P

Inflow Area = 3.410 ac, Inflow Depth = 0.09" for WQ STORM event
Inflow = 0.14 cfs @ 12.52 hrs, Volume= 0.027 af
Primary = 0.14 cfs @ 12.52 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

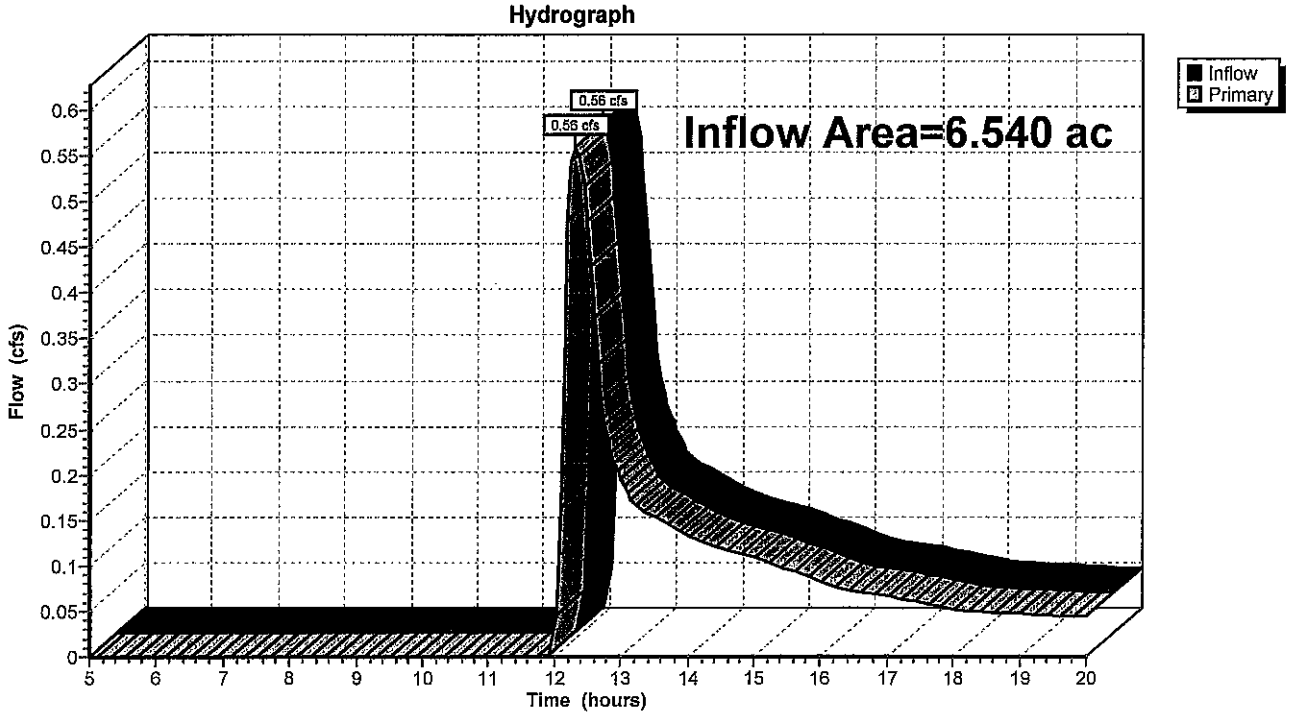


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 6.540 ac, Inflow Depth = 0.14" for WQ STORM event
Inflow = 0.56 cfs @ 12.32 hrs, Volume= 0.078 af
Primary = 0.56 cfs @ 12.32 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

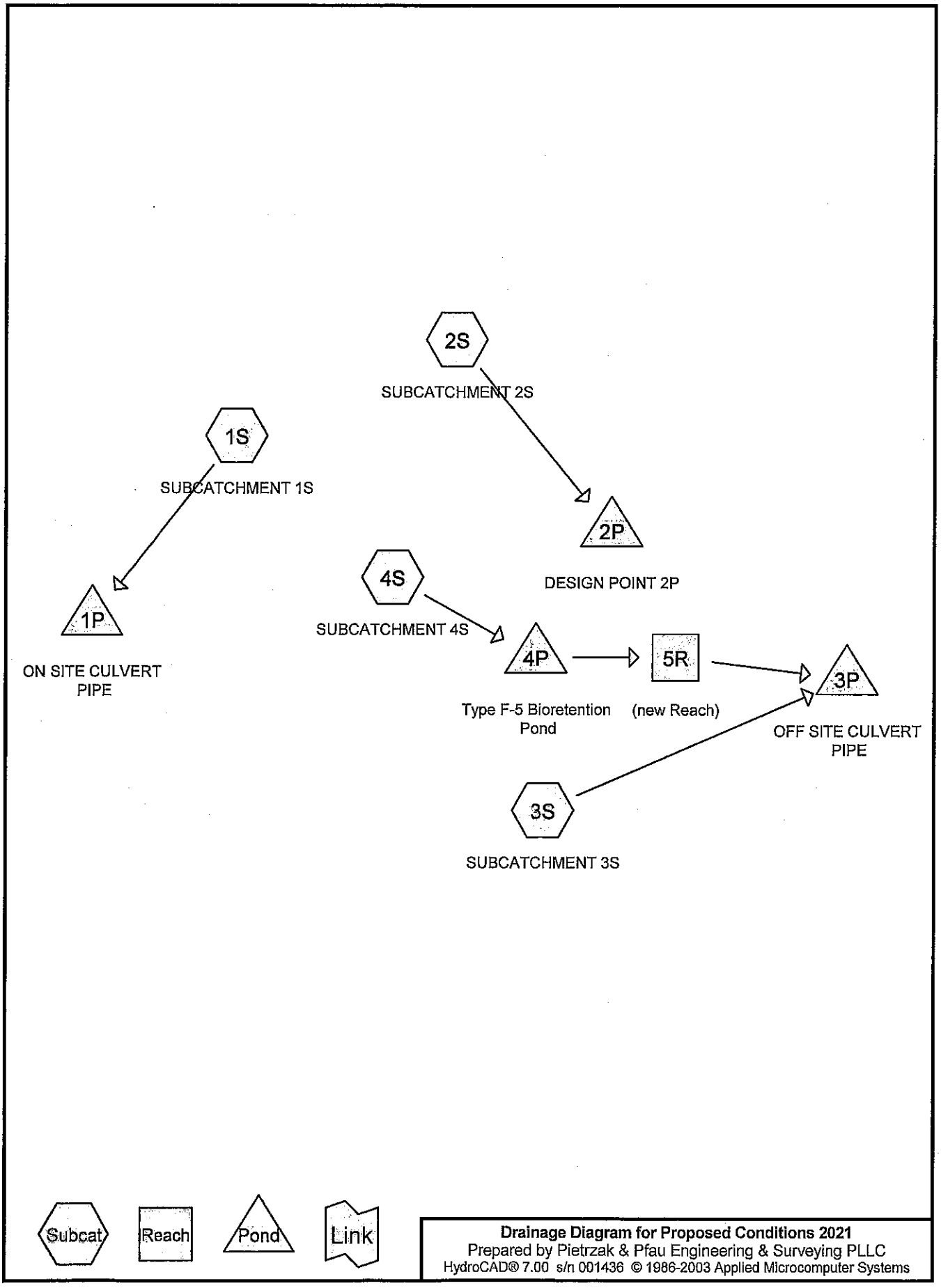
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 3P: OFF SITE CULVERT PIPE



APPENDIX 6

TR-20 Hydro-CAD Calculations – Proposed Conditions



Drainage Diagram for Proposed Conditions 2021
Prepared by Pietrzak & Pfau Engineering & Surveying PLLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=7.060 ac Runoff Depth=0.60"
Flow Length=408' Tc=11.5 min CN=74 Runoff=4.04 cfs 0.355 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=2.970 ac Runoff Depth=0.64"
Flow Length=745' Tc=18.5 min CN=75 Runoff=1.56 cfs 0.159 af

Subcatchment 3S: SUBCATCHMENT 3S Runoff Area=5.210 ac Runoff Depth=0.78"
Flow Length=951' Tc=11.3 min CN=78 Runoff=4.14 cfs 0.340 af

Subcatchment 4S: SUBCATCHMENT 4S Runoff Area=3.910 ac Runoff Depth=0.94"
Flow Length=832' Tc=16.5 min CN=81 Runoff=3.30 cfs 0.305 af

Reach 5R: (new Reach) Peak Depth=0.03' Max Vel=1.3 fps Inflow=0.14 cfs 0.082 af
n=0.030 L=616.0' S=0.0610 '/' Capacity=104.69 cfs Outflow=0.14 cfs 0.079 af

Pond 1P: ON SITE CULVERT PIPE Inflow=4.04 cfs 0.355 af
Primary=4.04 cfs 0.355 af

Pond 2P: DESIGN POINT 2P Inflow=1.56 cfs 0.159 af
Primary=1.56 cfs 0.159 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=4.14 cfs 0.419 af
Primary=4.14 cfs 0.419 af

Pond 4P: Type F-5 Bioretention Pond Peak Elev=418.42' Storage=9,916 cf Inflow=3.30 cfs 0.305 af
Outflow=0.14 cfs 0.082 af

Total Runoff Area = 19.150 ac Runoff Volume = 1.159 af Average Runoff Depth = 0.73"

Subcatchment 1S: SUBCATCHMENT 1S

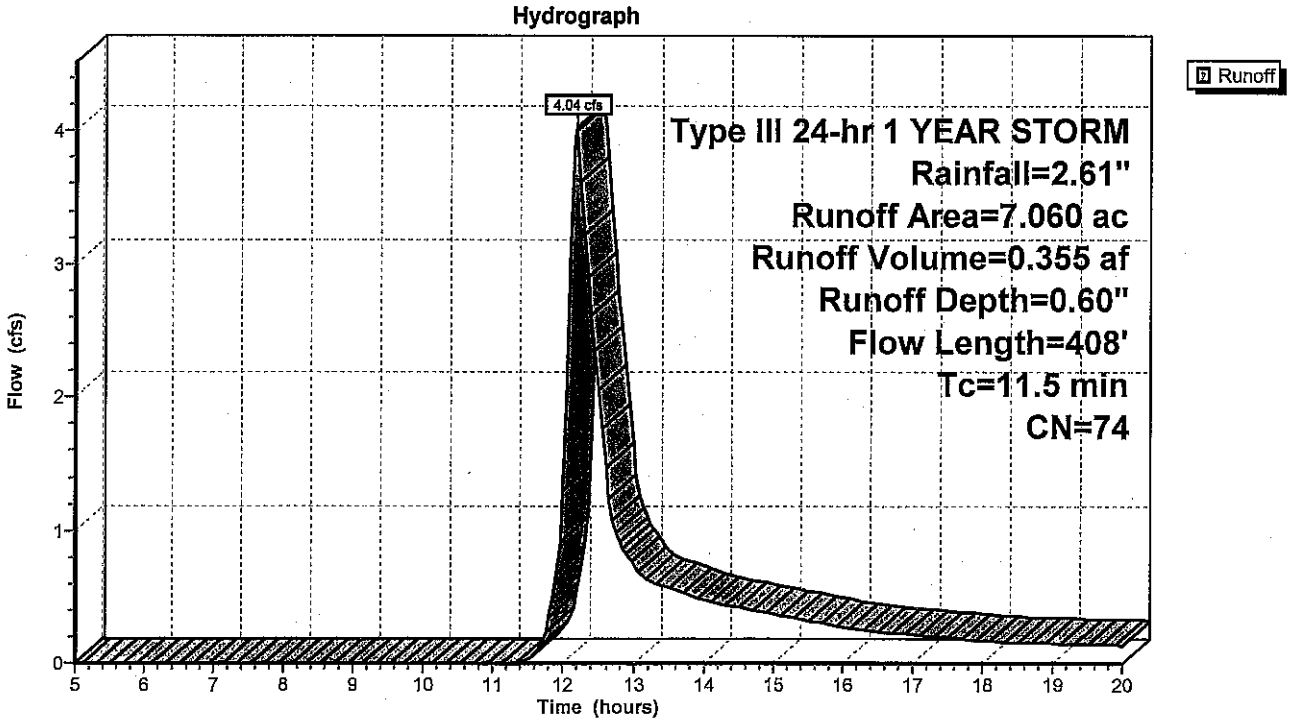
Runoff = 4.04 cfs @ 12.18 hrs, Volume= 0.355 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
3.070	74	>75% Grass cover, Good, HSG C
3.790	73	Woods, Fair, HSG C
7.060	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
1.5	308	0.0460	3.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.5	408	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

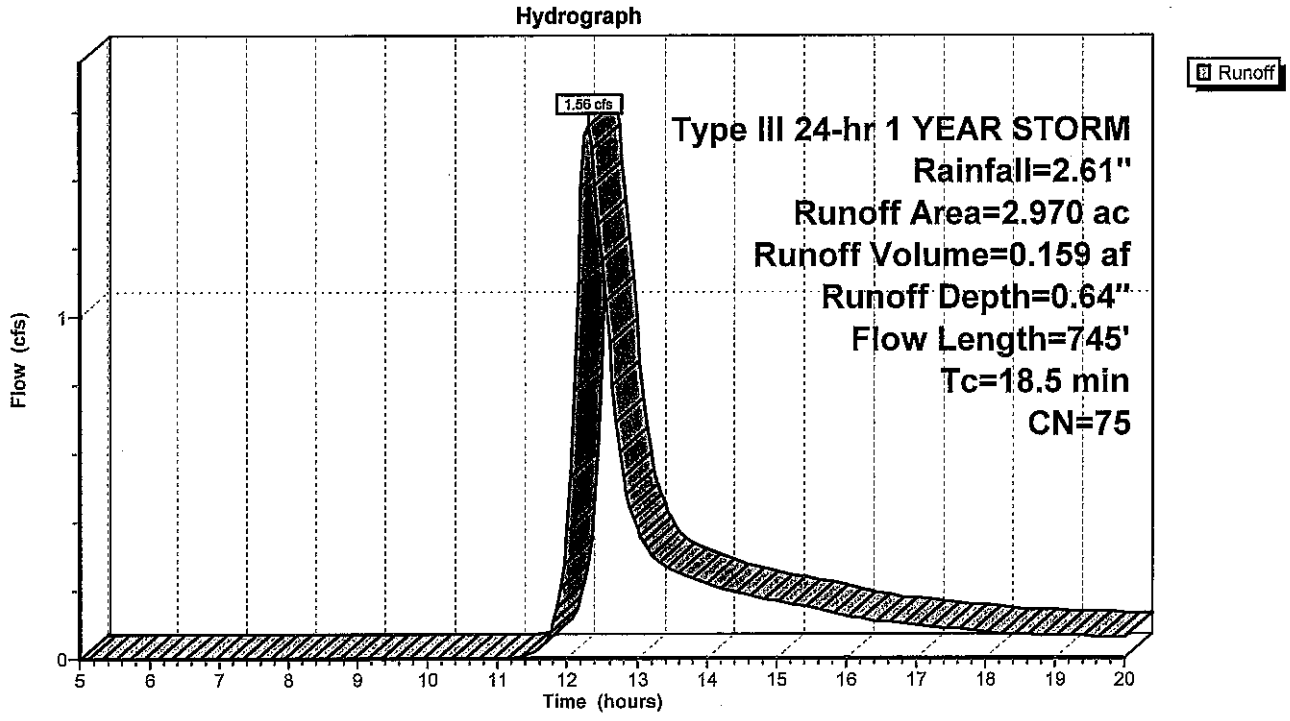
Runoff = 1.56 cfs @ 12.29 hrs, Volume= 0.159 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.996	73	Woods, Fair, HSG C
1.794	74	>75% Grass cover, Good, HSG C
2.970	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT 3S

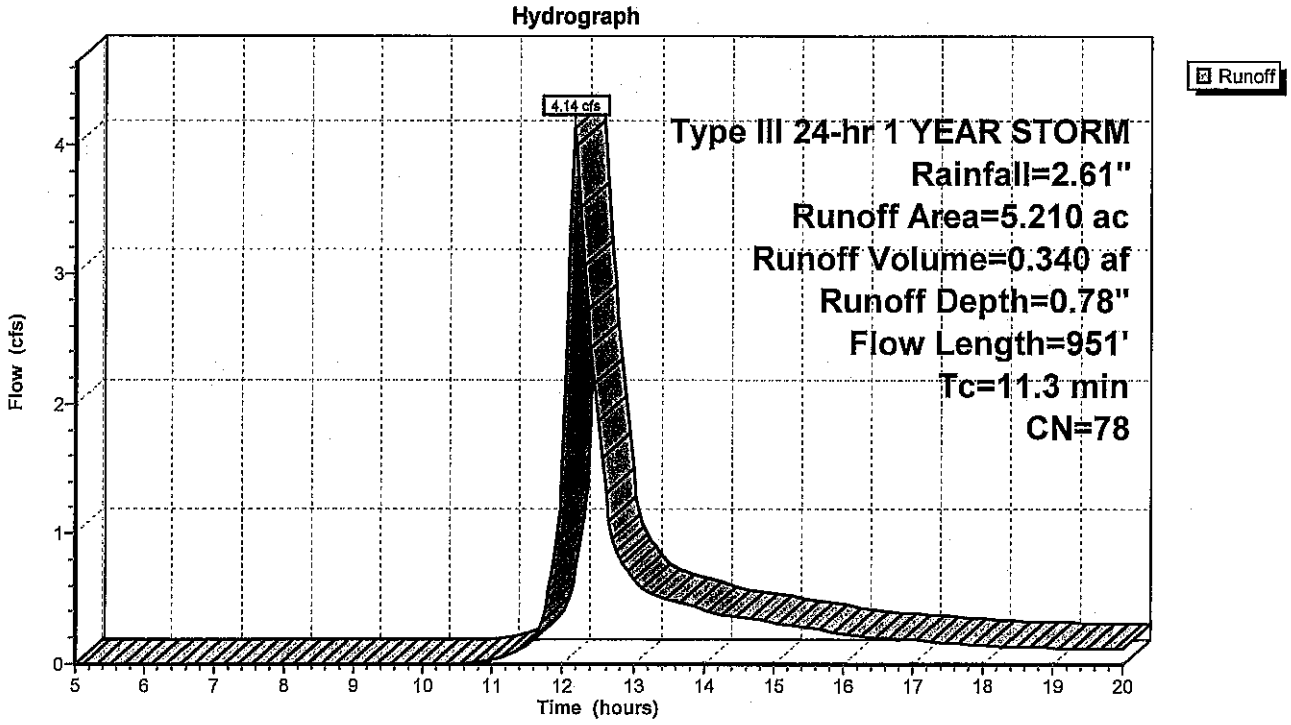
Runoff = 4.14 cfs @ 12.17 hrs, Volume= 0.340 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
4.270	74	>75% Grass cover, Good, HSG C
0.150	76	Woods/grass comb., Fair, HSG C
5.210	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1000	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
2.8	590	0.0490	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.3	951	Total			

Subcatchment 3S: SUBCATCHMENT 3S



Subcatchment 4S: SUBCATCHMENT 4S

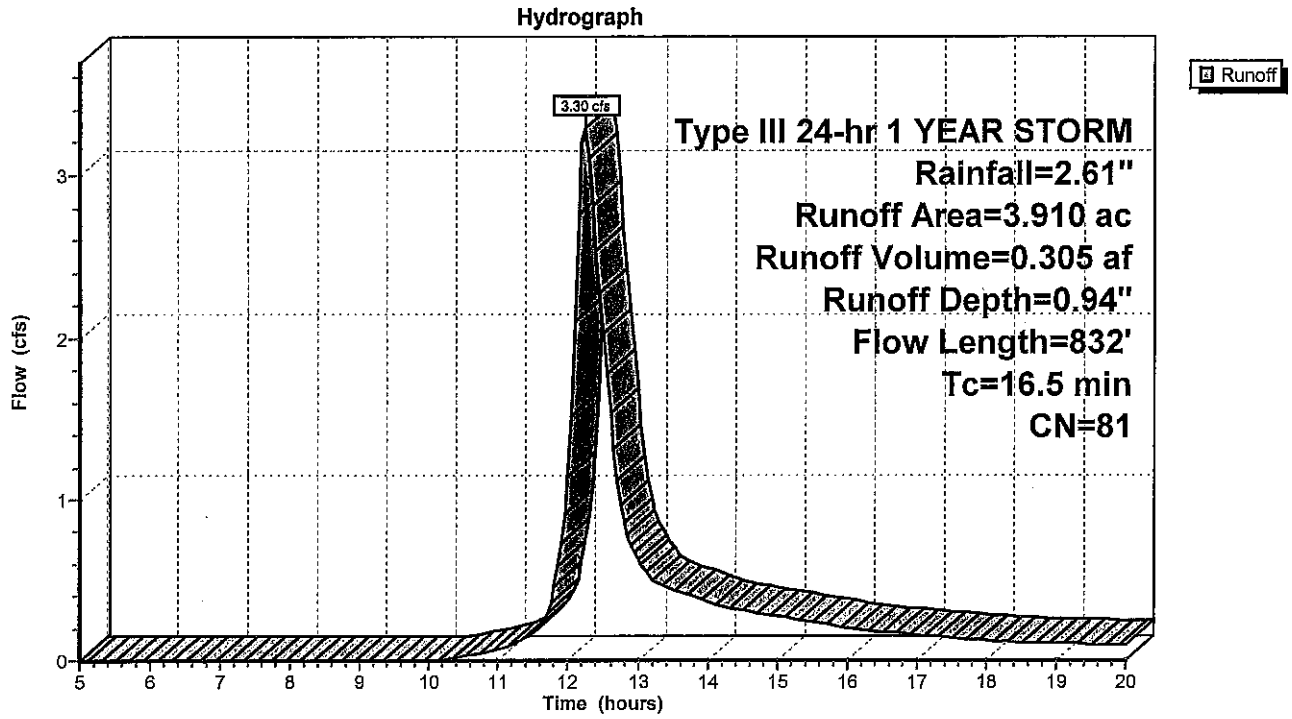
Runoff = 3.30 cfs @ 12.24 hrs, Volume= 0.305 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (ac)	CN	Description
1.050	98	Paved parking & roofs
1.650	74	>75% Grass cover, Good, HSG C
1.070	73	Woods, Fair, HSG C
0.140	98	POND SURFACE
3.910	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
0.5	153	0.1100	5.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	163	0.0610	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	416	0.0625	14.9	26.26	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
16.5	832	Total			

Subcatchment 4S: SUBCATCHMENT 4S



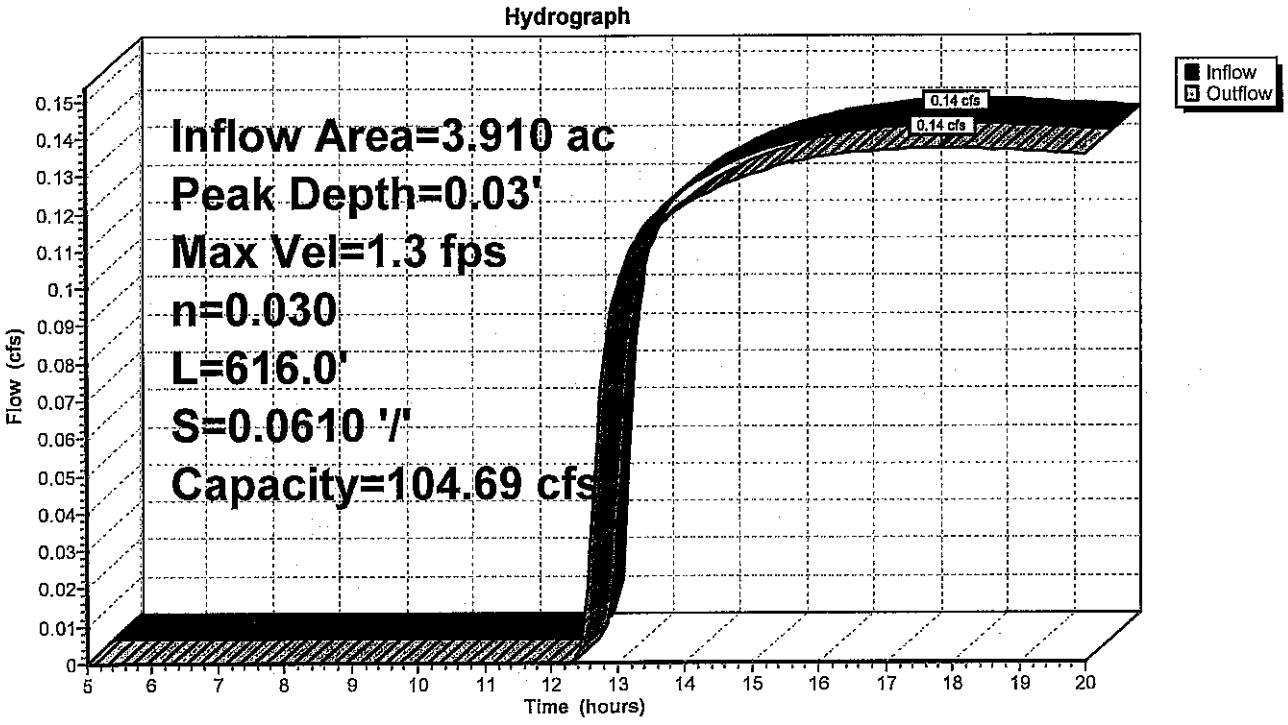
Reach 5R: (new Reach)

Inflow Area = 3.910 ac, Inflow Depth = 0.25" for 1 YEAR STORM event
Inflow = 0.14 cfs @ 17.64 hrs, Volume= 0.082 af
Outflow = 0.14 cfs @ 17.85 hrs, Volume= 0.079 af, Atten= 0%, Lag= 12.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.3 fps, Min. Travel Time= 7.9 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 8.3 min

Peak Depth= 0.03' @ 17.71 hrs
Capacity at bank full= 104.69 cfs
Inlet Invert= 410.00', Outlet Invert= 372.42'
3.00' x 1.50' deep channel, n= 0.030 Length= 616.0' Slope= 0.0610 '/'
Side Slope Z-value= 2.0 '/'

Reach 5R: (new Reach)

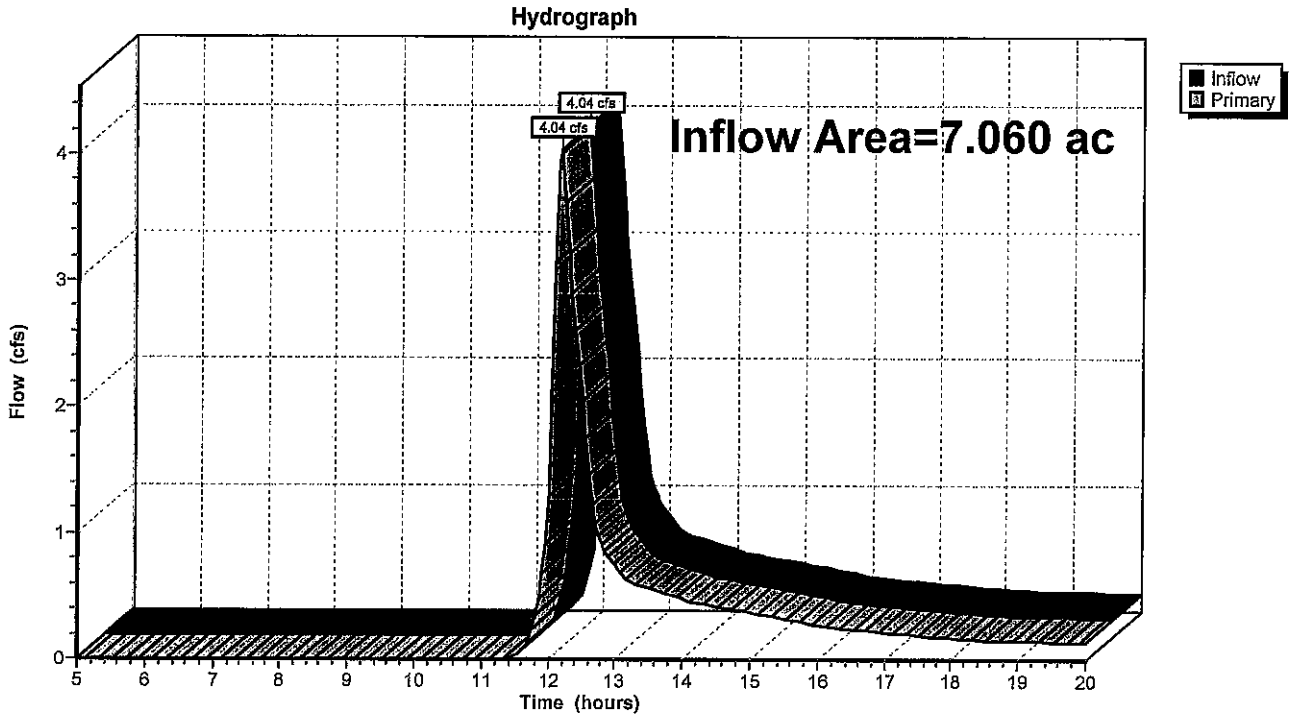


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 7.060 ac, Inflow Depth = 0.60" for 1 YEAR STORM event
Inflow = 4.04 cfs @ 12.18 hrs, Volume= 0.355 af
Primary = 4.04 cfs @ 12.18 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

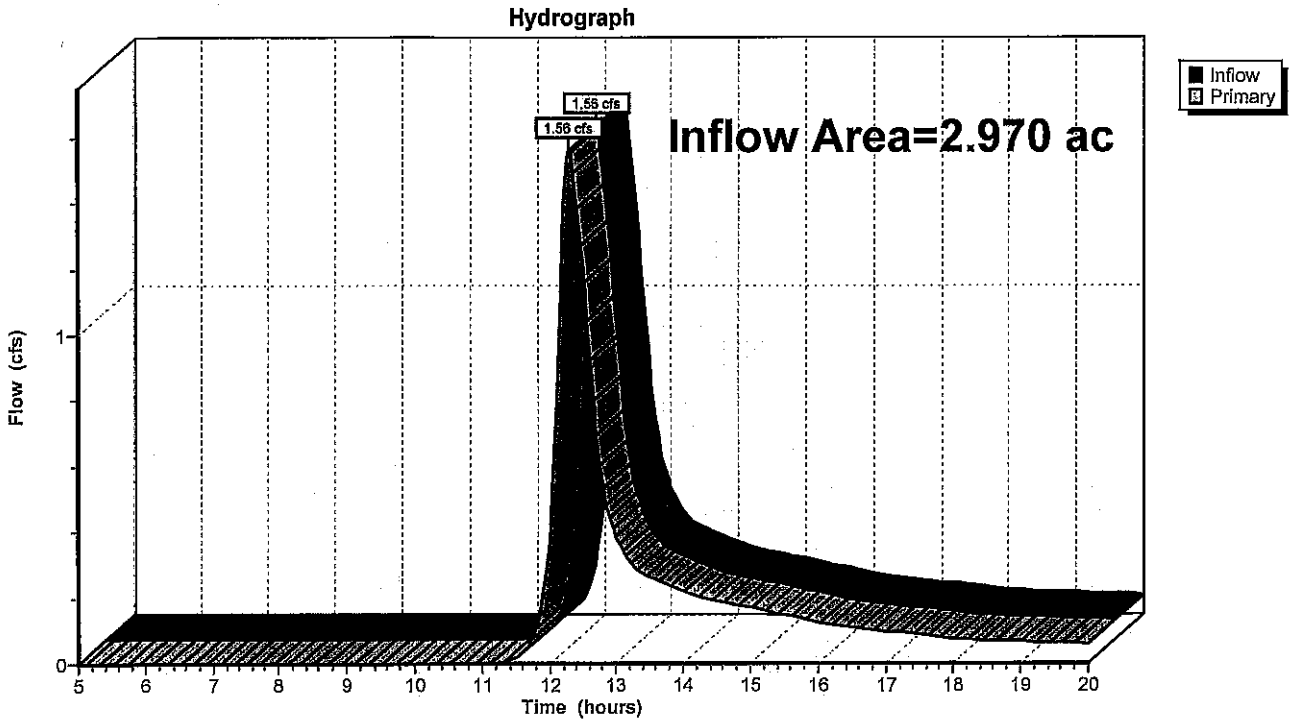


Pond 2P: DESIGN POINT 2P

Inflow Area = 2.970 ac, Inflow Depth = 0.64" for 1 YEAR STORM event
Inflow = 1.56 cfs @ 12.29 hrs, Volume= 0.159 af
Primary = 1.56 cfs @ 12.29 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

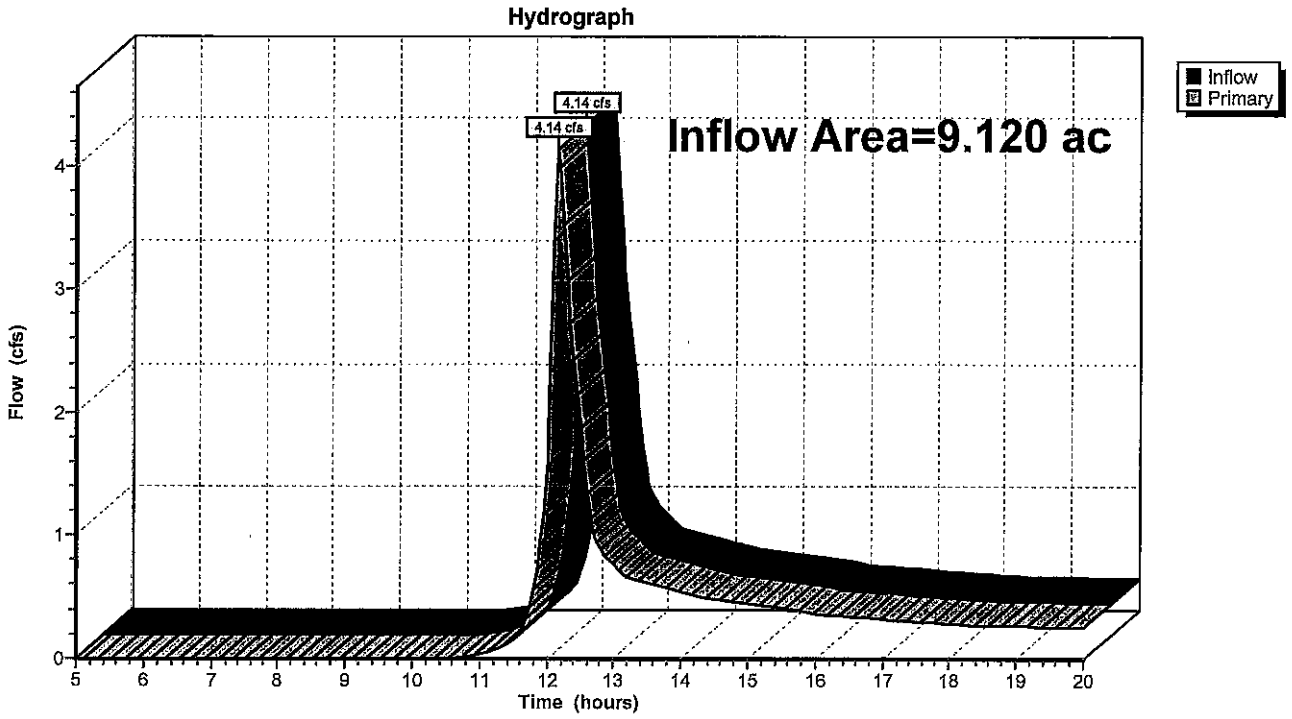


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 9.120 ac, Inflow Depth = 0.55" for 1 YEAR STORM event
Inflow = 4.14 cfs @ 12.17 hrs, Volume= 0.419 af
Primary = 4.14 cfs @ 12.17 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Pond 4P: Type F-5 Bioretention Pond

Inflow Area = 3.910 ac, Inflow Depth = 0.94" for 1 YEAR STORM event
Inflow = 3.30 cfs @ 12.24 hrs, Volume= 0.305 af
Outflow = 0.14 cfs @ 17.64 hrs, Volume= 0.082 af, Atten= 96%, Lag= 323.7 min
Primary = 0.14 cfs @ 17.64 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 418.42' @ 17.64 hrs Surf.Area= 0 sf Storage= 9,916 cf
Plug-Flow detention time= 261.6 min calculated for 0.082 af (27% of inflow)
Center-of-Mass det. time= 163.6 min (981.1 - 817.5)

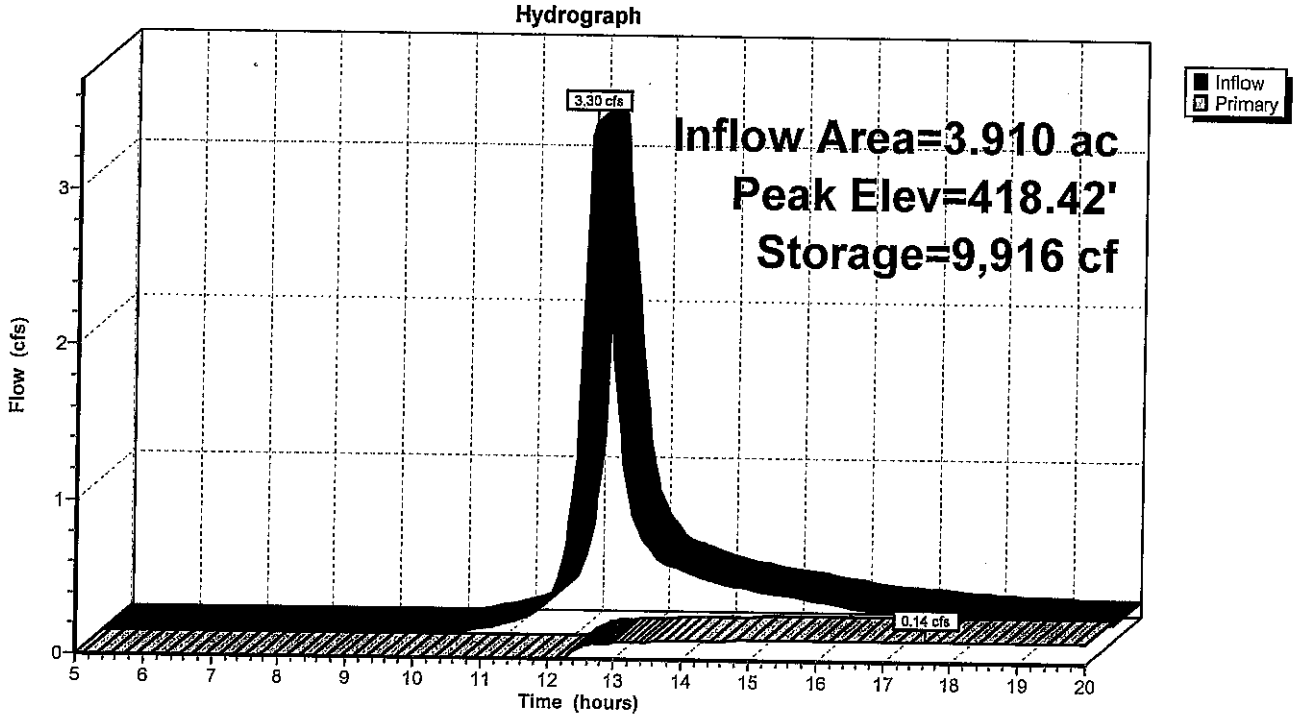
#	Invert	Avail.Storage	Storage Description
1	417.00'	45,796 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
417.00	0
418.00	6,396
420.00	23,049
422.00	45,796

#	Routing	Invert	Outlet Devices
1	Primary	413.00'	**18.0" x 70.0' long Culvert** RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 410.00' S= 0.0429 '/' n= 0.011 Cc= 0.900
2	Device 1	417.50'	**2.4" Vert. Orifice/Grate** C= 0.600
3	Device 1	418.50'	**1.50' x 0.50' Vert. Orifice/Grate** C= 0.600
4	Device 1	420.00'	**1.00' x 1.00' Vert. Orifice/Grate** C= 0.600
5	Device 1	421.00'	**4.00' x 2.50' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=0.14 cfs @ 17.64 hrs HW=418.42' (Free Discharge)
↑**1=Culvert** (Passes 0.14 cfs of 25.08 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 4.4 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)
5=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: Type F-5 Bioretention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=7.060 ac Runoff Depth=1.93"
Flow Length=408' Tc=11.5 min CN=74 Runoff=14.23 cfs 1.138 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=2.970 ac Runoff Depth=2.01"
Flow Length=745' Tc=18.5 min CN=75 Runoff=5.22 cfs 0.497 af

Subcatchment 3S: SUBCATCHMENT 3S Runoff Area=5.210 ac Runoff Depth=2.25"
Flow Length=951' Tc=11.3 min CN=78 Runoff=12.33 cfs 0.978 af

Subcatchment 4S: SUBCATCHMENT 4S Runoff Area=3.910 ac Runoff Depth=2.50"
Flow Length=832' Tc=16.5 min CN=81 Runoff=8.92 cfs 0.815 af

Reach 5R: (new Reach) Peak Depth=0.21' Max Vel=3.9 fps Inflow=2.84 cfs 0.559 af
n=0.030 L=616.0' S=0.0610 '/' Capacity=104.69 cfs Outflow=2.83 cfs 0.556 af

Pond 1P: ON SITE CULVERT PIPE Inflow=14.23 cfs 1.138 af
Primary=14.23 cfs 1.138 af

Pond 2P: DESIGN POINT 2P Inflow=5.22 cfs 0.497 af
Primary=5.22 cfs 0.497 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=12.42 cfs 1.533 af
Primary=12.42 cfs 1.533 af

Pond 4P: Type F-5 Bioretention Pond Peak Elev=419.29' Storage=17,173 cf Inflow=8.92 cfs 0.815 af
Outflow=2.84 cfs 0.559 af

Total Runoff Area = 19.150 ac Runoff Volume = 3.427 af Average Runoff Depth = 2.15"

Subcatchment 1S: SUBCATCHMENT 1S

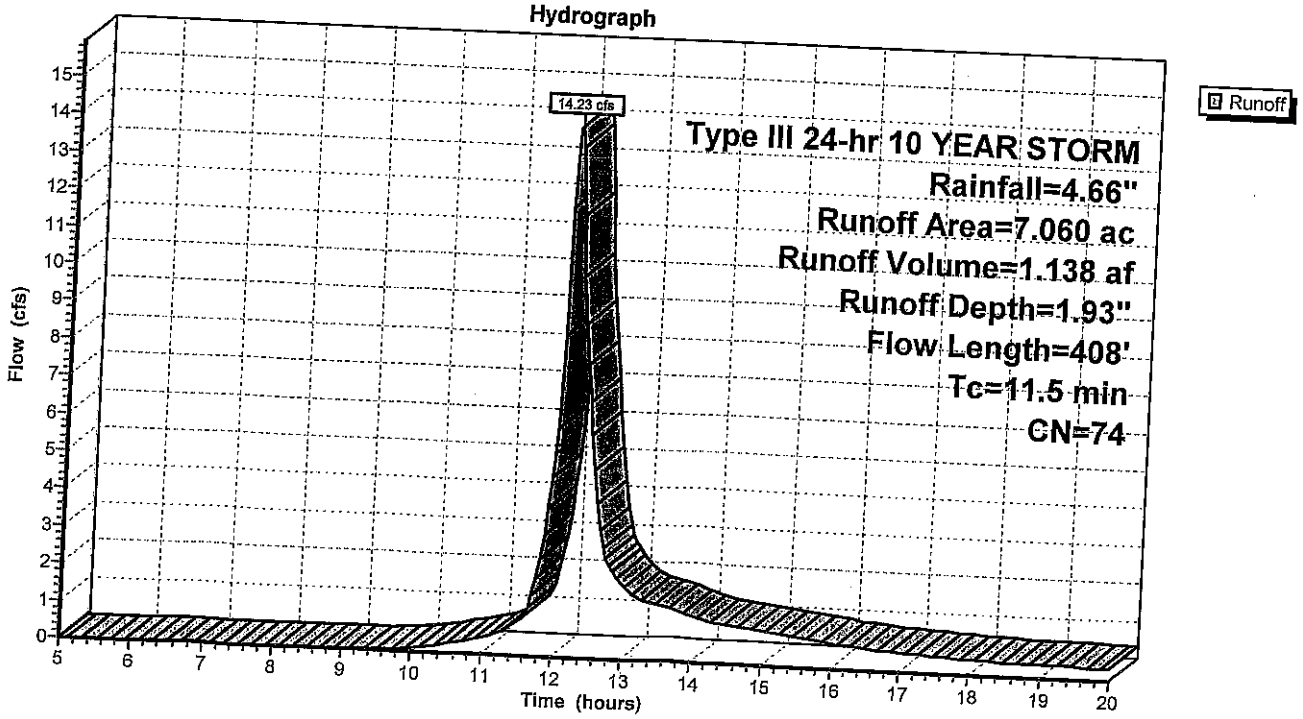
Runoff = 14.23 cfs @ 12.17 hrs, Volume= 1.138 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
3.070	74	>75% Grass cover, Good, HSG C
3.790	73	Woods, Fair, HSG C
7.060	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
1.5	308	0.0460	3.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.5	408	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

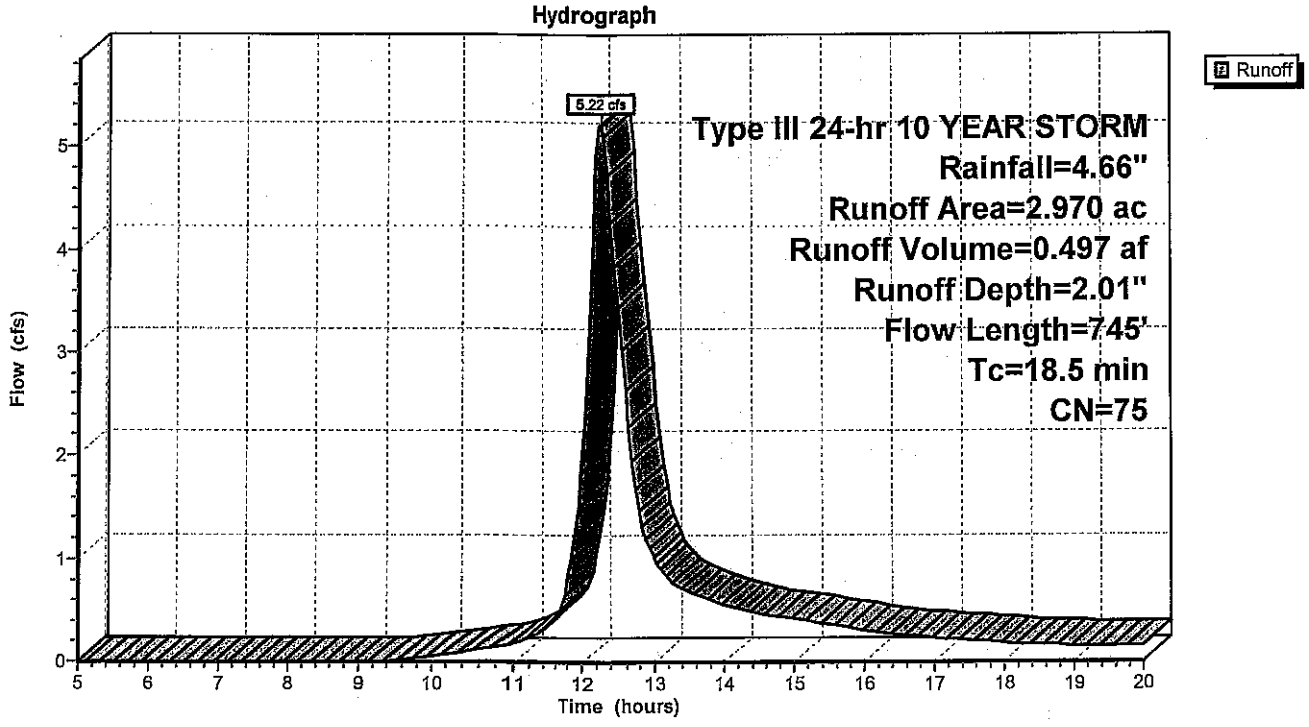
Runoff = 5.22 cfs @ 12.26 hrs, Volume= 0.497 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.996	73	Woods, Fair, HSG C
1.794	74	>75% Grass cover, Good, HSG C
2.970	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT 3S

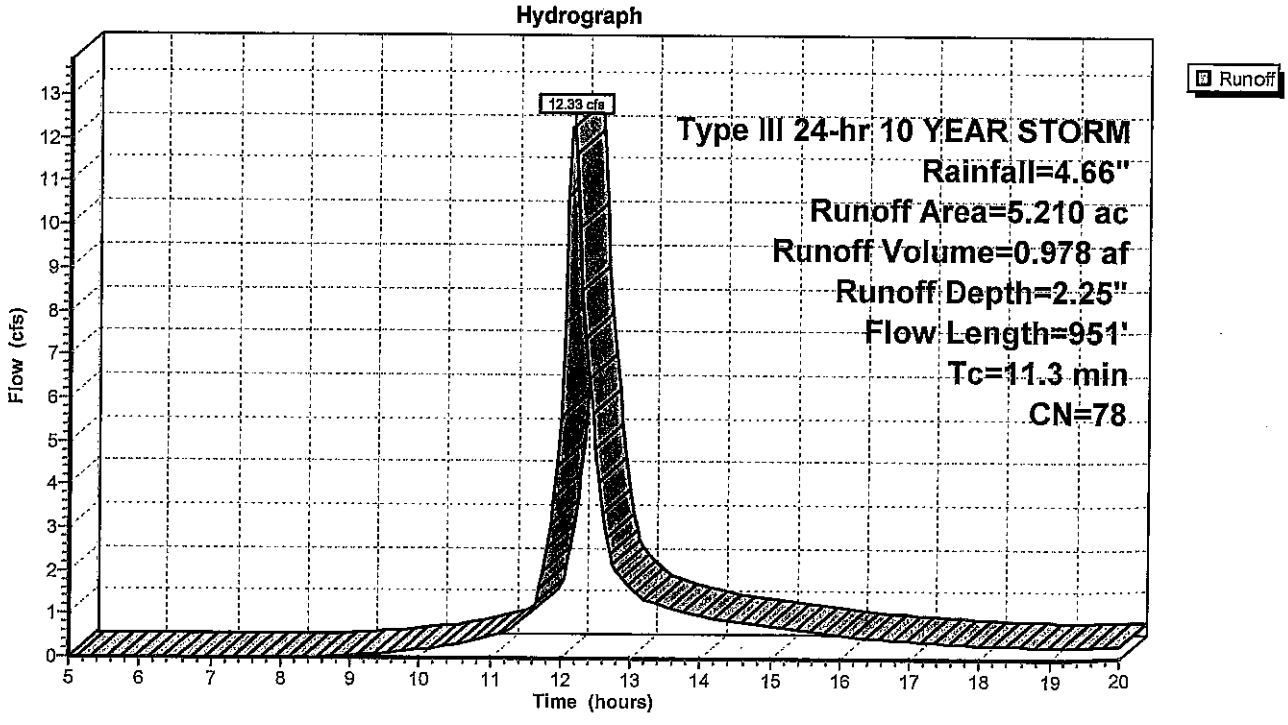
Runoff = 12.33 cfs @ 12.16 hrs, Volume= 0.978 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
4.270	74	>75% Grass cover, Good, HSG C
0.150	76	Woods/grass comb., Fair, HSG C
5.210	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1000	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
2.8	590	0.0490	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.3	951	Total			

Subcatchment 3S: SUBCATCHMENT 3S



Subcatchment 4S: SUBCATCHMENT 4S

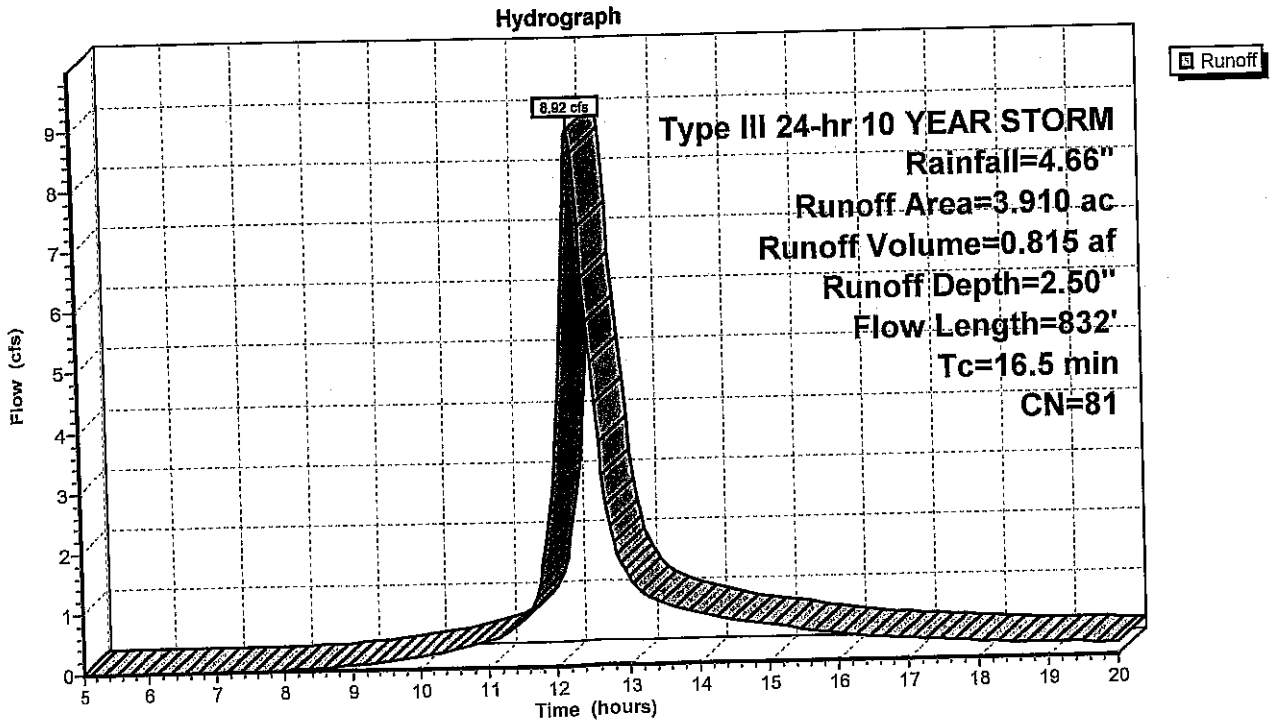
Runoff = 8.92 cfs @ 12.23 hrs, Volume= 0.815 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.66"

Area (ac)	CN	Description
1.050	98	Paved parking & roofs
1.650	74	>75% Grass cover, Good, HSG C
1.070	73	Woods, Fair, HSG C
0.140	98	POND SURFACE
3.910	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
0.5	153	0.1100	5.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	163	0.0610	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	416	0.0625	14.9	26.26	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
16.5	832	Total			

Subcatchment 4S: SUBCATCHMENT 4S



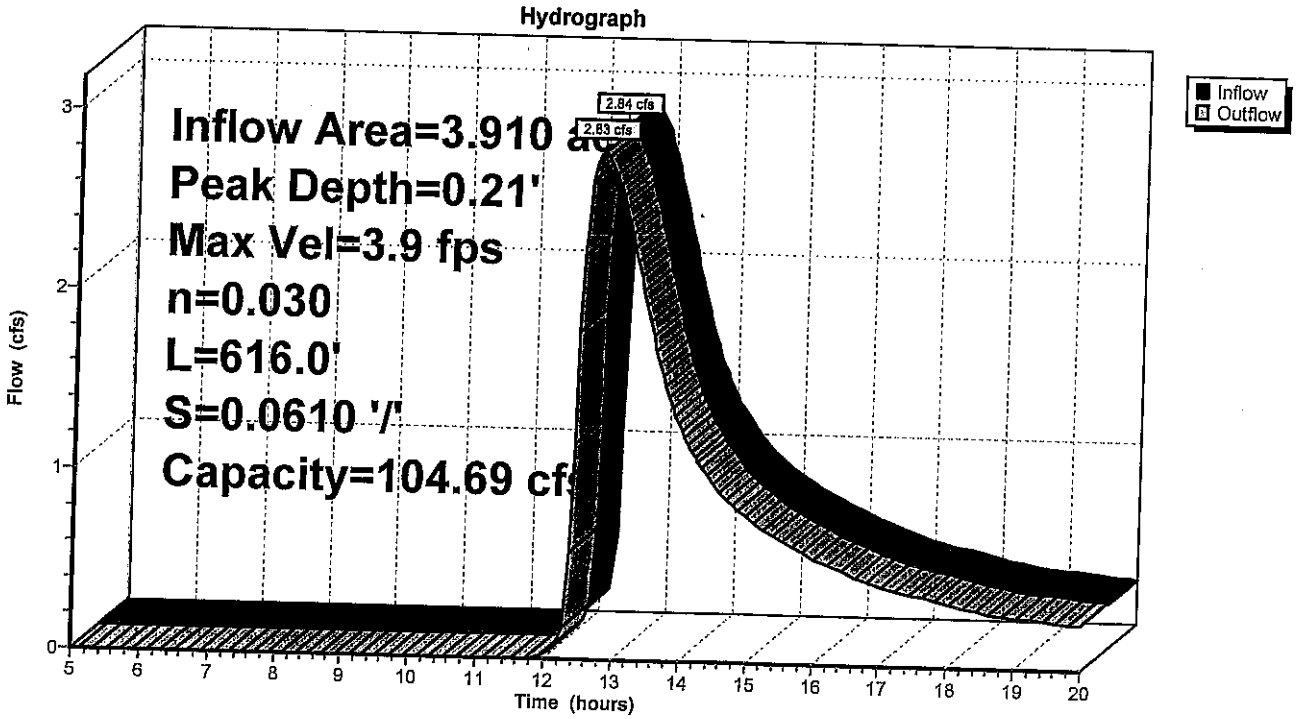
Reach 5R: (new Reach)

Inflow Area = 3.910 ac, Inflow Depth = 1.71" for 10 YEAR STORM event
Inflow = 2.84 cfs @ 12.69 hrs, Volume= 0.559 af
Outflow = 2.83 cfs @ 12.76 hrs, Volume= 0.556 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.9 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 4.5 min

Peak Depth= 0.21' @ 12.72 hrs
Capacity at bank full= 104.69 cfs
Inlet Invert= 410.00', Outlet Invert= 372.42'
3.00' x 1.50' deep channel, n= 0.030 Length= 616.0' Slope= 0.0610 '/'
Side Slope Z-value= 2.0 '/'

Reach 5R: (new Reach)

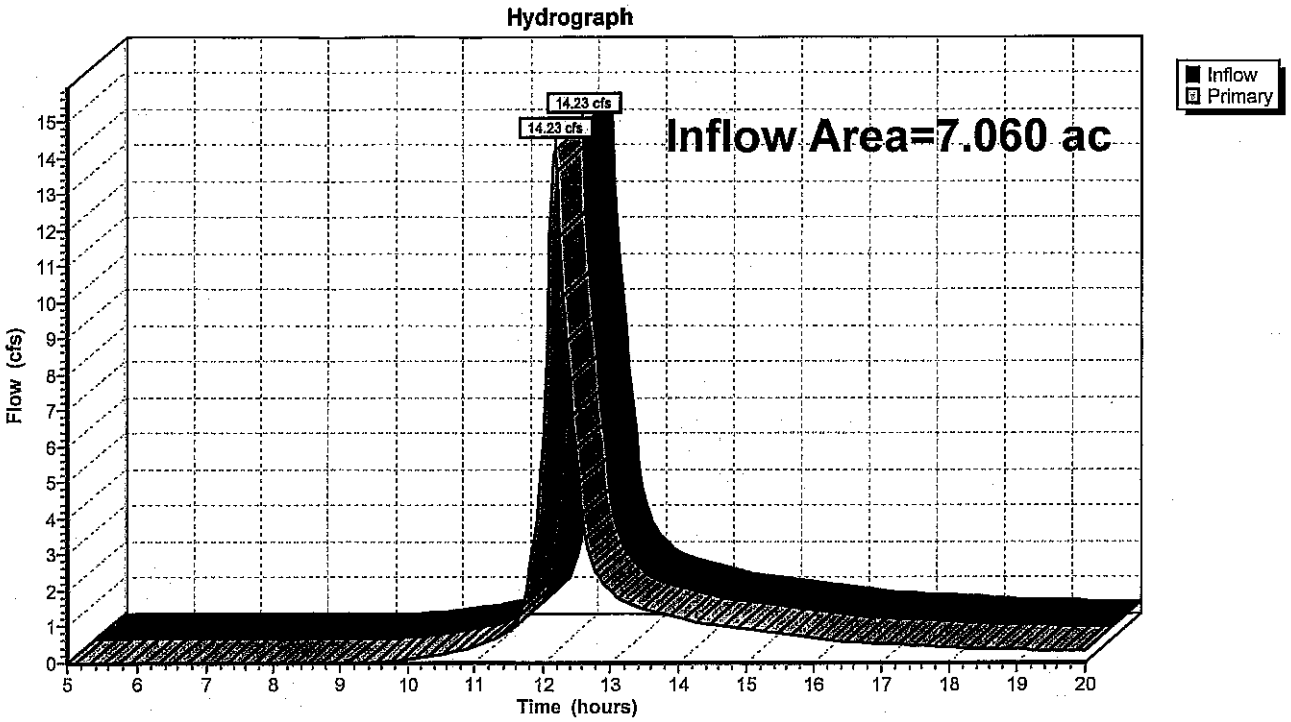


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 7.060 ac, Inflow Depth = 1.93" for 10 YEAR STORM event
Inflow = 14.23 cfs @ 12.17 hrs, Volume= 1.138 af
Primary = 14.23 cfs @ 12.17 hrs, Volume= 1.138 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

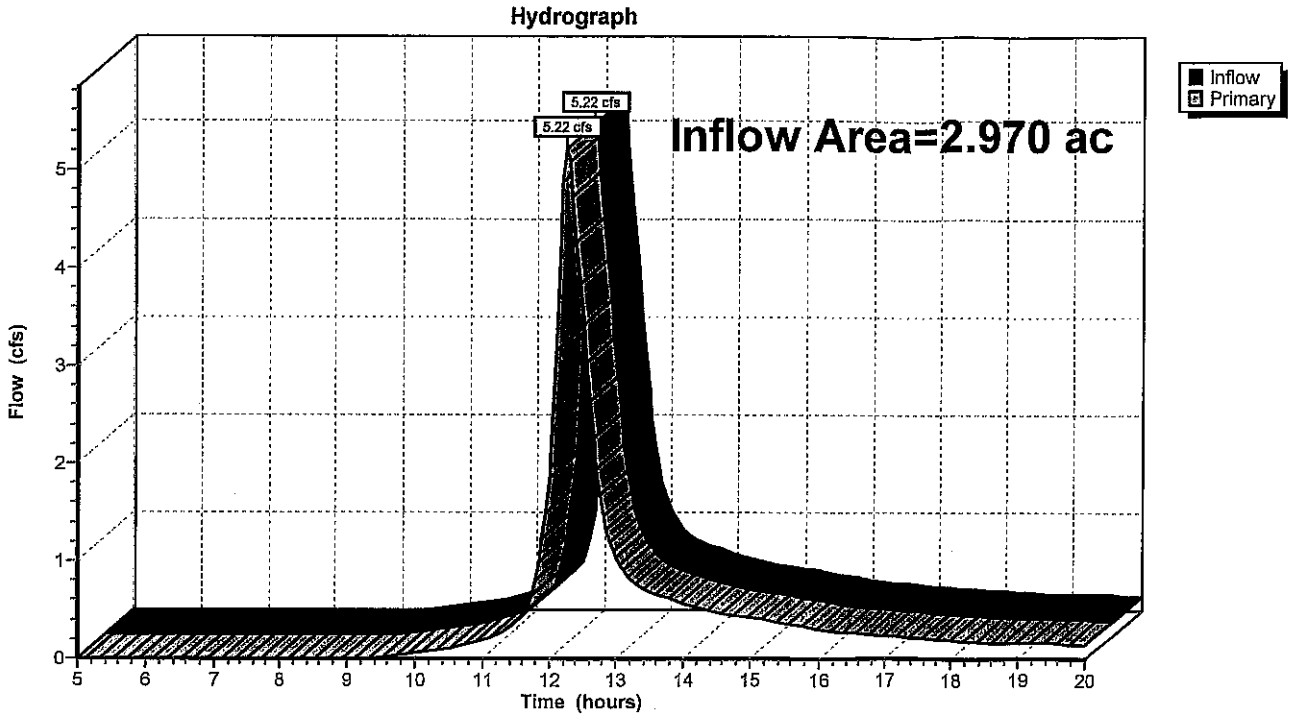


Pond 2P: DESIGN POINT 2P

Inflow Area = 2.970 ac, Inflow Depth = 2.01" for 10 YEAR STORM event
Inflow = 5.22 cfs @ 12.26 hrs, Volume= 0.497 af
Primary = 5.22 cfs @ 12.26 hrs, Volume= 0.497 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

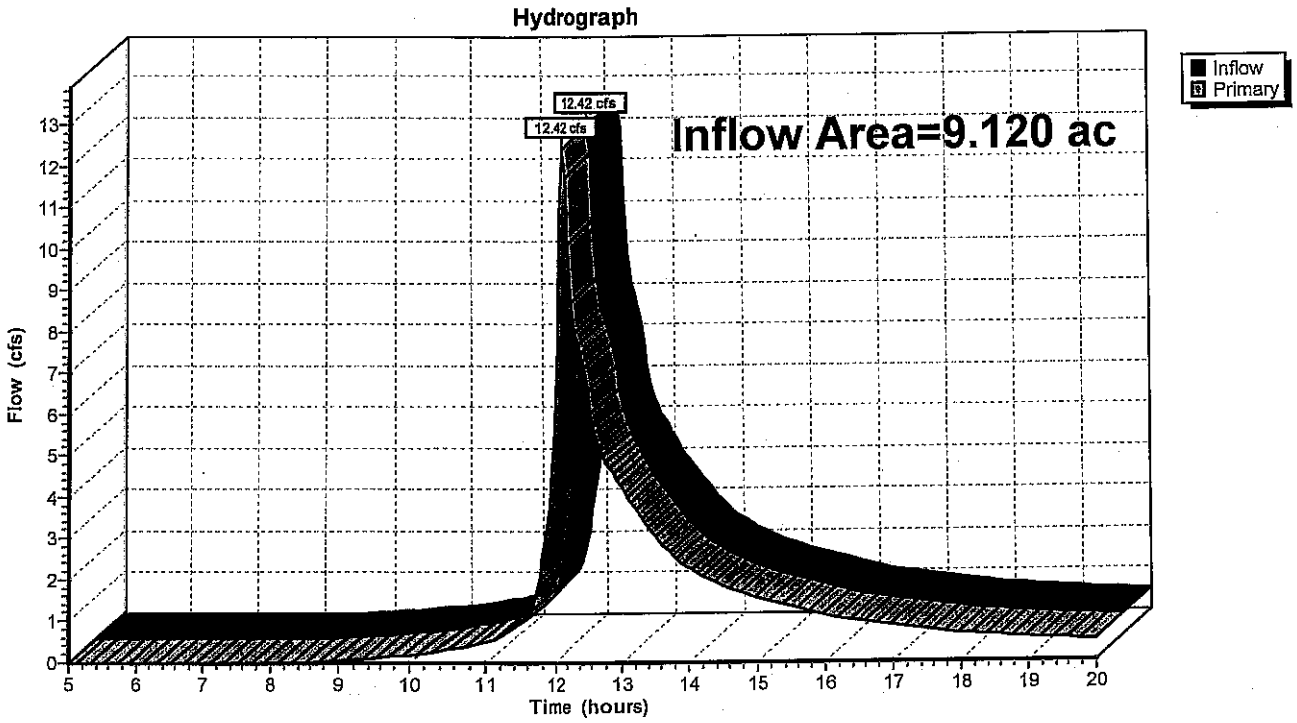


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 9.120 ac, Inflow Depth = 2.02" for 10 YEAR STORM event
Inflow = 12.42 cfs @ 12.16 hrs, Volume= 1.533 af
Primary = 12.42 cfs @ 12.16 hrs, Volume= 1.533 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Pond 4P: Type F-5 Bioretention Pond

Inflow Area = 3.910 ac, Inflow Depth = 2.50" for 10 YEAR STORM event
Inflow = 8.92 cfs @ 12.23 hrs, Volume= 0.815 af
Outflow = 2.84 cfs @ 12.69 hrs, Volume= 0.559 af, Atten= 68%, Lag= 27.4 min
Primary = 2.84 cfs @ 12.69 hrs, Volume= 0.559 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 419.29' @ 12.69 hrs Surf.Area= 0 sf Storage= 17,173 cf
Plug-Flow detention time= 140.4 min calculated for 0.557 af (68% of inflow)
Center-of-Mass det. time= 74.2 min (869.8 - 795.6)

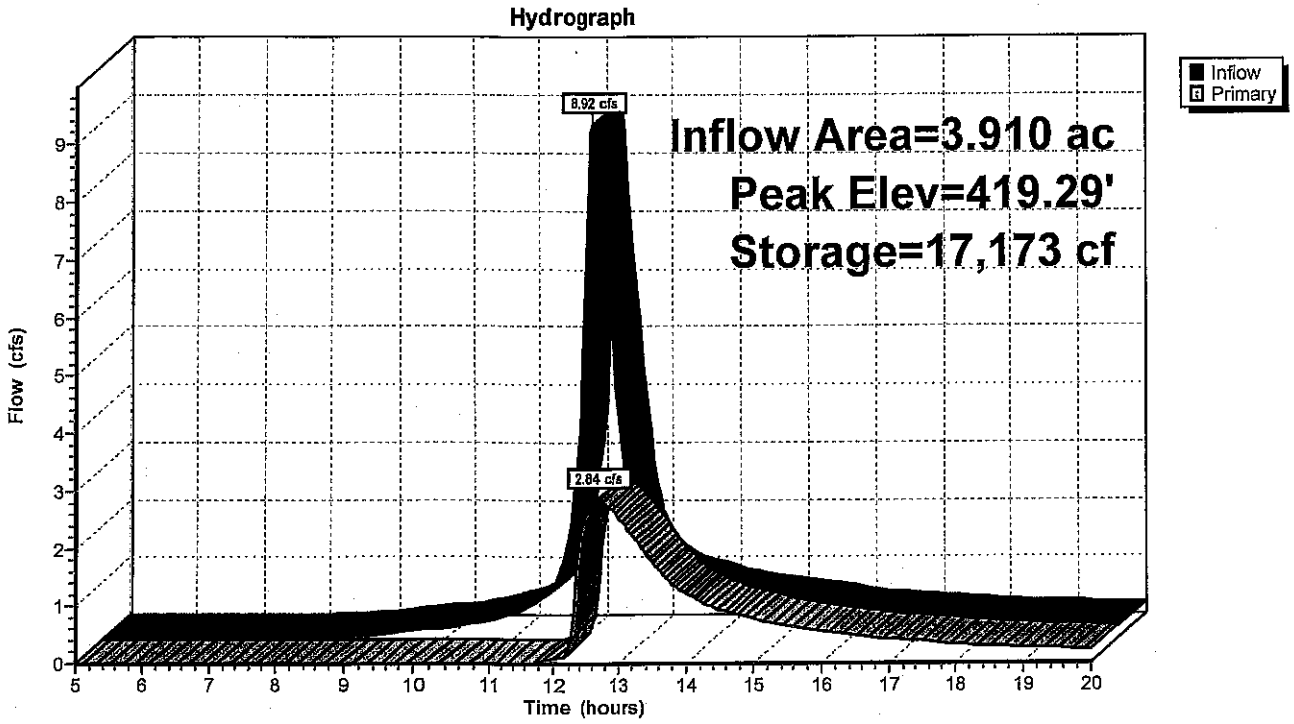
#	Invert	Avail.Storage	Storage Description
1	417.00'	45,796 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
417.00	0
418.00	6,396
420.00	23,049
422.00	45,796

#	Routing	Invert	Outlet Devices
1	Primary	413.00'	**18.0" x 70.0' long Culvert** RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 410.00' S= 0.0429 '/' n= 0.011 Cc= 0.900
2	Device 1	417.50'	**2.4" Vert. Orifice/Grate** C= 0.600
3	Device 1	418.50'	**1.50' x 0.50' Vert. Orifice/Grate** C= 0.600
4	Device 1	420.00'	**1.00' x 1.00' Vert. Orifice/Grate** C= 0.600
5	Device 1	421.00'	**4.00' x 2.50' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=2.83 cfs @ 12.69 hrs HW=419.29' (Free Discharge)
↑**1=Culvert** (Passes 2.83 cfs of 27.32 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 6.3 fps)
3=Orifice/Grate (Orifice Controls 2.64 cfs @ 3.5 fps)
4=Orifice/Grate (Controls 0.00 cfs)
5=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: Type F-5 Bioretention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=7.060 ac Runoff Depth=2.83"
Flow Length=408' Tc=11.5 min CN=74 Runoff=20.90 cfs 1.667 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=2.970 ac Runoff Depth=2.92"
Flow Length=745' Tc=18.5 min CN=75 Runoff=7.60 cfs 0.722 af

Subcatchment 3S: SUBCATCHMENT 3S Runoff Area=5.210 ac Runoff Depth=3.21"
Flow Length=951' Tc=11.3 min CN=78 Runoff=17.50 cfs 1.393 af

Subcatchment 4S: SUBCATCHMENT 4S Runoff Area=3.910 ac Runoff Depth=3.50"
Flow Length=832' Tc=16.5 min CN=81 Runoff=12.42 cfs 1.139 af

Reach 5R: (new Reach) Peak Depth=0.27' Max Vel=4.5 fps Inflow=4.24 cfs 0.877 af
n=0.030 L=616.0' S=0.0610 '/' Capacity=104.69 cfs Outflow=4.24 cfs 0.873 af

Pond 1P: ON SITE CULVERT PIPE Inflow=20.90 cfs 1.667 af
Primary=20.90 cfs 1.667 af

Pond 2P: DESIGN POINT 2P Inflow=7.60 cfs 0.722 af
Primary=7.60 cfs 0.722 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=17.86 cfs 2.266 af
Primary=17.86 cfs 2.266 af

Pond 4P: Type F-5 Bioretention Pond Peak Elev=419.99' Storage=22,932 cf Inflow=12.42 cfs 1.139 af
Outflow=4.24 cfs 0.877 af

Total Runoff Area = 19.150 ac Runoff Volume = 4.920 af Average Runoff Depth = 3.08"

Subcatchment 1S: SUBCATCHMENT 1S

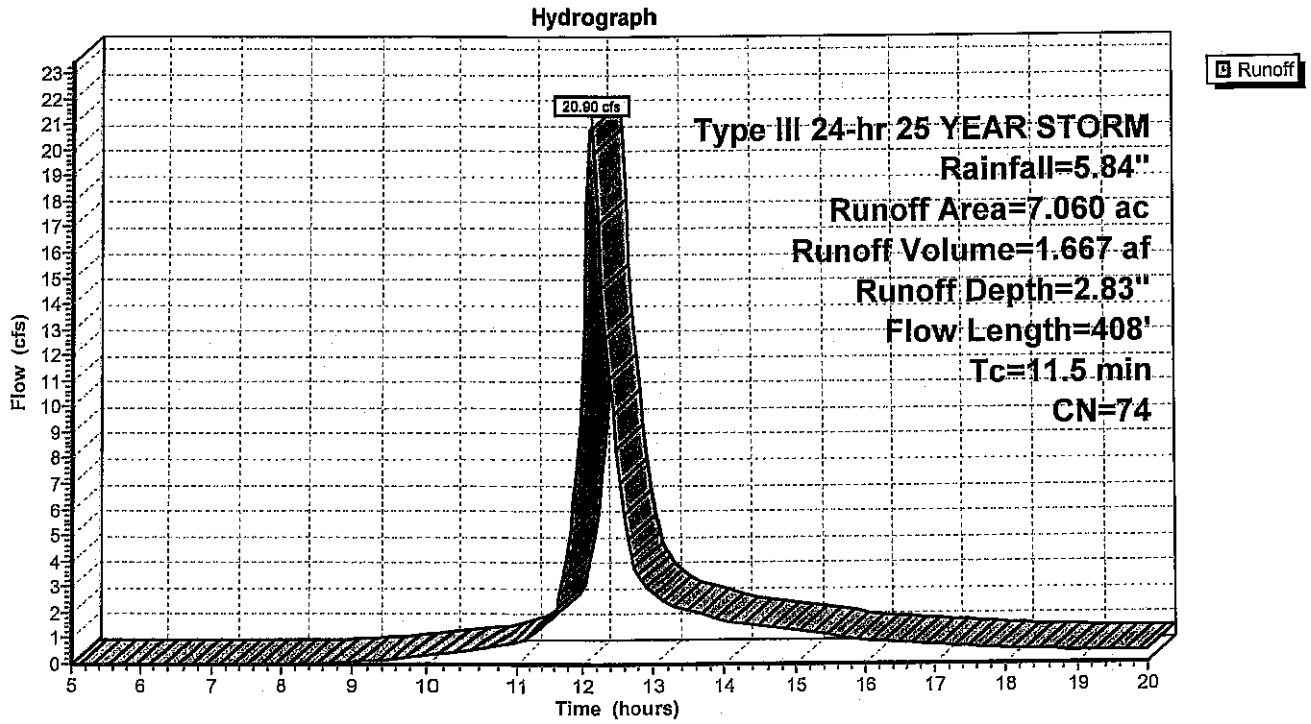
Runoff = 20.90 cfs @ 12.16 hrs, Volume= 1.667 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
3.070	74	>75% Grass cover, Good, HSG C
3.790	73	Woods, Fair, HSG C
7.060	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
1.5	308	0.0460	3.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.5	408	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

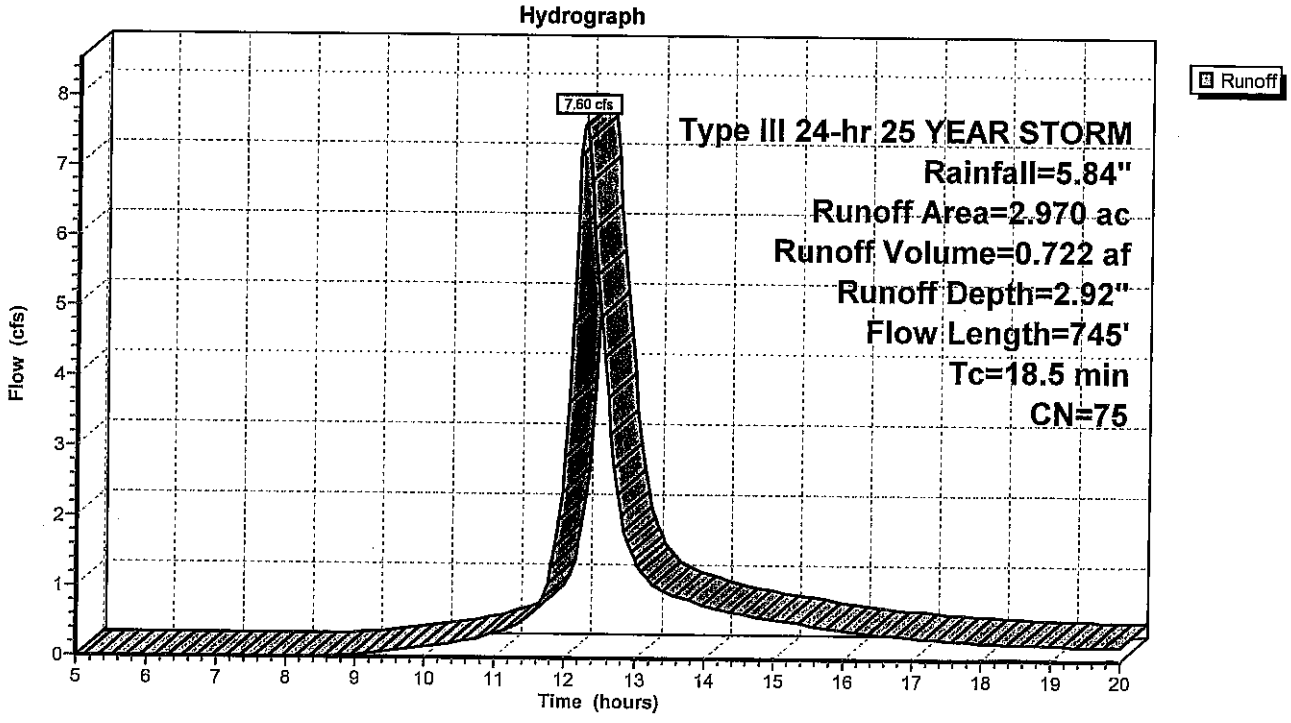
Runoff = 7.60 cfs @ 12.26 hrs, Volume= 0.722 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.996	73	Woods, Fair, HSG C
1.794	74	>75% Grass cover, Good, HSG C
2.970	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT 3S

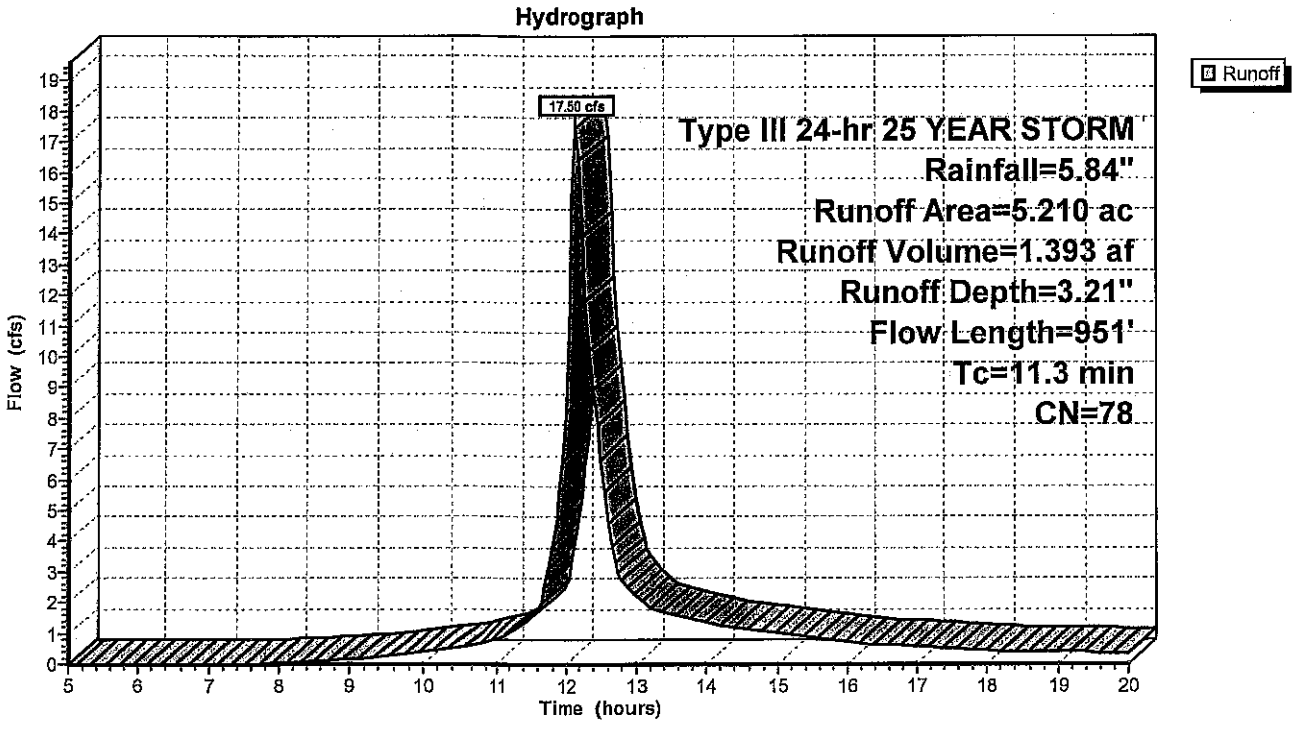
Runoff = 17.50 cfs @ 12.16 hrs, Volume= 1.393 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
4.270	74	>75% Grass cover, Good, HSG C
0.150	76	Woods/grass comb., Fair, HSG C
5.210	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1000	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
2.8	590	0.0490	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.3	951	Total			

Subcatchment 3S: SUBCATCHMENT 3S



Subcatchment 4S: SUBCATCHMENT 4S

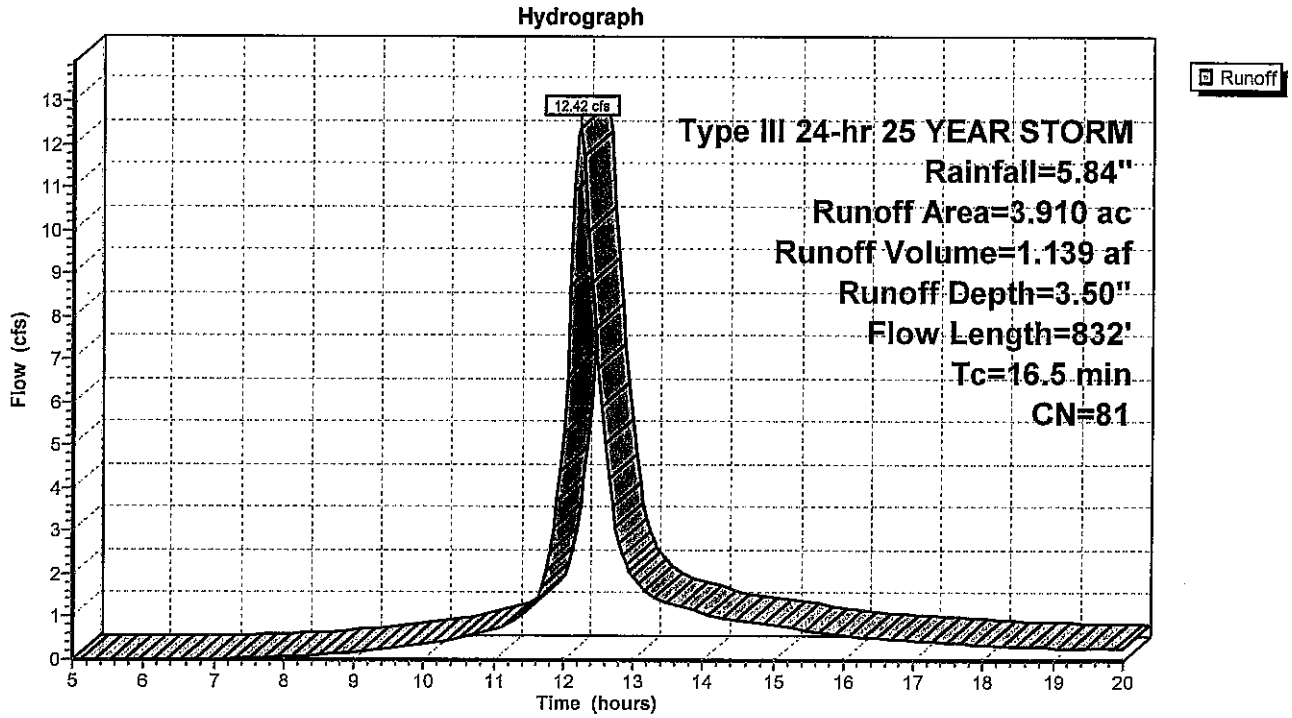
Runoff = 12.42 cfs @ 12.22 hrs, Volume= 1.139 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.84"

Area (ac)	CN	Description
1.050	98	Paved parking & roofs
1.650	74	>75% Grass cover, Good, HSG C
1.070	73	Woods, Fair, HSG C
0.140	98	POND SURFACE
3.910	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
0.5	153	0.1100	5.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	163	0.0610	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	416	0.0625	14.9	26.26	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
16.5	832	Total			

Subcatchment 4S: SUBCATCHMENT 4S



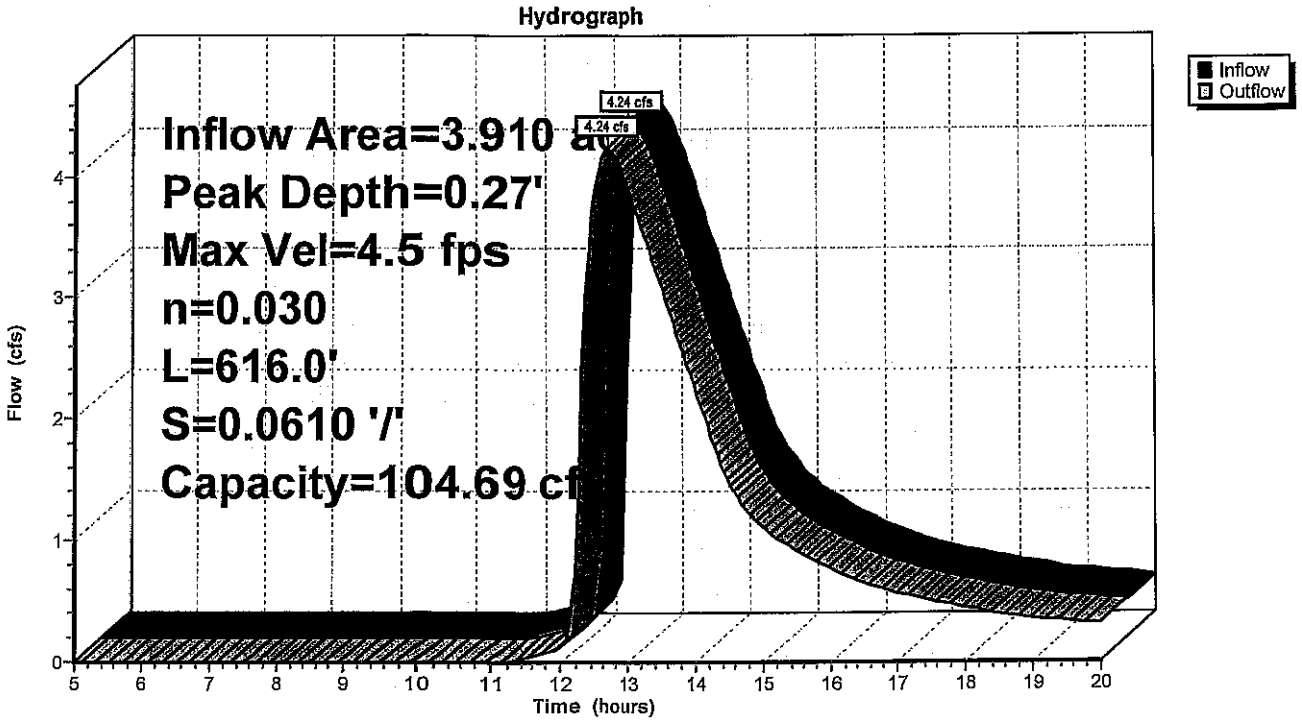
Reach 5R: (new Reach)

Inflow Area = 3.910 ac, Inflow Depth = 2.69" for 25 YEAR STORM event
Inflow = 4.24 cfs @ 12.65 hrs, Volume= 0.877 af
Outflow = 4.24 cfs @ 12.72 hrs, Volume= 0.873 af, Atten= 0%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 4.1 min

Peak Depth= 0.27' @ 12.68 hrs
Capacity at bank full= 104.69 cfs
Inlet Invert= 410.00', Outlet Invert= 372.42'
3.00' x 1.50' deep channel, n= 0.030 Length= 616.0' Slope= 0.0610 '/'
Side Slope Z-value= 2.0 '/'

Reach 5R: (new Reach)

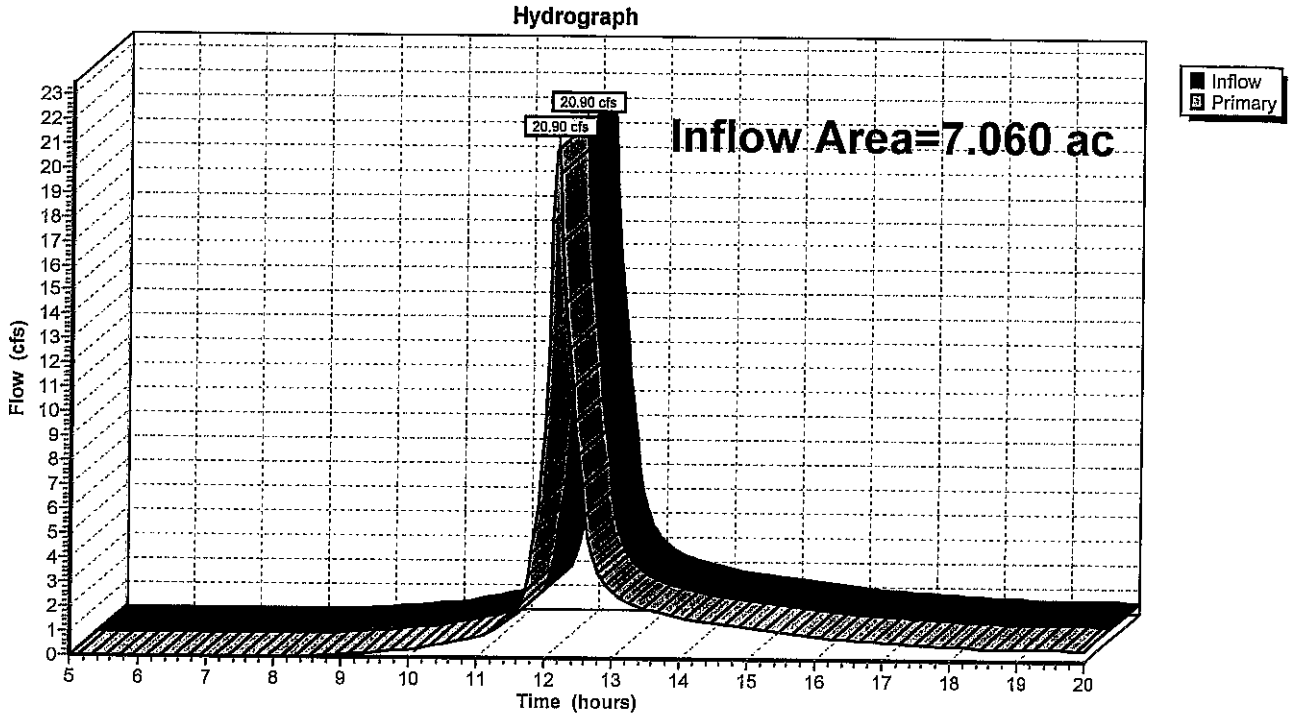


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 7.060 ac, Inflow Depth = 2.83" for 25 YEAR STORM event
Inflow = 20.90 cfs @ 12.16 hrs, Volume= 1.667 af
Primary = 20.90 cfs @ 12.16 hrs, Volume= 1.667 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

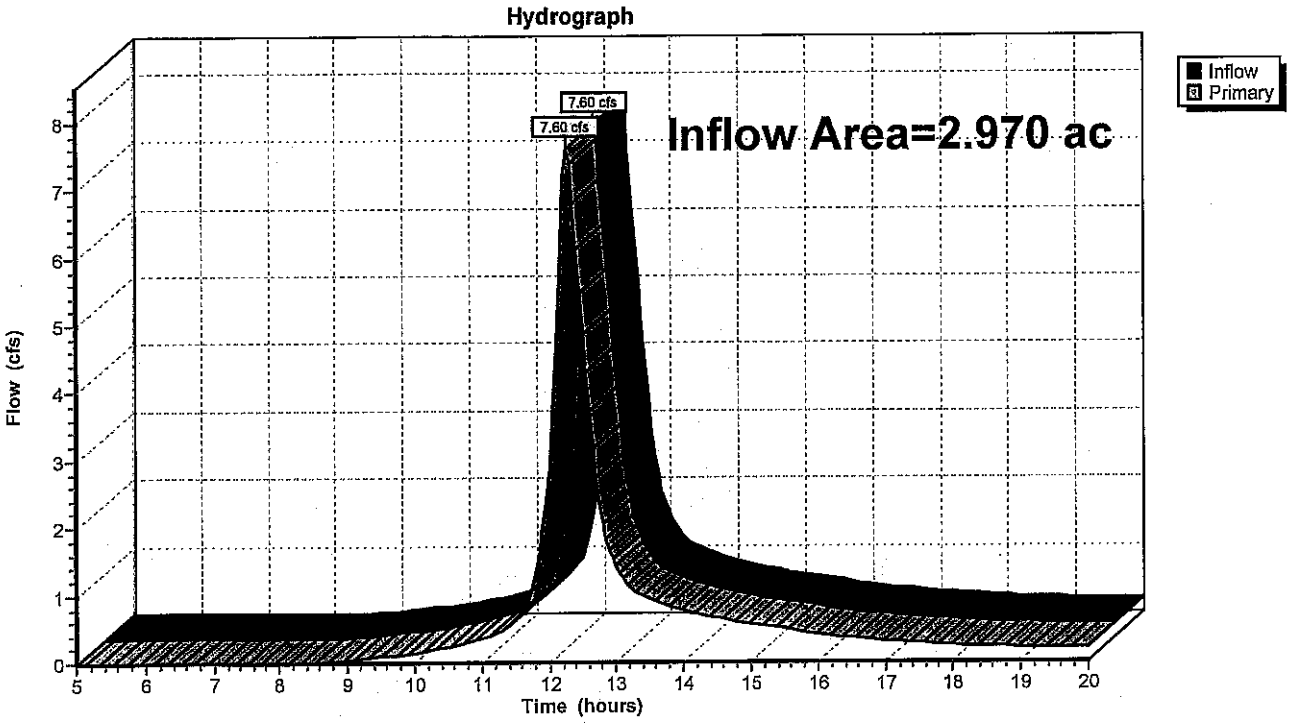


Pond 2P: DESIGN POINT 2P

Inflow Area = 2.970 ac, Inflow Depth = 2.92" for 25 YEAR STORM event
Inflow = 7.60 cfs @ 12.26 hrs, Volume= 0.722 af
Primary = 7.60 cfs @ 12.26 hrs, Volume= 0.722 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

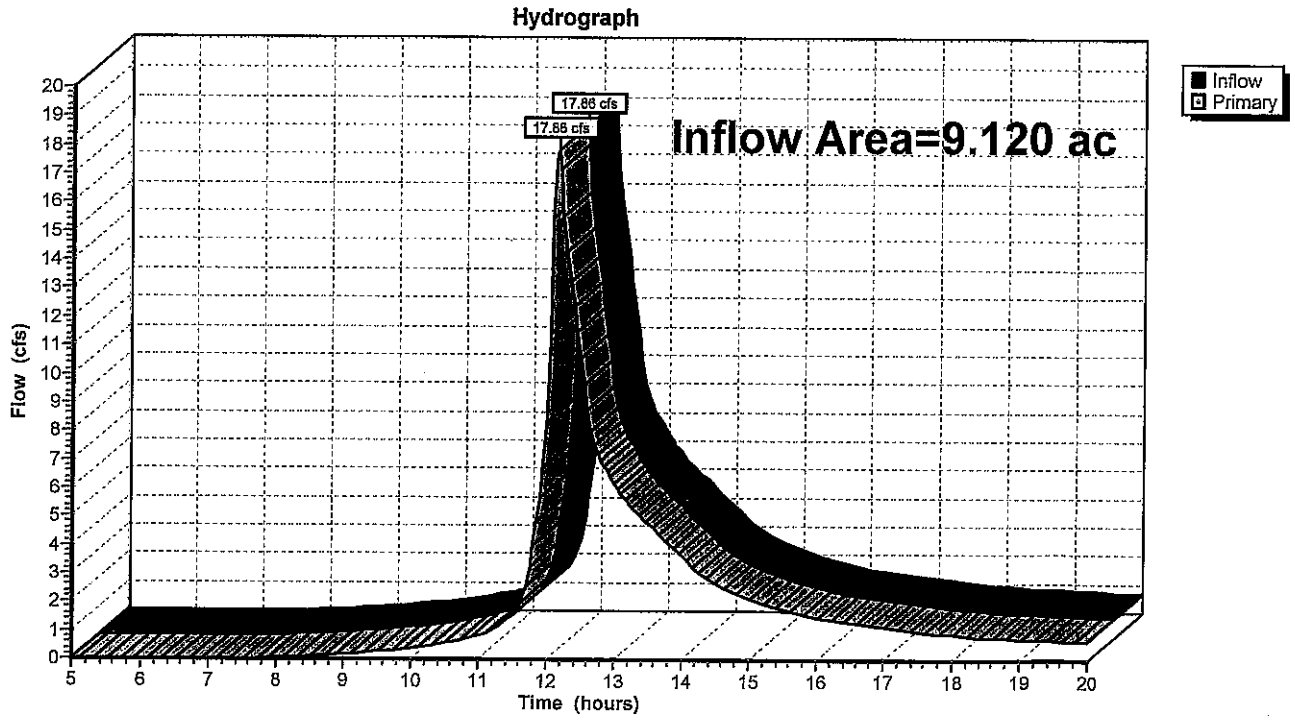


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 9.120 ac, Inflow Depth = 2.98" for 25 YEAR STORM event
Inflow = 17.86 cfs @ 12.17 hrs, Volume= 2.266 af
Primary = 17.86 cfs @ 12.17 hrs, Volume= 2.266 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Pond 4P: Type F-5 Bioretention Pond

Inflow Area = 3.910 ac, Inflow Depth = 3.50" for 25 YEAR STORM event
Inflow = 12.42 cfs @ 12.22 hrs, Volume= 1.139 af
Outflow = 4.24 cfs @ 12.65 hrs, Volume= 0.877 af, Atten= 66%, Lag= 25.7 min
Primary = 4.24 cfs @ 12.65 hrs, Volume= 0.877 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 419.99' @ 12.65 hrs Surf.Area= 0 sf Storage= 22,932 cf
Plug-Flow detention time= 122.7 min calculated for 0.874 af (77% of inflow)
Center-of-Mass det. time= 67.1 min (854.9 - 787.8)

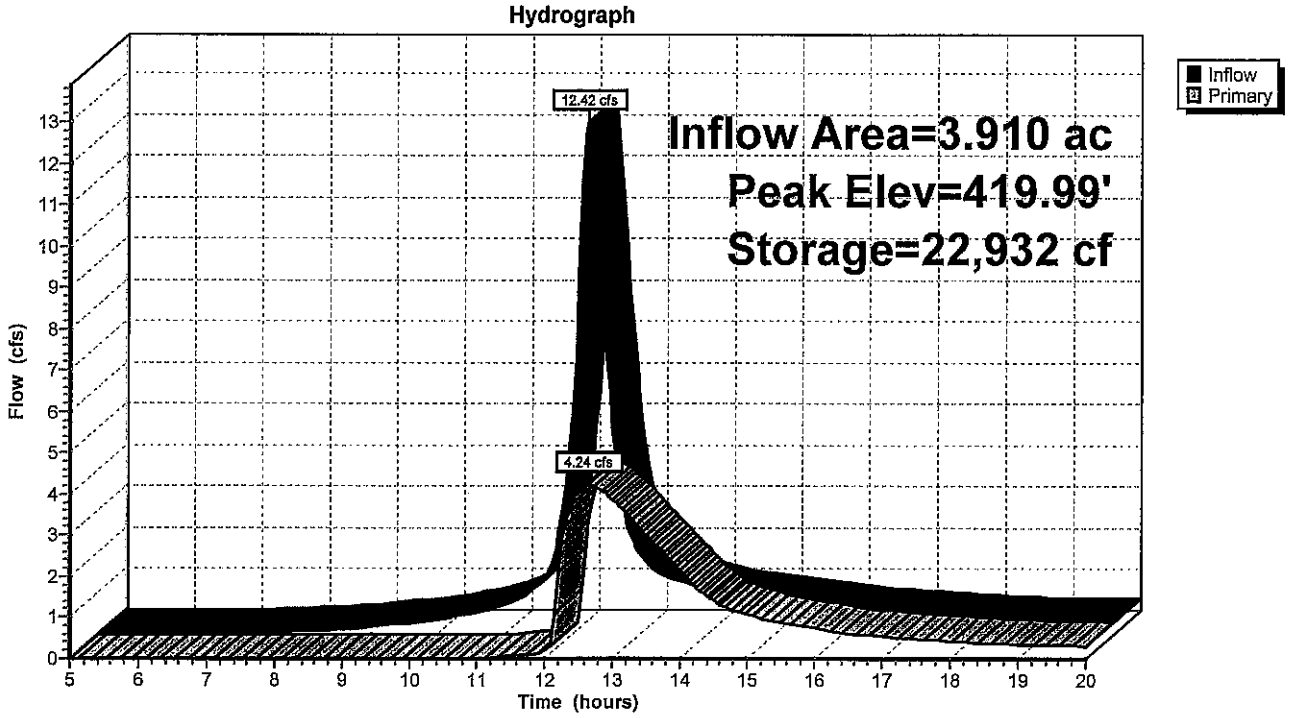
#	Invert	Avail.Storage	Storage Description
1	417.00'	45,796 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
417.00	0
418.00	6,396
420.00	23,049
422.00	45,796

#	Routing	Invert	Outlet Devices
1	Primary	413.00'	**18.0" x 70.0' long Culvert** RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 410.00' S= 0.0429 '/' n= 0.011 Cc= 0.900
2	Device 1	417.50'	**2.4" Vert. Orifice/Grate** C= 0.600
3	Device 1	418.50'	**1.50' x 0.50' Vert. Orifice/Grate** C= 0.600
4	Device 1	420.00'	**1.00' x 1.00' Vert. Orifice/Grate** C= 0.600
5	Device 1	421.00'	**4.00' x 2.50' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=4.24 cfs @ 12.65 hrs HW=419.99' (Free Discharge)
↑—**1=Culvert** (Passes 4.24 cfs of 28.97 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 7.4 fps)
—**3=Orifice/Grate** (Orifice Controls 4.01 cfs @ 5.3 fps)
—**4=Orifice/Grate** (Controls 0.00 cfs)
—**5=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: Type F-5 Bioretention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=7.060 ac Runoff Depth=4.79"
Flow Length=408' Tc=11.5 min CN=74 Runoff=35.06 cfs 2.819 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=2.970 ac Runoff Depth=4.90"
Flow Length=745' Tc=18.5 min CN=75 Runoff=12.64 cfs 1.212 af

Subcatchment 3S: SUBCATCHMENT 3S Runoff Area=5.210 ac Runoff Depth=5.25"
Flow Length=951' Tc=11.3 min CN=78 Runoff=28.21 cfs 2.281 af

Subcatchment 4S: SUBCATCHMENT 4S Runoff Area=3.910 ac Runoff Depth=5.59"
Flow Length=832' Tc=16.5 min CN=81 Runoff=19.50 cfs 1.822 af

Reach 5R: (new Reach) Peak Depth=0.39' Max Vel=5.6 fps Inflow=8.43 cfs 1.550 af
n=0.030 L=616.0' S=0.0610 '/' Capacity=104.69 cfs Outflow=8.40 cfs 1.546 af

Pond 1P: ON SITE CULVERT PIPE Inflow=35.06 cfs 2.819 af
Primary=35.06 cfs 2.819 af

Pond 2P: DESIGN POINT 2P Inflow=12.64 cfs 1.212 af
Primary=12.64 cfs 1.212 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=31.61 cfs 3.827 af
Primary=31.61 cfs 3.827 af

Pond 4P: Type F-5 Bioretention Pond Peak Elev=420.92' Storage=33,519 cf Inflow=19.50 cfs 1.822 af
Outflow=8.43 cfs 1.550 af

Total Runoff Area = 19.150 ac Runoff Volume = 8.134 af Average Runoff Depth = 5.10"

Subcatchment 1S: SUBCATCHMENT 1S

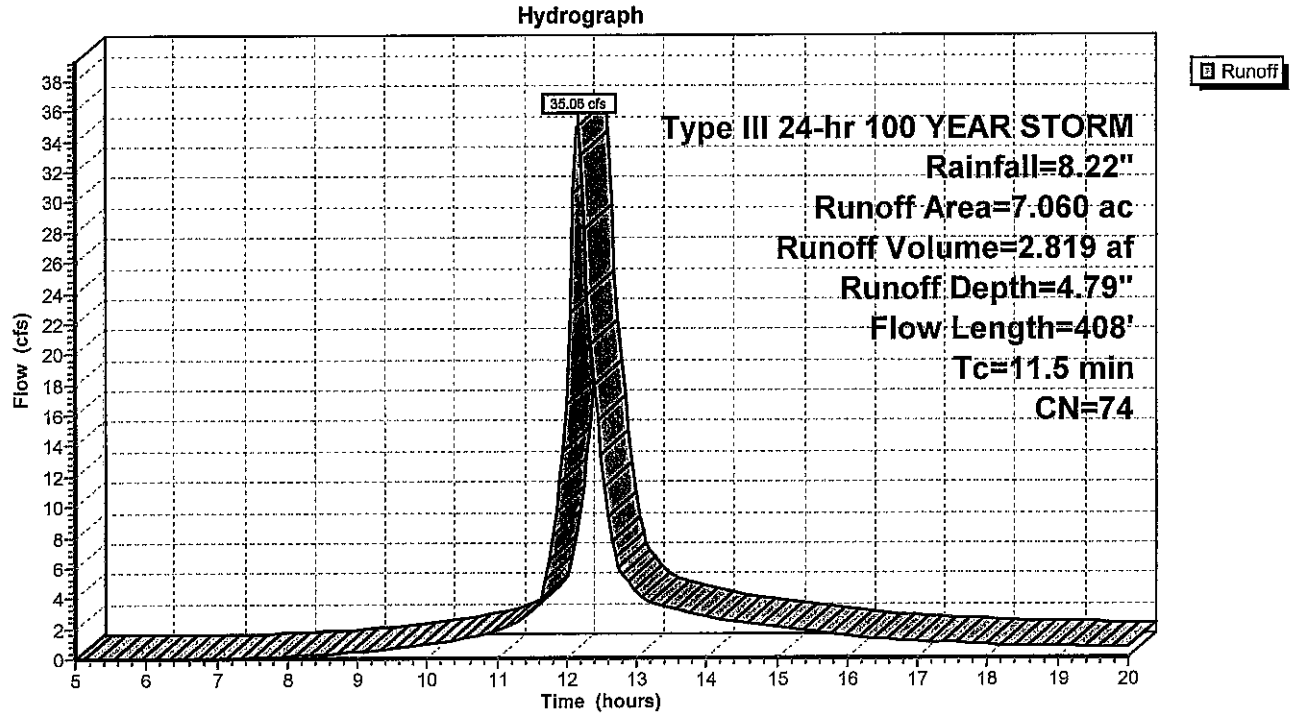
Runoff = 35.06 cfs @ 12.16 hrs, Volume= 2.819 af, Depth= 4.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
3.070	74	>75% Grass cover, Good, HSG C
3.790	73	Woods, Fair, HSG C
7.060	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
1.5	308	0.0460	3.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.5	408	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

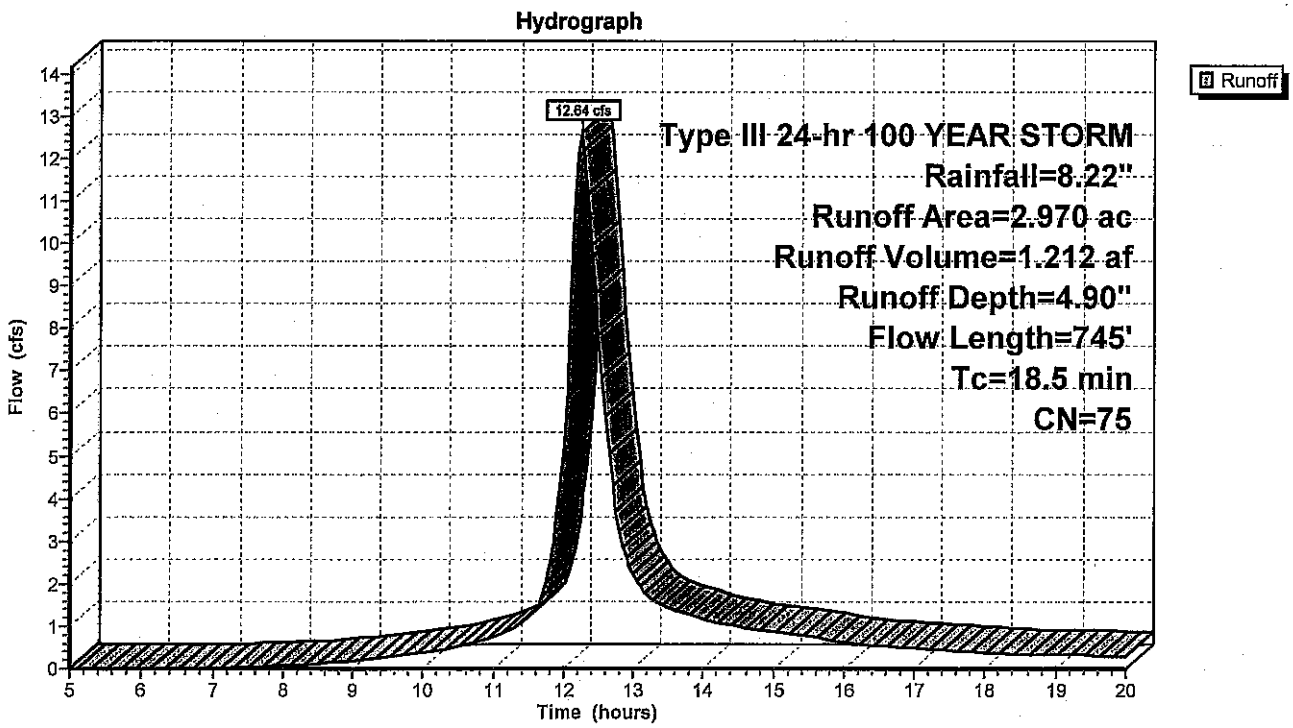
Runoff = 12.64 cfs @ 12.25 hrs, Volume= 1.212 af, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.996	73	Woods, Fair, HSG C
1.794	74	>75% Grass cover, Good, HSG C
2.970	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT 3S

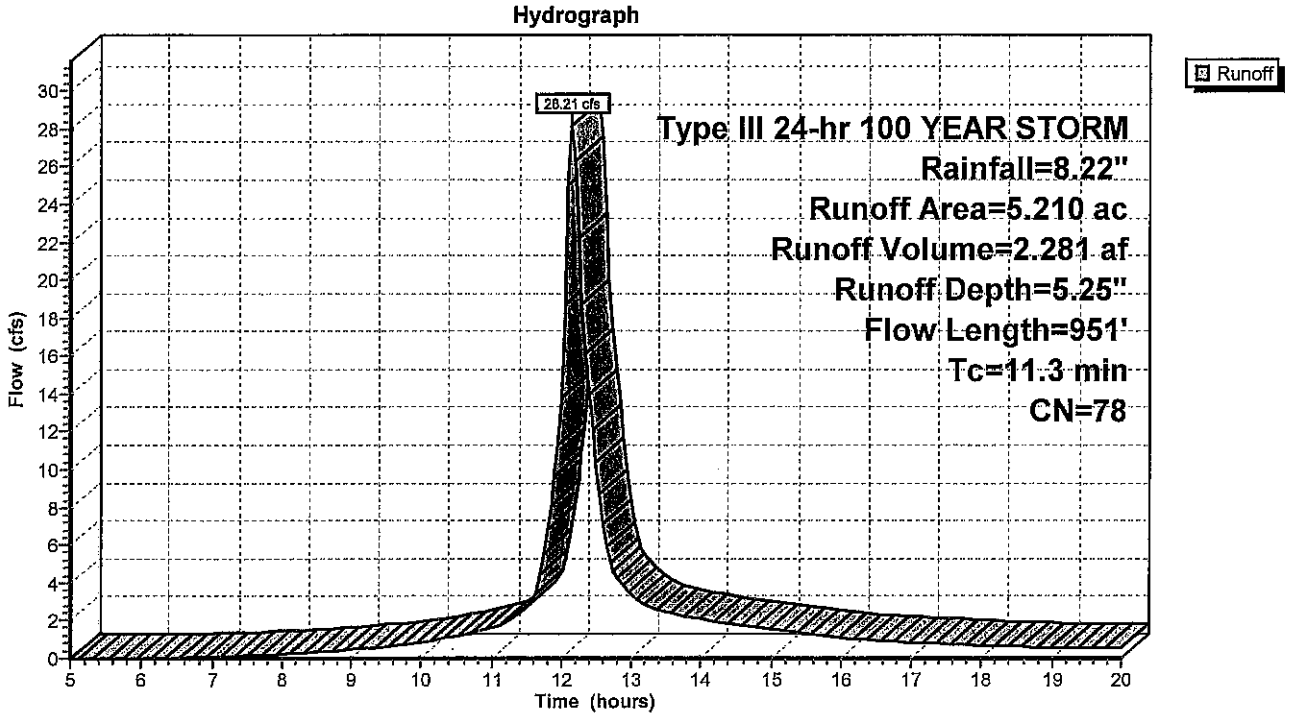
Runoff = 28.21 cfs @ 12.16 hrs, Volume= 2.281 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
4.270	74	>75% Grass cover, Good, HSG C
0.150	76	Woods/grass comb., Fair, HSG C
5.210	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1000	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
2.8	590	0.0490	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.3	951	Total			

Subcatchment 3S: SUBCATCHMENT 3S



Subcatchment 4S: SUBCATCHMENT 4S

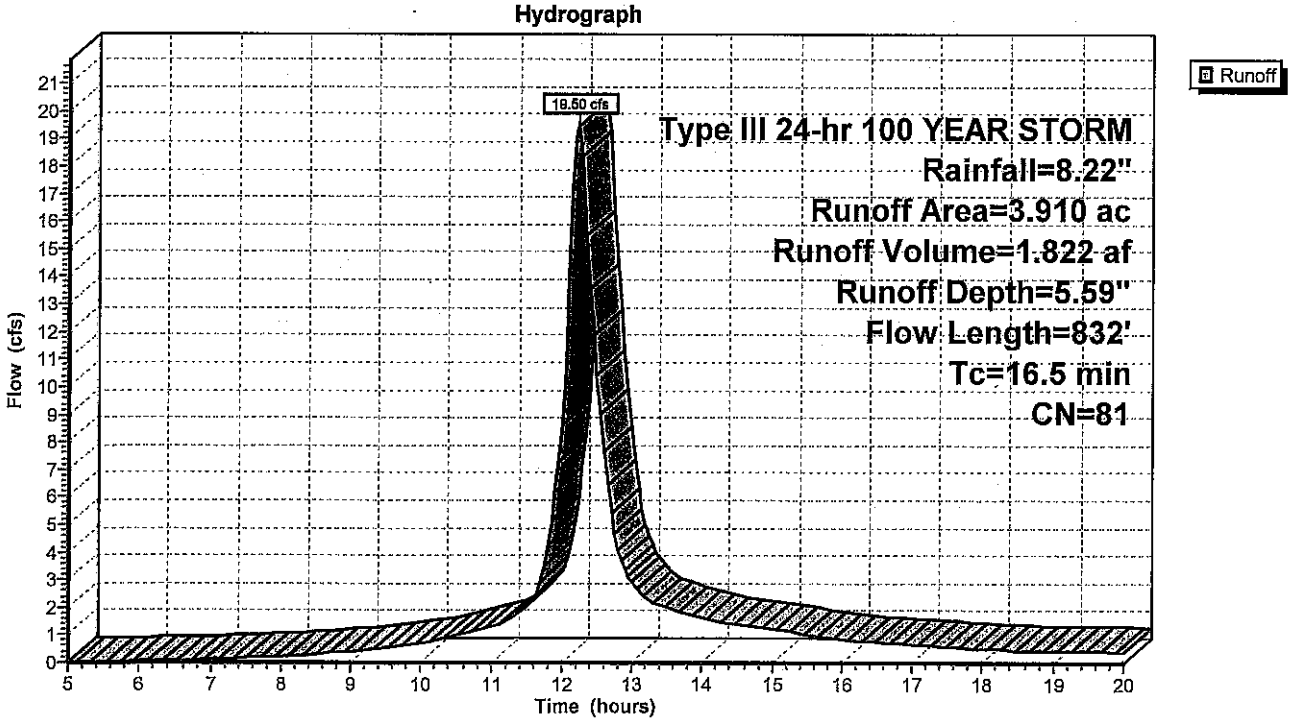
Runoff = 19.50 cfs @ 12.22 hrs, Volume= 1.822 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.22"

Area (ac)	CN	Description
1.050	98	Paved parking & roofs
1.650	74	>75% Grass cover, Good, HSG C
1.070	73	Woods, Fair, HSG C
0.140	98	POND SURFACE
3.910	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
0.5	153	0.1100	5.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	163	0.0610	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	416	0.0625	14.9	26.26	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
16.5	832	Total			

Subcatchment 4S: SUBCATCHMENT 4S



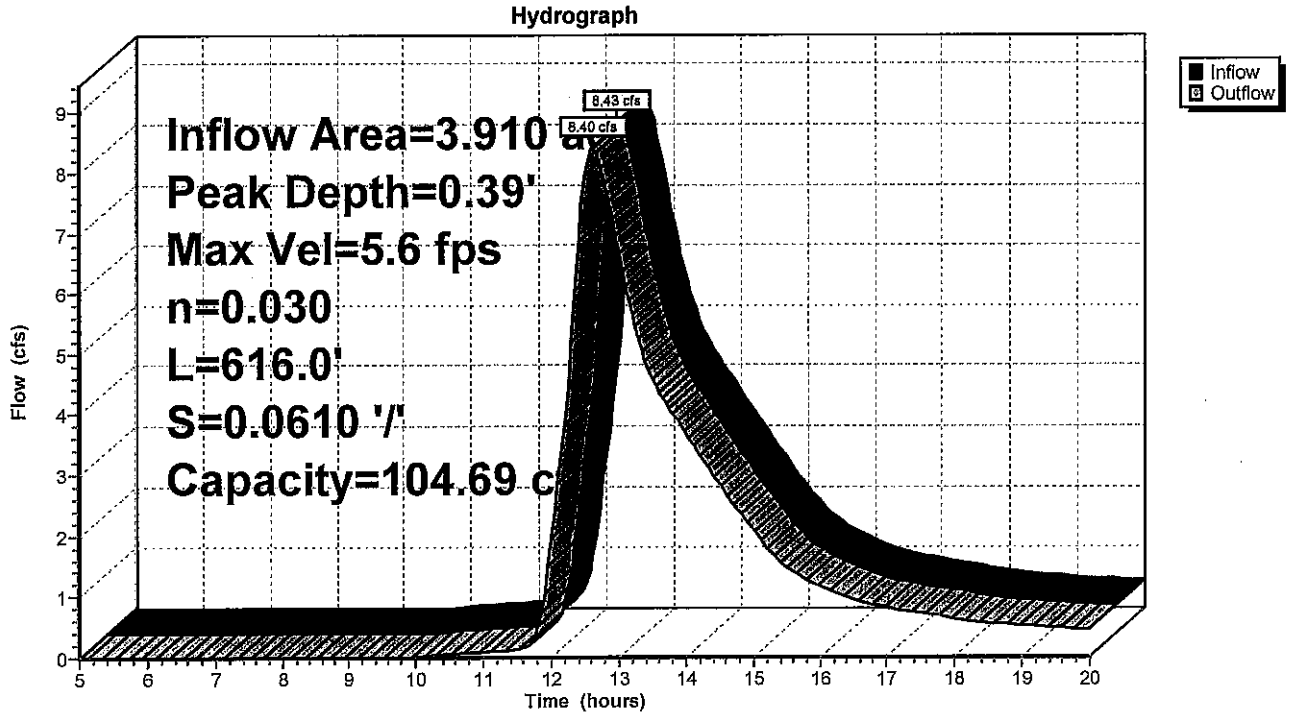
Reach 5R: (new Reach)

Inflow Area = 3.910 ac, Inflow Depth = 4.76" for 100 YEAR STORM event
Inflow = 8.43 cfs @ 12.57 hrs, Volume= 1.550 af
Outflow = 8.40 cfs @ 12.63 hrs, Volume= 1.546 af, Atten= 0%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.6 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 3.7 min

Peak Depth= 0.39' @ 12.59 hrs
Capacity at bank full= 104.69 cfs
Inlet Invert= 410.00', Outlet Invert= 372.42'
3.00' x 1.50' deep channel, n= 0.030 Length= 616.0' Slope= 0.0610 '/'
Side Slope Z-value= 2.0 '/'

Reach 5R: (new Reach)

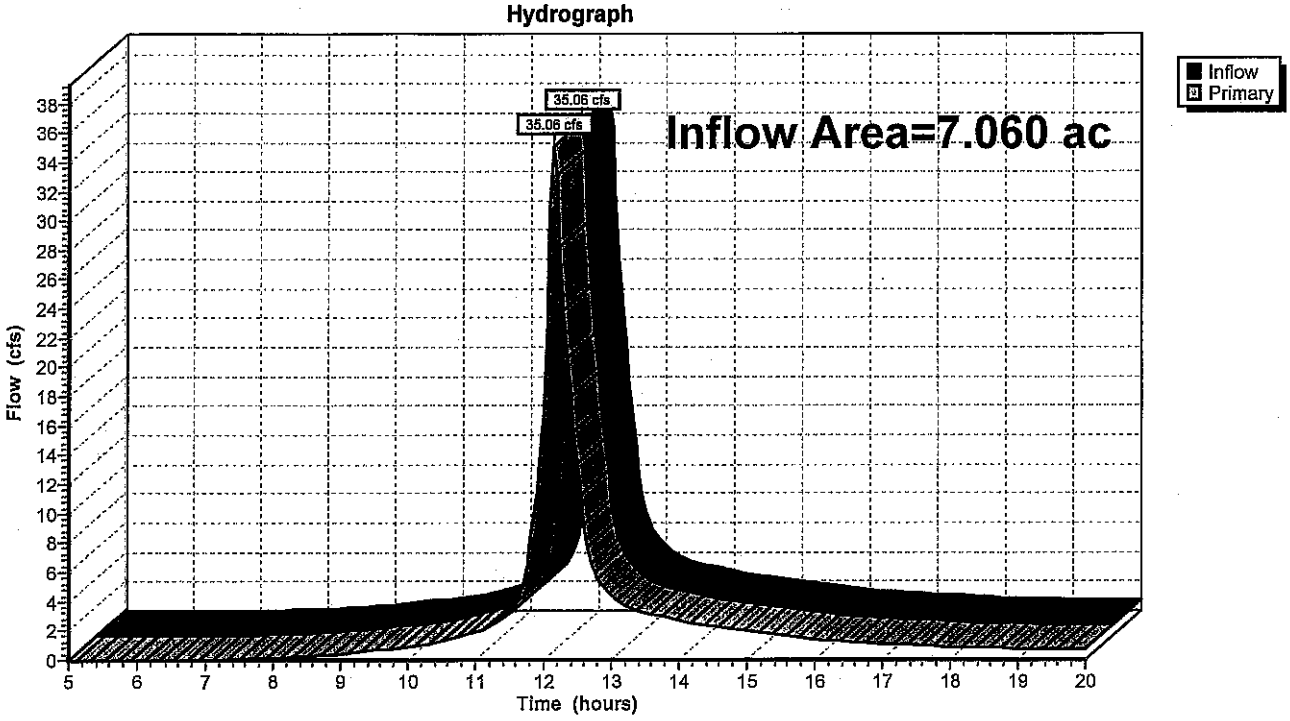


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 7.060 ac, Inflow Depth = 4.79" for 100 YEAR STORM event
Inflow = 35.06 cfs @ 12.16 hrs, Volume= 2.819 af
Primary = 35.06 cfs @ 12.16 hrs, Volume= 2.819 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

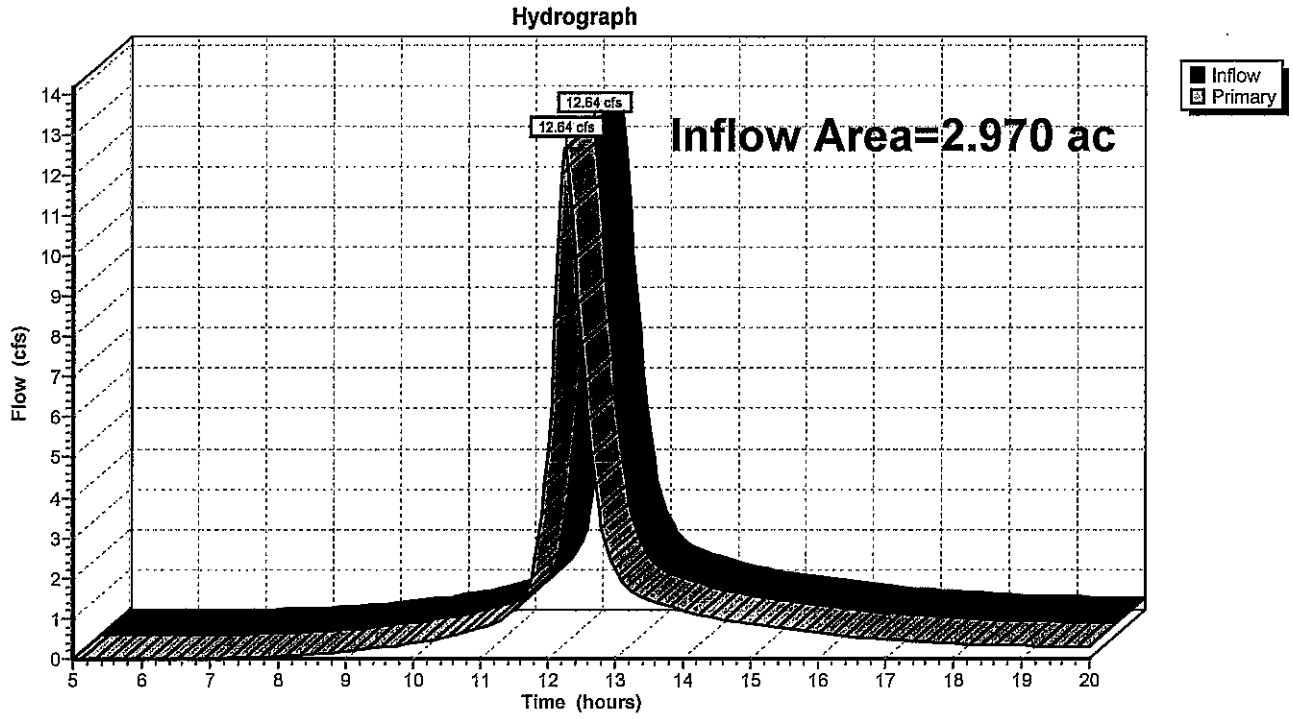


Pond 2P: DESIGN POINT 2P

Inflow Area = 2.970 ac, Inflow Depth = 4.90" for 100 YEAR STORM event
Inflow = 12.64 cfs @ 12.25 hrs, Volume= 1.212 af
Primary = 12.64 cfs @ 12.25 hrs, Volume= 1.212 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

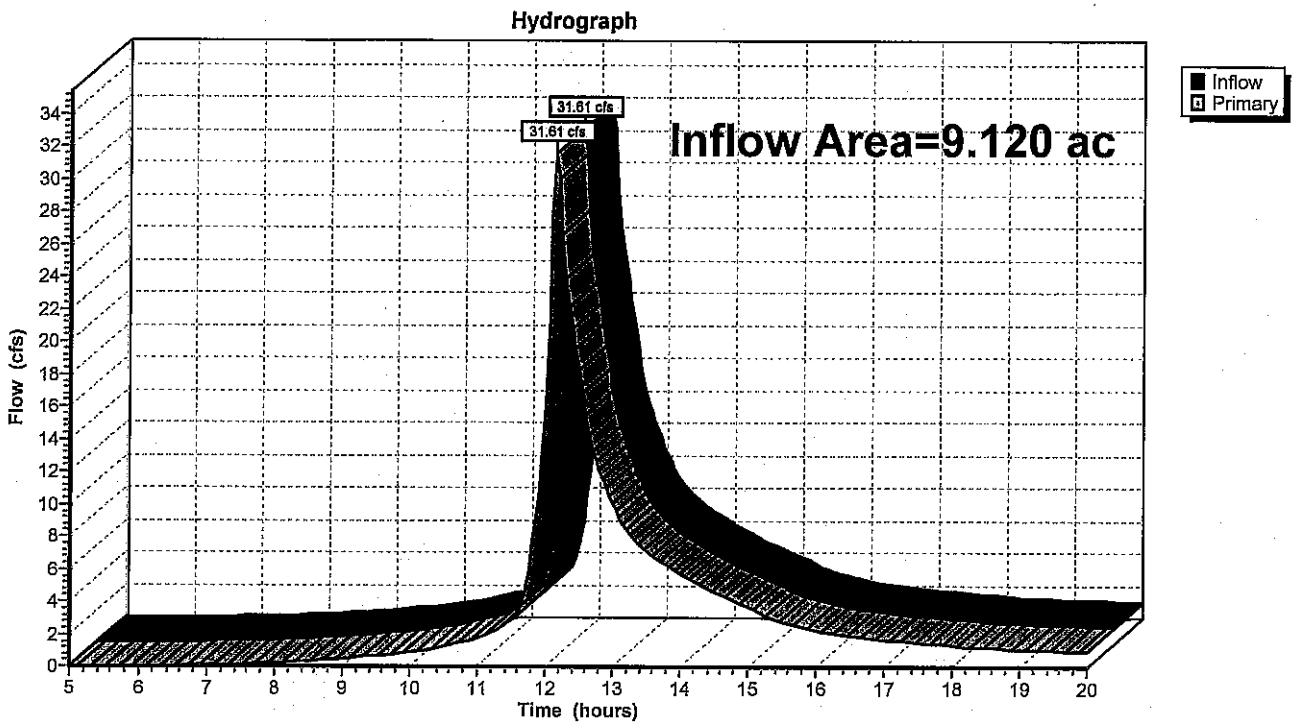


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 9.120 ac, Inflow Depth = 5.04" for 100 YEAR STORM event
Inflow = 31.61 cfs @ 12.16 hrs, Volume= 3.827 af
Primary = 31.61 cfs @ 12.16 hrs, Volume= 3.827 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Pond 4P: Type F-5 Bioretention Pond

Inflow Area = 3.910 ac, Inflow Depth = 5.59" for 100 YEAR STORM event
Inflow = 19.50 cfs @ 12.22 hrs, Volume= 1.822 af
Outflow = 8.43 cfs @ 12.57 hrs, Volume= 1.550 af, Atten= 57%, Lag= 21.0 min
Primary = 8.43 cfs @ 12.57 hrs, Volume= 1.550 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 420.92' @ 12.57 hrs Surf.Area= 0 sf Storage= 33,519 cf
Plug-Flow detention time= 106.4 min calculated for 1.545 af (85% of inflow)
Center-of-Mass det. time= 63.7 min (840.4 - 776.7)

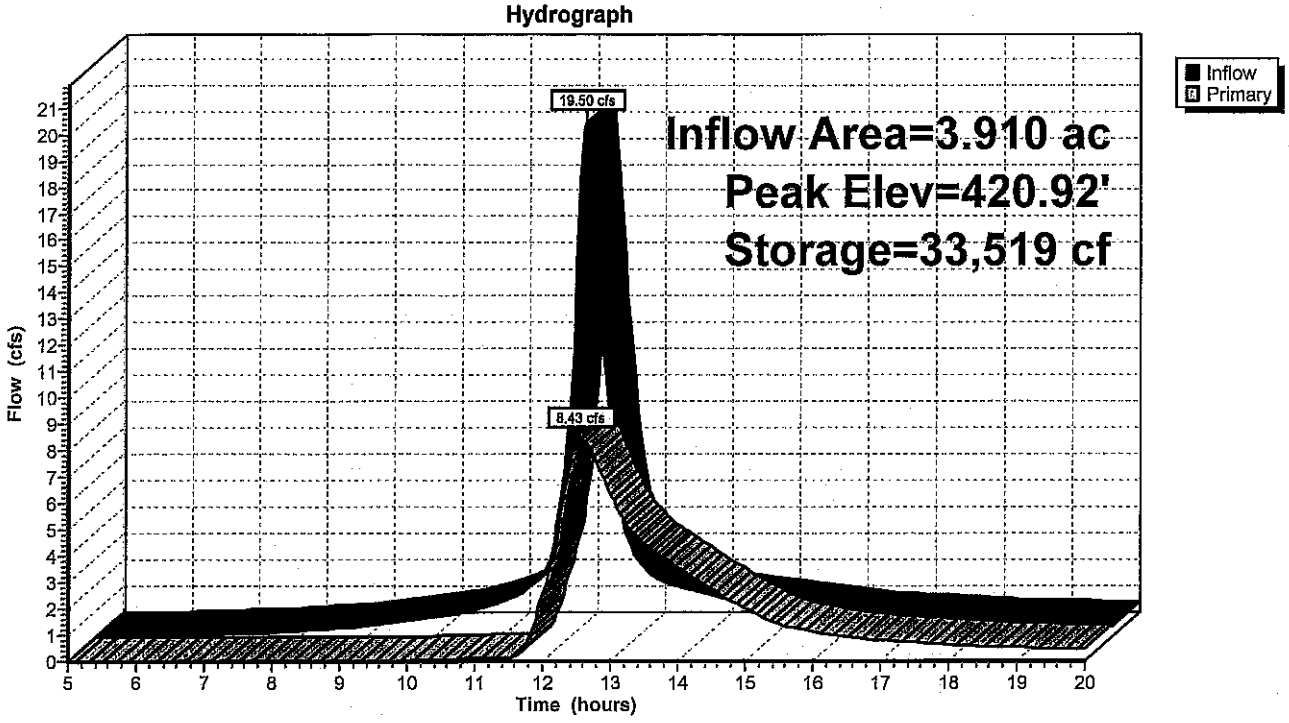
#	Invert	Avail.Storage	Storage Description
1	417.00'	45,796 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
417.00	0
418.00	6,396
420.00	23,049
422.00	45,796

#	Routing	Invert	Outlet Devices
1	Primary	413.00'	**18.0" x 70.0' long Culvert** RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 410.00' S= 0.0429 '/' n= 0.011 Cc= 0.900
2	Device 1	417.50'	**2.4" Vert. Orifice/Grate** C= 0.600
3	Device 1	418.50'	**1.50' x 0.50' Vert. Orifice/Grate** C= 0.600
4	Device 1	420.00'	**1.00' x 1.00' Vert. Orifice/Grate** C= 0.600
5	Device 1	421.00'	**4.00' x 2.50' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=8.41 cfs @ 12.57 hrs HW=420.92' (Free Discharge)
↑**1=Culvert** (Passes 8.41 cfs of 30.65 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 8.8 fps)
3=Orifice/Grate (Orifice Controls 5.31 cfs @ 7.1 fps)
4=Orifice/Grate (Orifice Controls 2.82 cfs @ 3.1 fps)
5=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: Type F-5 Bioretention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT 1S Runoff Area=7.060 ac Runoff Depth=0.09"
Flow Length=408' Tc=11.5 min CN=74 Runoff=0.32 cfs 0.055 af

Subcatchment 2S: SUBCATCHMENT 2S Runoff Area=2.970 ac Runoff Depth=0.11"
Flow Length=745' Tc=18.5 min CN=75 Runoff=0.15 cfs 0.027 af

Subcatchment 3S: SUBCATCHMENT 3S Runoff Area=5.210 ac Runoff Depth=0.16"
Flow Length=951' Tc=11.3 min CN=78 Runoff=0.57 cfs 0.071 af

Subcatchment 4S: SUBCATCHMENT 4S Runoff Area=3.910 ac Runoff Depth=0.23"
Flow Length=832' Tc=16.5 min CN=81 Runoff=0.67 cfs 0.075 af

Reach 5R: (new Reach) Peak Depth=0.00' Max Vel=0.7 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=616.0' S=0.0610 '/' Capacity=104.69 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: ON SITE CULVERT PIPE Inflow=0.32 cfs 0.055 af
Primary=0.32 cfs 0.055 af

Pond 2P: DESIGN POINT 2P Inflow=0.15 cfs 0.027 af
Primary=0.15 cfs 0.027 af

Pond 3P: OFF SITE CULVERT PIPE Inflow=0.57 cfs 0.071 af
Primary=0.57 cfs 0.071 af

Pond 4P: Type F-5 Bioretention Pond Peak Elev=417.51' Storage=3,250 cf Inflow=0.67 cfs 0.075 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 19.150 ac Runoff Volume = 0.228 af Average Runoff Depth = 0.14"

Subcatchment 1S: SUBCATCHMENT 1S

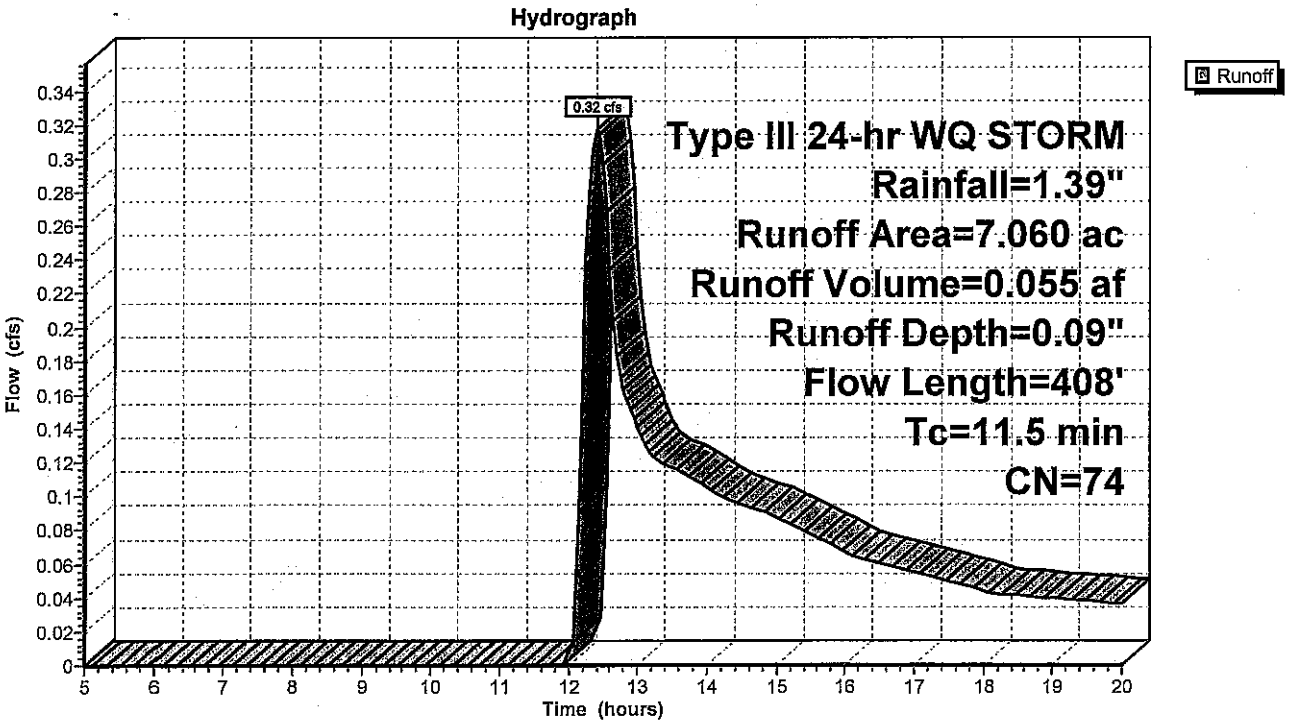
Runoff = 0.32 cfs @ 12.41 hrs, Volume= 0.055 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
3.070	74	>75% Grass cover, Good, HSG C
3.790	73	Woods, Fair, HSG C
7.060	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
1.5	308	0.0460	3.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.5	408	Total			

Subcatchment 1S: SUBCATCHMENT 1S



Subcatchment 2S: SUBCATCHMENT 2S

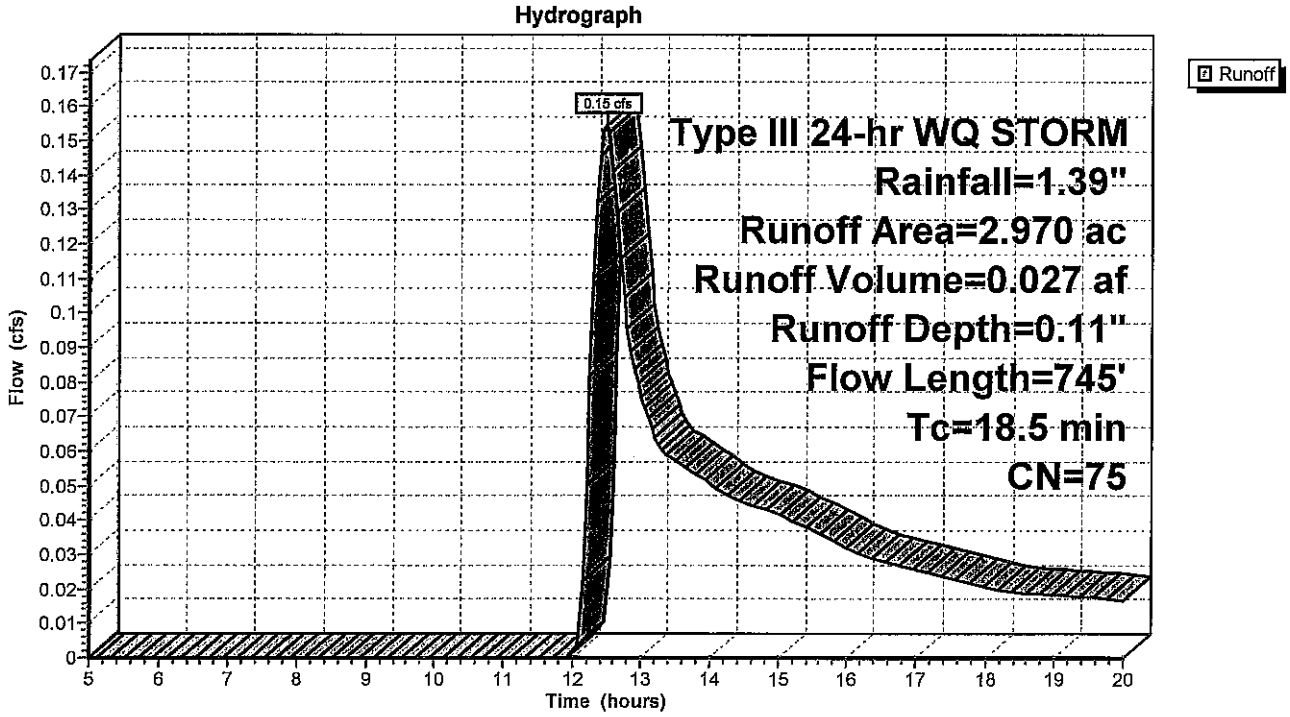
Runoff = 0.15 cfs @ 12.49 hrs, Volume= 0.027 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.996	73	Woods, Fair, HSG C
1.794	74	>75% Grass cover, Good, HSG C
2.970	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0400	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
2.1	645	0.1000	5.1		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	745	Total			

Subcatchment 2S: SUBCATCHMENT 2S



Subcatchment 3S: SUBCATCHMENT 3S

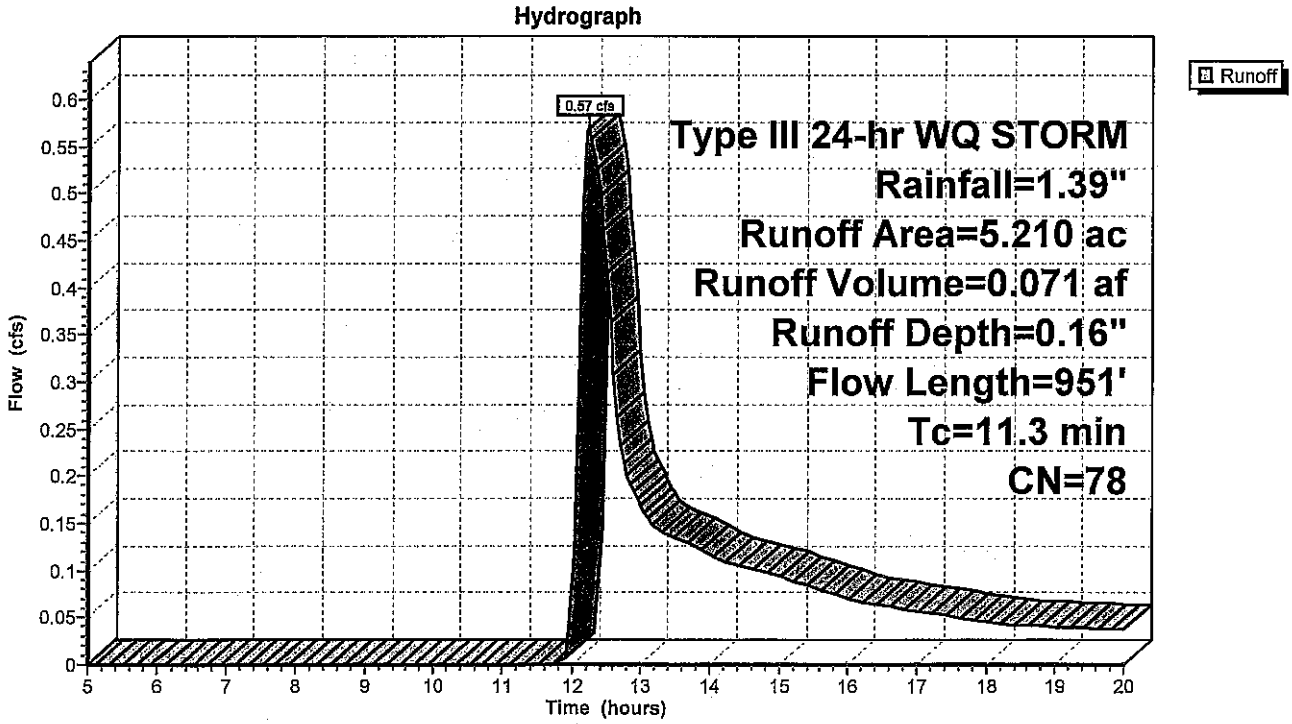
Runoff = 0.57 cfs @ 12.23 hrs, Volume= 0.071 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
4.270	74	>75% Grass cover, Good, HSG C
0.150	76	Woods/grass comb., Fair, HSG C
5.210	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1000	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
2.8	590	0.0490	3.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	261	0.0550	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.3	951	Total			

Subcatchment 3S: SUBCATCHMENT 3S



Subcatchment 4S: SUBCATCHMENT 4S

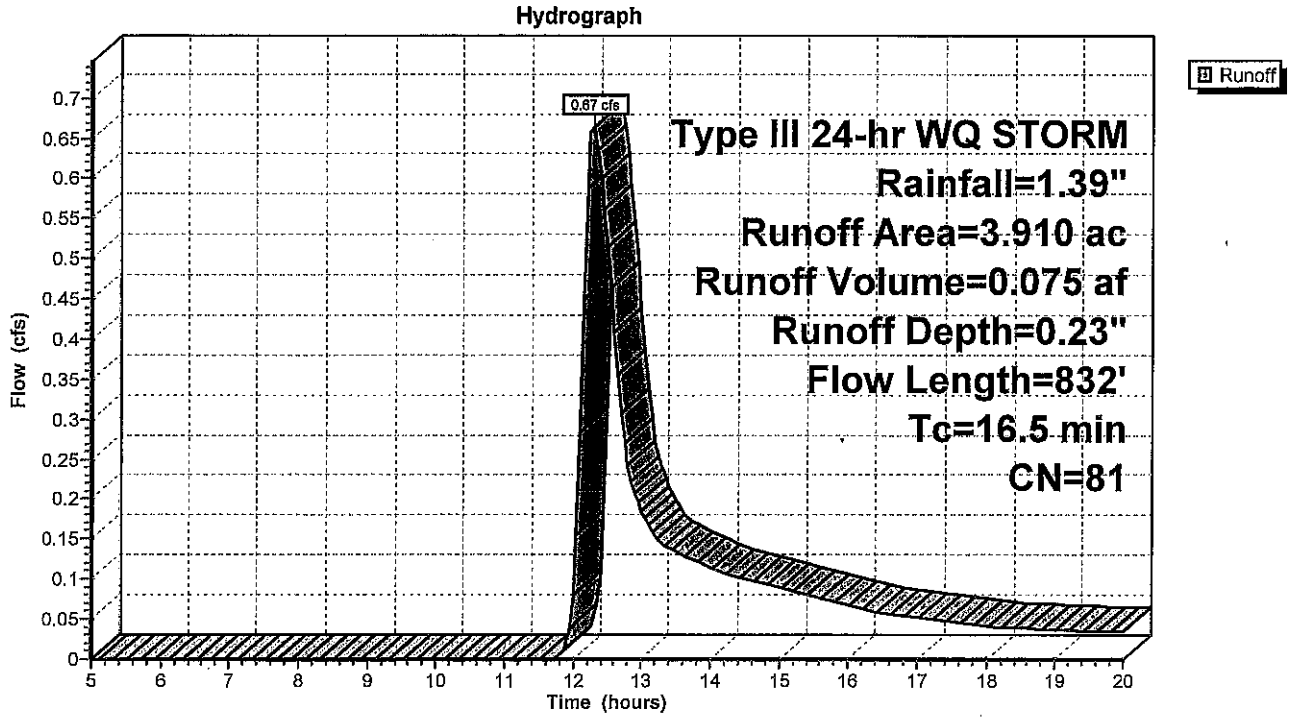
Runoff = 0.67 cfs @ 12.29 hrs, Volume= 0.075 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.39"

Area (ac)	CN	Description
1.050	98	Paved parking & roofs
1.650	74	>75% Grass cover, Good, HSG C
1.070	73	Woods, Fair, HSG C
0.140	98	POND SURFACE
3.910	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
0.5	153	0.1100	5.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	163	0.0610	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	416	0.0625	14.9	26.26	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
16.5	832	Total			

Subcatchment 4S: SUBCATCHMENT 4S



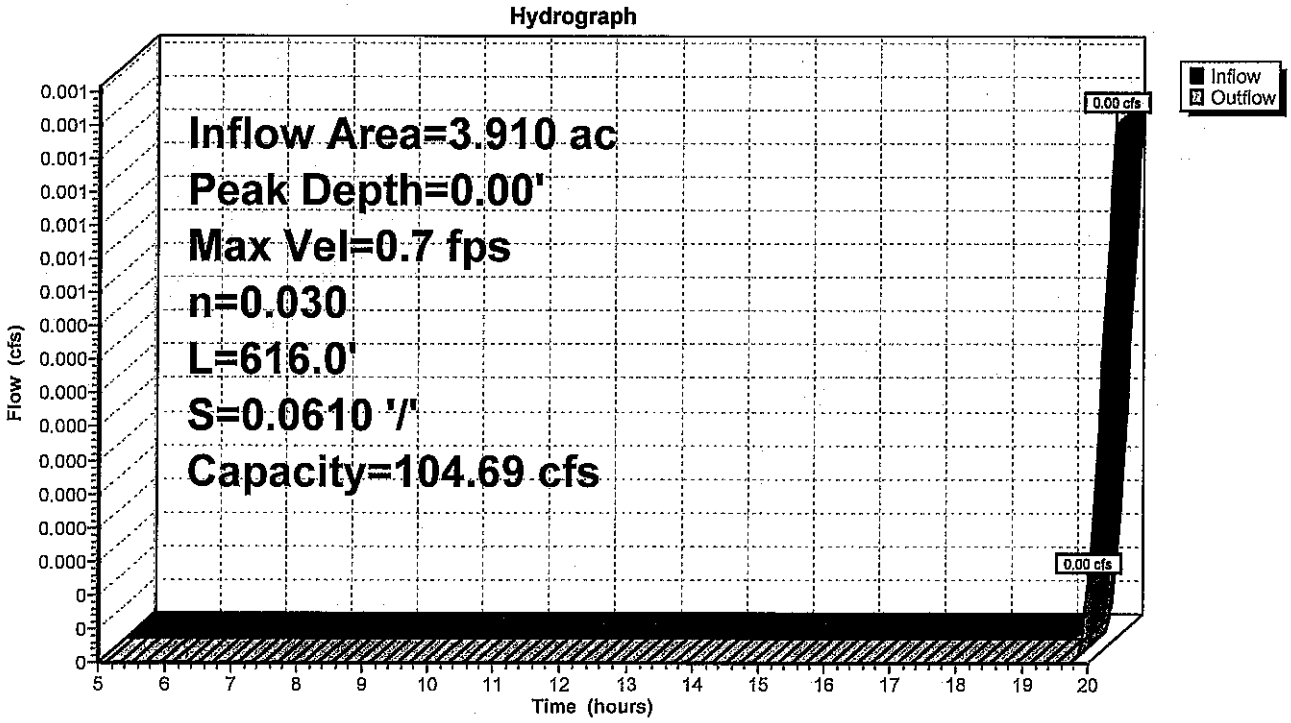
Reach 5R: (new Reach)

Inflow Area = 3.910 ac, Inflow Depth = 0.00" for WQ STORM event
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 85%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.7 fps, Min. Travel Time= 13.9 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 13.9 min

Peak Depth= 0.00' @ 20.00 hrs
Capacity at bank full= 104.69 cfs
Inlet Invert= 410.00', Outlet Invert= 372.42'
3.00' x 1.50' deep channel, n= 0.030 Length= 616.0' Slope= 0.0610 '/'
Side Slope Z-value= 2.0 '/'

Reach 5R: (new Reach)

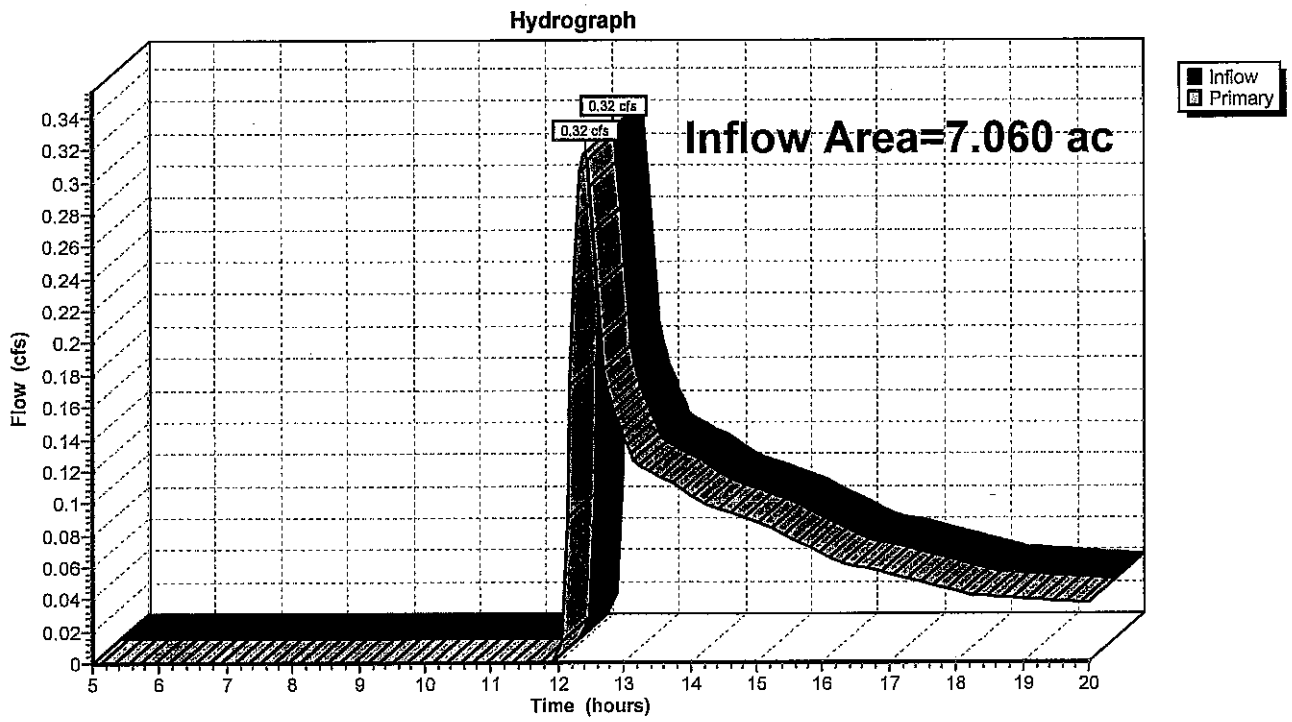


Pond 1P: ON SITE CULVERT PIPE

Inflow Area = 7.060 ac, Inflow Depth = 0.09" for WQ STORM event
Inflow = 0.32 cfs @ 12.41 hrs, Volume= 0.055 af
Primary = 0.32 cfs @ 12.41 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: ON SITE CULVERT PIPE

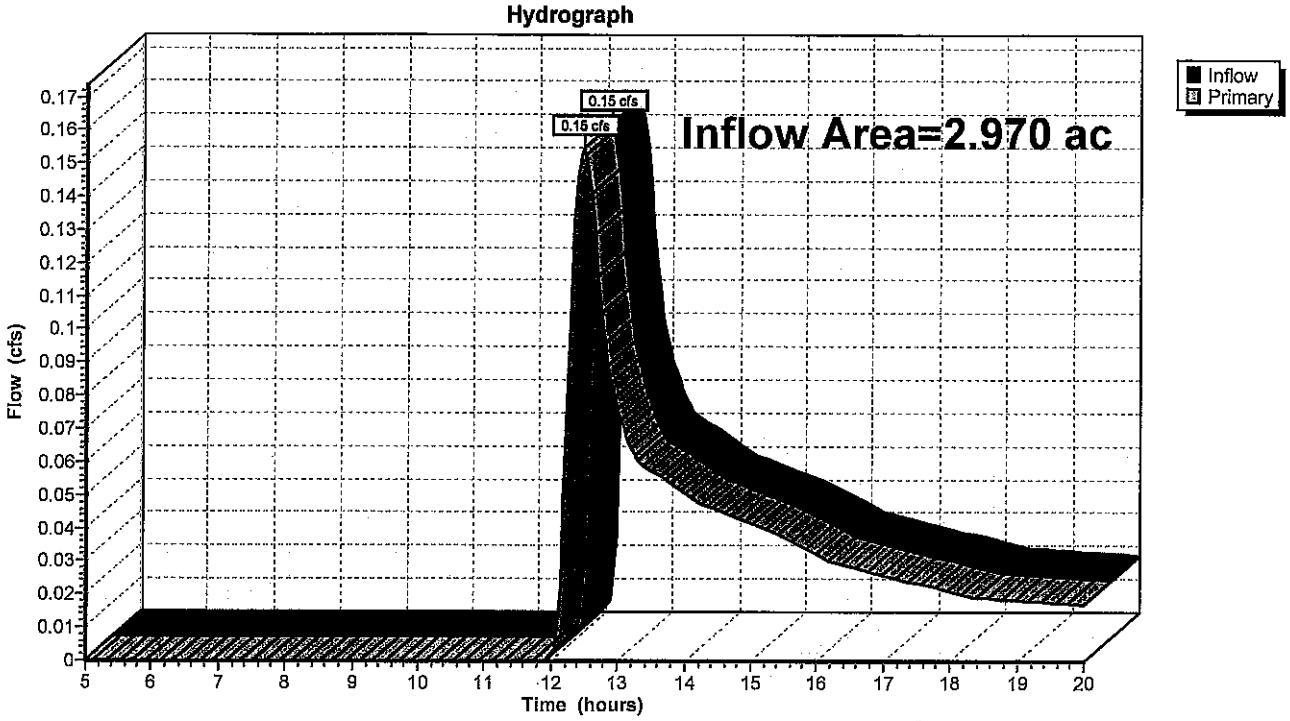


Pond 2P: DESIGN POINT 2P

Inflow Area = 2.970 ac, Inflow Depth = 0.11" for WQ STORM event
Inflow = 0.15 cfs @ 12.49 hrs, Volume= 0.027 af
Primary = 0.15 cfs @ 12.49 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: DESIGN POINT 2P

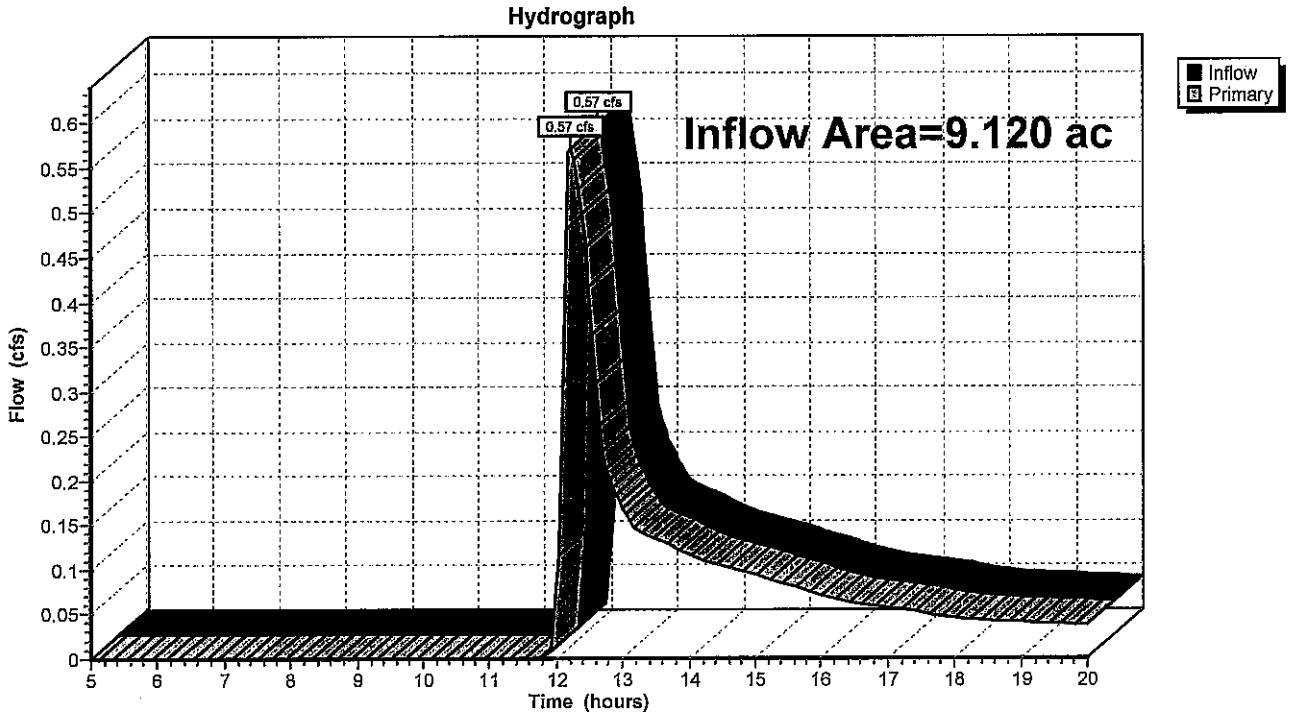


Pond 3P: OFF SITE CULVERT PIPE

Inflow Area = 9.120 ac, Inflow Depth = 0.09" for WQ STORM event
Inflow = 0.57 cfs @ 12.23 hrs, Volume= 0.071 af
Primary = 0.57 cfs @ 12.23 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

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

Pond 3P: OFF SITE CULVERT PIPE



Pond 4P: Type F-5 Bioretention Pond

Inflow Area = 3.910 ac, Inflow Depth = 0.23" for WQ STORM event
Inflow = 0.67 cfs @ 12.29 hrs, Volume= 0.075 af
Outflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 462.9 min
Primary = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 417.51' @ 20.00 hrs Surf.Area= 0 sf Storage= 3,250 cf
Plug-Flow detention time= 482.2 min calculated for 0.000 af (0% of inflow)
Center-of-Mass det. time= 341.9 min (1,192.4 - 850.5)

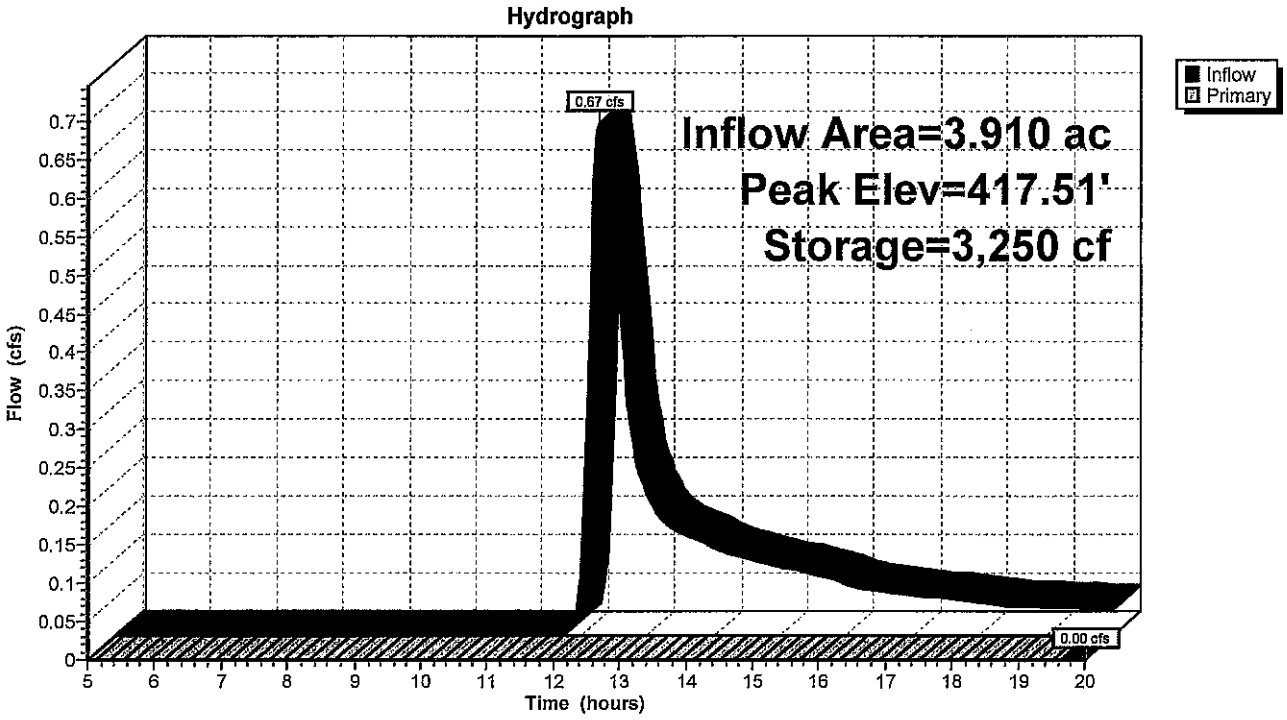
#	Invert	Avail.Storage	Storage Description
1	417.00'	45,796 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
417.00	0
418.00	6,396
420.00	23,049
422.00	45,796

#	Routing	Invert	Outlet Devices
1	Primary	413.00'	**18.0" x 70.0' long Culvert** RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 410.00' S= 0.0429 '/' n= 0.011 Cc= 0.900
2	Device 1	417.50'	**2.4" Vert. Orifice/Grate** C= 0.600
3	Device 1	418.50'	**1.50' x 0.50' Vert. Orifice/Grate** C= 0.600
4	Device 1	420.00'	**1.00' x 1.00' Vert. Orifice/Grate** C= 0.600
5	Device 1	421.00'	**4.00' x 2.50' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Primary OutFlow Max=0.00 cfs @ 20.00 hrs HW=417.51' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 22.49 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.3 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

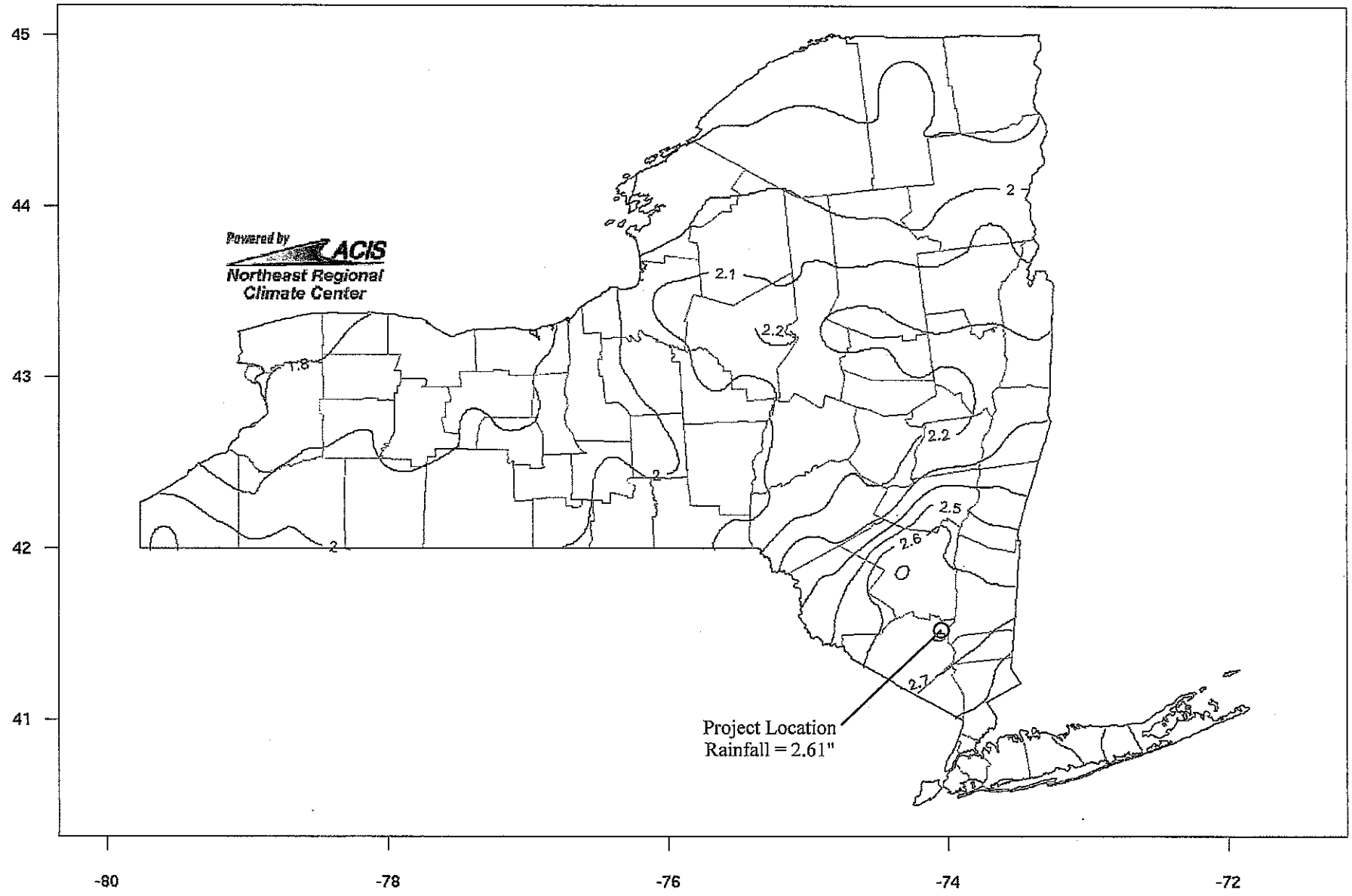
Pond 4P: Type F-5 Bioretention Pond



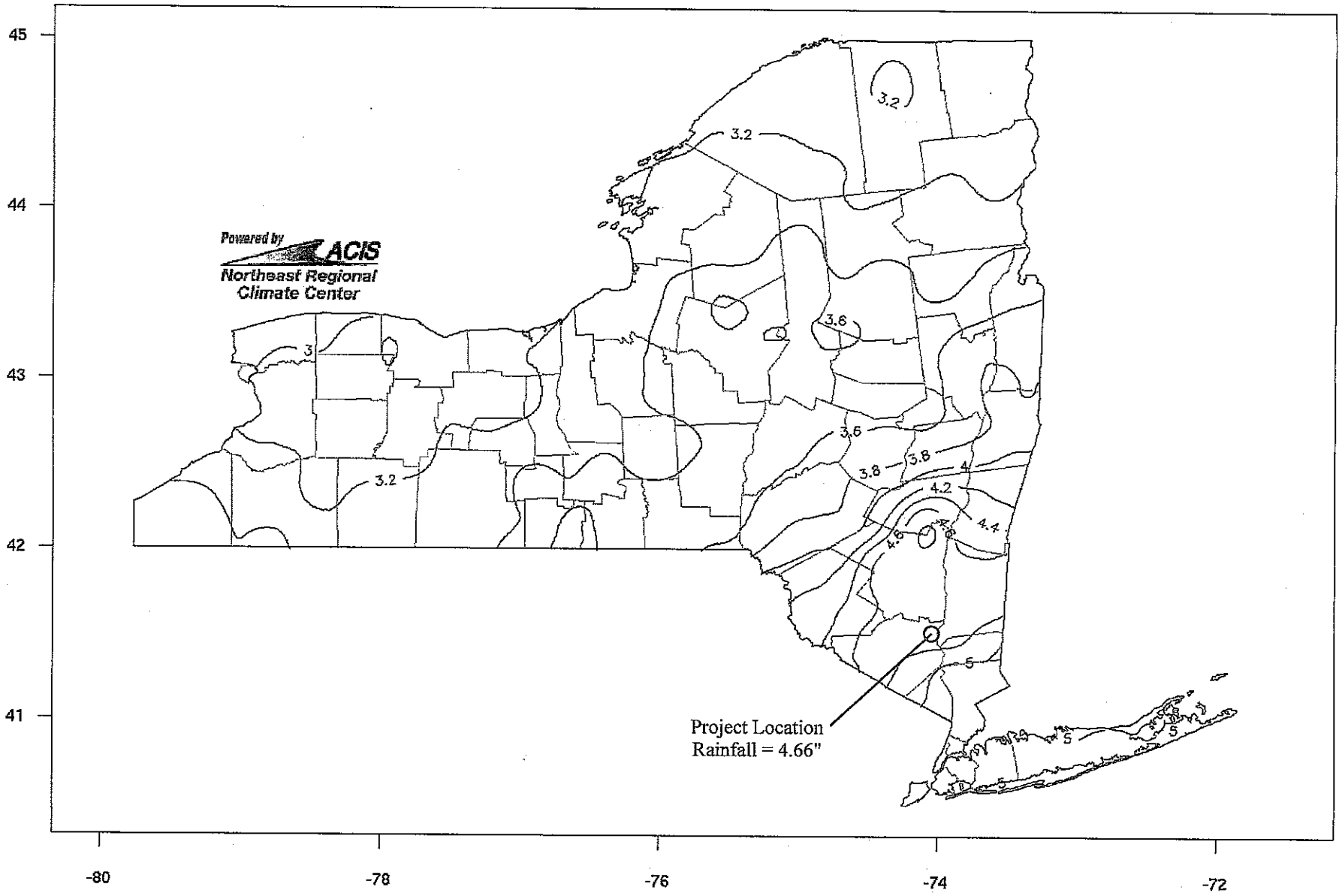
APPENDIX 7

TR-20 Supporting Data

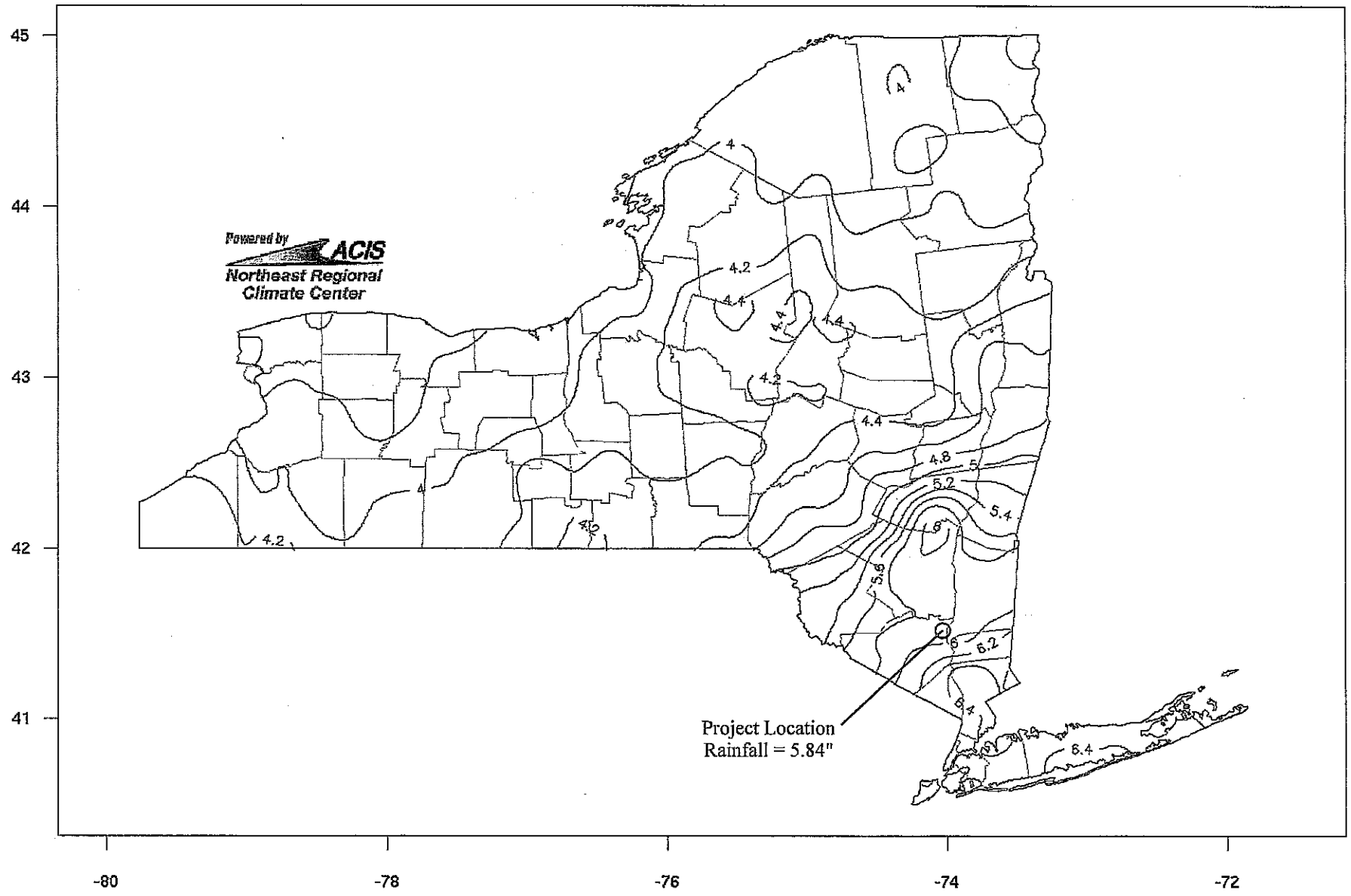
Extreme Precipitation Estimates
24hr 1yr



Extreme Precipitation Estimates
24hr 10yr



Extreme Precipitation Estimates
24hr 25yr



Extreme Precipitation Estimates
24hr 100yr

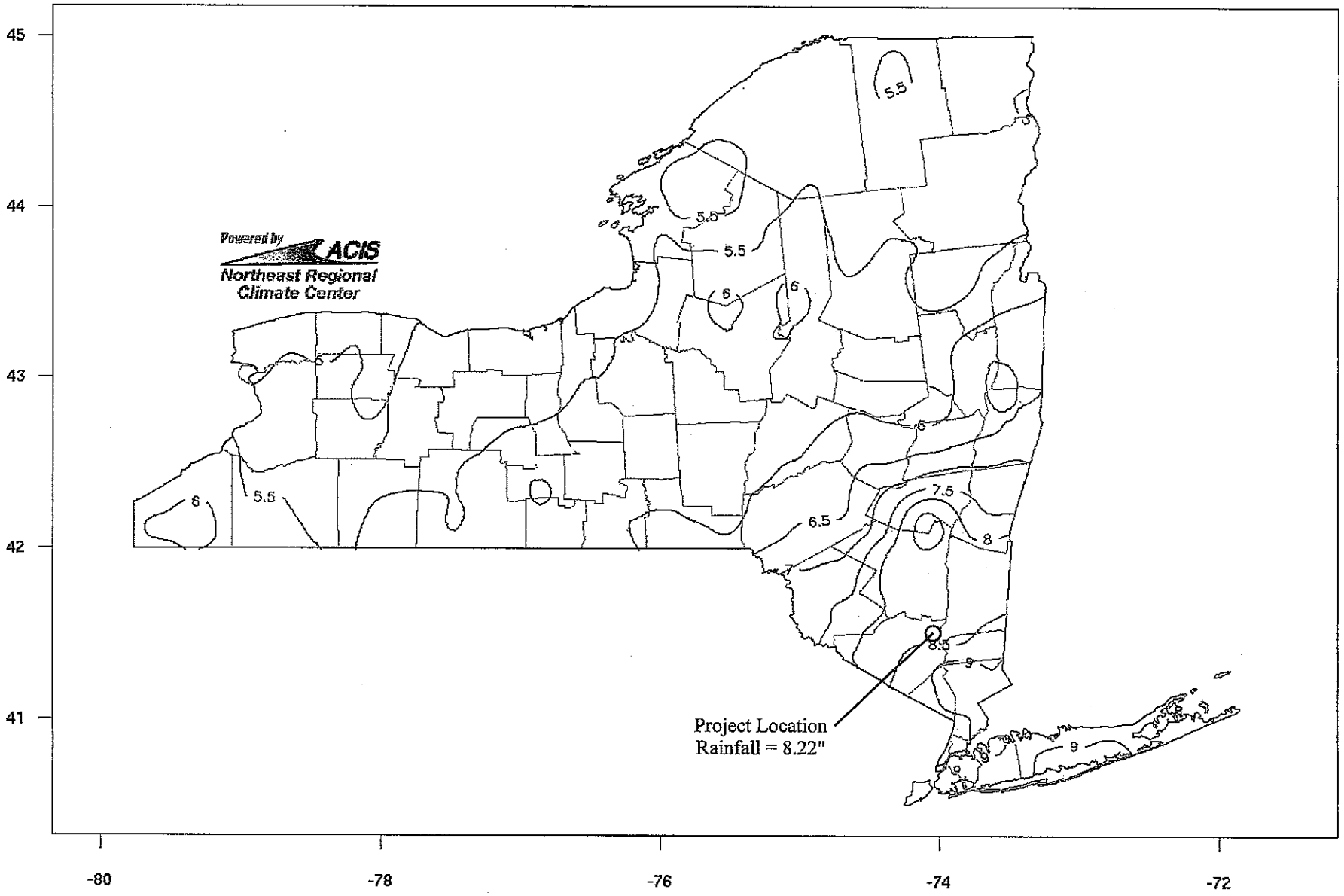
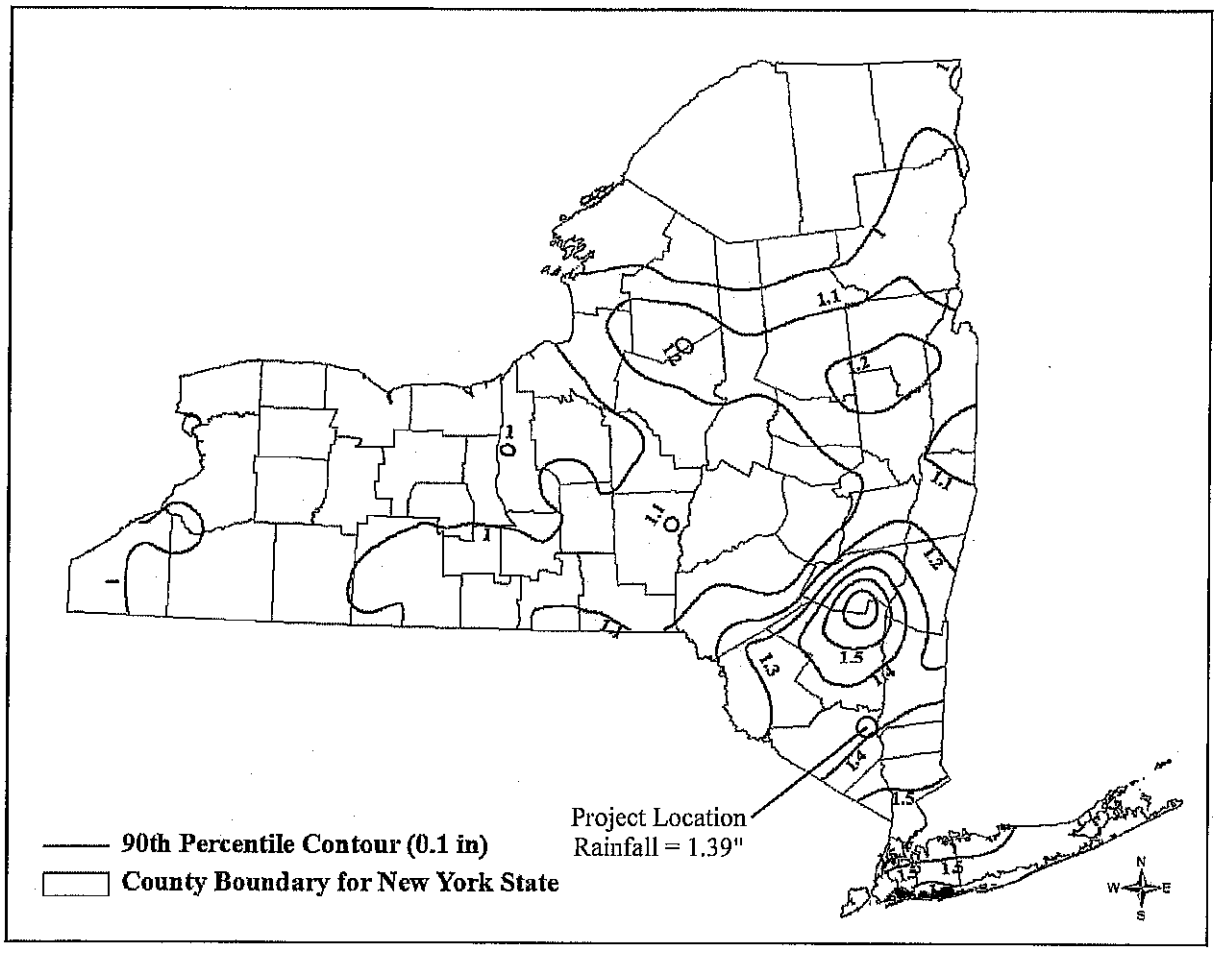


Figure 4.1: 90th Percentile Rainfall in New York State (NYSDEC, 2013)



Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	74.030 degrees West
Latitude	41.548 degrees North
Elevation	0 feet
Date/Time	Tue, 09 Feb 2021 23:47:43 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.32	0.50	0.62	0.81	1.01	1.26	**1yr**	0.87	1.18	1.44	1.76	2.14	2.61	2.97	**1yr**	2.31	2.86	3.31	3.96	4.59	**1yr**
2yr	0.39	0.59	0.74	0.97	1.22	1.52	**2yr**	1.06	1.42	1.74	2.13	2.60	3.15	3.56	**2yr**	2.78	3.42	3.92	4.62	5.26	**2yr**
5yr	0.45	0.71	0.89	1.19	1.52	1.91	**5yr**	1.31	1.75	2.19	2.69	3.26	3.93	4.49	**5yr**	3.48	4.32	4.96	5.72	6.48	**5yr**
10yr	0.51	0.80	1.01	1.38	1.79	2.26	**10yr**	1.54	2.06	2.61	3.20	3.88	4.66	5.37	**10yr**	4.13	5.16	5.93	6.73	7.59	**10yr**
25yr	0.59	0.95	1.21	1.67	2.22	2.84	**25yr**	1.92	2.55	3.29	4.04	4.89	5.84	6.79	**25yr**	5.17	6.53	7.51	8.34	9.36	**25yr**
50yr	0.68	1.09	1.39	1.95	2.62	3.38	**50yr**	2.26	2.99	3.91	4.81	5.81	6.93	8.12	**50yr**	6.13	7.81	8.99	9.81	10.98	**50yr**
100yr	0.77	1.24	1.60	2.28	3.10	4.02	**100yr**	2.68	3.52	4.67	5.74	6.92	8.22	9.71	**100yr**	7.28	9.34	10.77	11.56	12.89	**100yr**
200yr	0.87	1.43	1.85	2.66	3.67	4.78	**200yr**	3.17	4.14	5.57	6.84	8.24	9.77	11.62	**200yr**	8.64	11.18	12.90	13.61	15.13	**200yr**
500yr	1.05	1.73	2.26	3.28	4.60	6.03	**500yr**	3.97	5.14	7.02	8.63	10.38	12.27	14.75	**500yr**	10.86	14.18	16.41	16.92	18.73	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.54	0.73	0.90	1.07	**1yr**	0.78	1.05	1.23	1.55	1.99	2.12	2.39	**1yr**	1.88	2.30	2.72	3.25	3.90	**1yr**
2yr	0.37	0.58	0.71	0.96	1.18	1.41	**2yr**	1.02	1.38	1.60	2.04	2.57	3.05	3.43	**2yr**	2.70	3.29	3.74	4.44	5.08	**2yr**
5yr	0.42	0.64	0.80	1.10	1.40	1.64	**5yr**	1.21	1.60	1.86	2.40	2.99	3.62	4.10	**5yr**	3.20	3.95	4.51	5.17	5.98	**5yr**
10yr	0.46	0.71	0.88	1.23	1.59	1.83	**10yr**	1.38	1.79	2.08	2.69	3.35	4.10	4.69	**10yr**	3.63	4.51	5.16	5.78	6.76	**10yr**
25yr	0.53	0.81	1.01	1.44	1.90	2.11	**25yr**	1.64	2.06	2.41	3.03	3.90	4.83	5.61	**25yr**	4.27	5.39	6.15	6.68	7.98	**25yr**
50yr	0.59	0.90	1.12	1.62	2.18	2.34	**50yr**	1.88	2.29	2.70	3.39	4.38	5.47	6.41	**50yr**	4.84	6.17	7.03	7.44	9.07	**50yr**
100yr	0.67	1.01	1.26	1.83	2.50	2.62	**100yr**	2.16	2.56	3.04	3.78	4.94	6.18	7.33	**100yr**	5.47	7.05	8.04	8.24	10.33	**100yr**
200yr	0.75	1.14	1.44	2.08	2.90	2.92	**200yr**	2.51	2.85	3.41	4.24	5.56	6.95	8.40	**200yr**	6.15	8.08	9.20	9.10	11.80	**200yr**
500yr	0.90	1.33	1.72	2.49	3.55	3.39	**500yr**	3.06	3.31	4.00	4.94	6.54	8.14	10.03	**500yr**	7.21	9.65	11.02	10.34	14.10	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.35	0.55	0.67	0.90	1.11	1.34	**1yr**	0.95	1.31	1.52	1.94	2.41	2.85	3.25	**1yr**	2.52	3.13	3.68	4.24	5.04	**1yr**
2yr	0.40	0.62	0.76	1.03	1.27	1.53	**2yr**	1.10	1.49	1.73	2.23	2.78	3.30	3.70	**2yr**	2.92	3.56	4.14	4.83	5.49	**2yr**
5yr	0.49	0.76	0.94	1.29	1.65	1.95	**5yr**	1.42	1.91	2.25	2.87	3.63	4.25	4.90	**5yr**	3.76	4.71	5.42	6.28	7.02	**5yr**
10yr	0.58	0.90	1.11	1.55	2.01	2.38	**10yr**	1.73	2.32	2.74	3.52	4.44	5.20	6.05	**10yr**	4.60	5.81	6.71	7.69	8.49	**10yr**
25yr	0.73	1.11	1.38	1.97	2.59	3.08	**25yr**	2.24	3.01	3.58	4.72	5.81	6.78	8.02	**25yr**	6.00	7.71	8.94	10.08	10.92	**25yr**
50yr	0.86	1.31	1.63	2.35	3.16	3.76	**50yr**	2.73	3.68	4.38	5.82	7.11	8.29	9.93	**50yr**	7.34	9.55	11.12	12.39	13.21	**50yr**
100yr	1.02	1.55	1.94	2.80	3.84	4.59	**100yr**	3.31	4.49	5.36	7.19	8.72	10.16	12.31	**100yr**	8.99	11.83	13.83	15.25	15.97	**100yr**
200yr	1.21	1.82	2.31	3.34	4.66	5.60	**200yr**	4.02	5.47	6.57	8.88	10.68	12.45	15.28	**200yr**	11.02	14.69	17.21	18.80	19.31	**200yr**
500yr	1.52	2.27	2.92	4.24	6.03	7.29	**500yr**	5.20	7.13	8.60	11.74	13.98	16.33	20.33	**500yr**	14.45	19.55	23.03	24.86	24.81	**500yr**

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Northeast Regional Climate Center

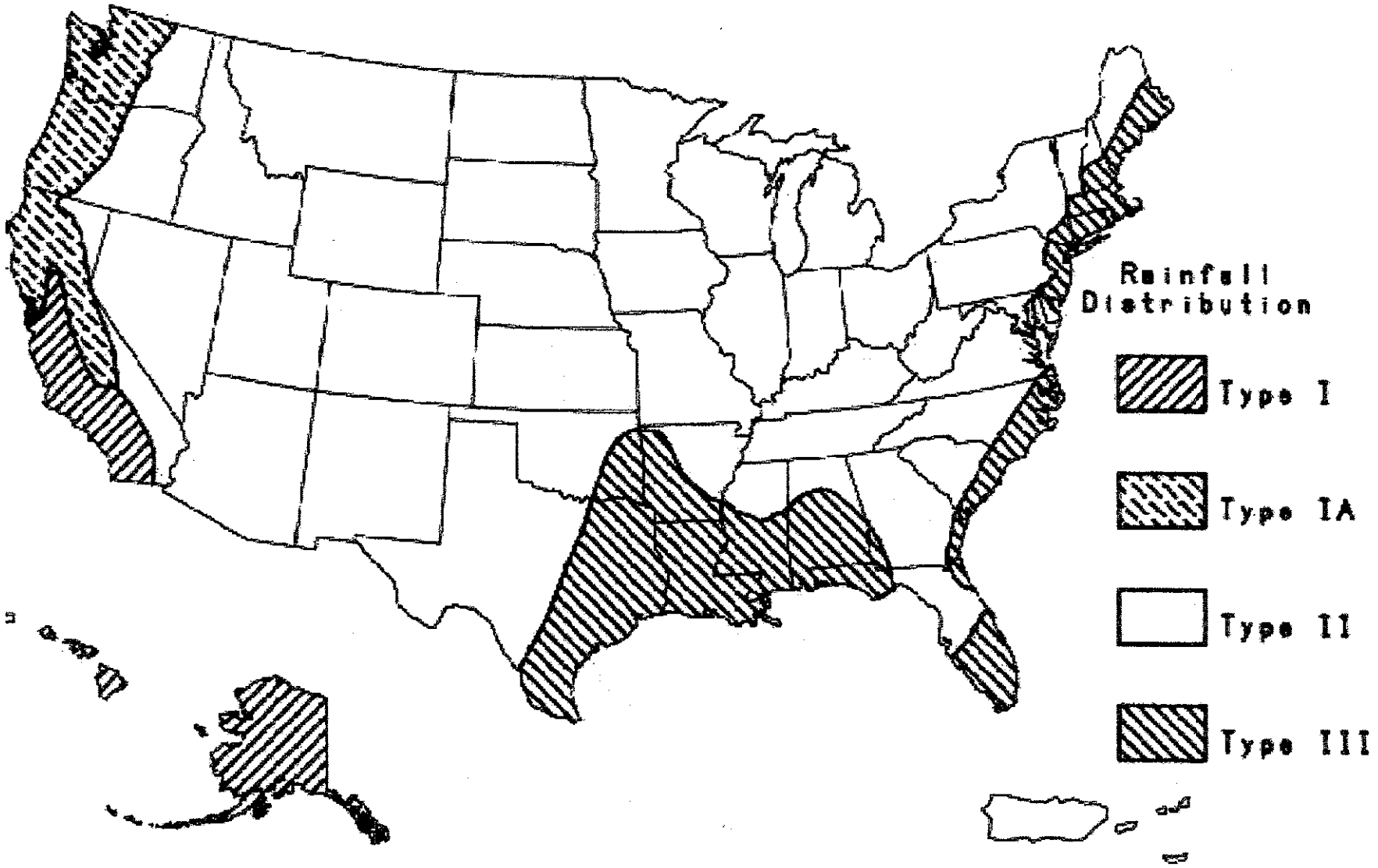


Figure B-2.—Approximate geographic boundaries for SCS rainfall distributions.

United States Department of Agriculture

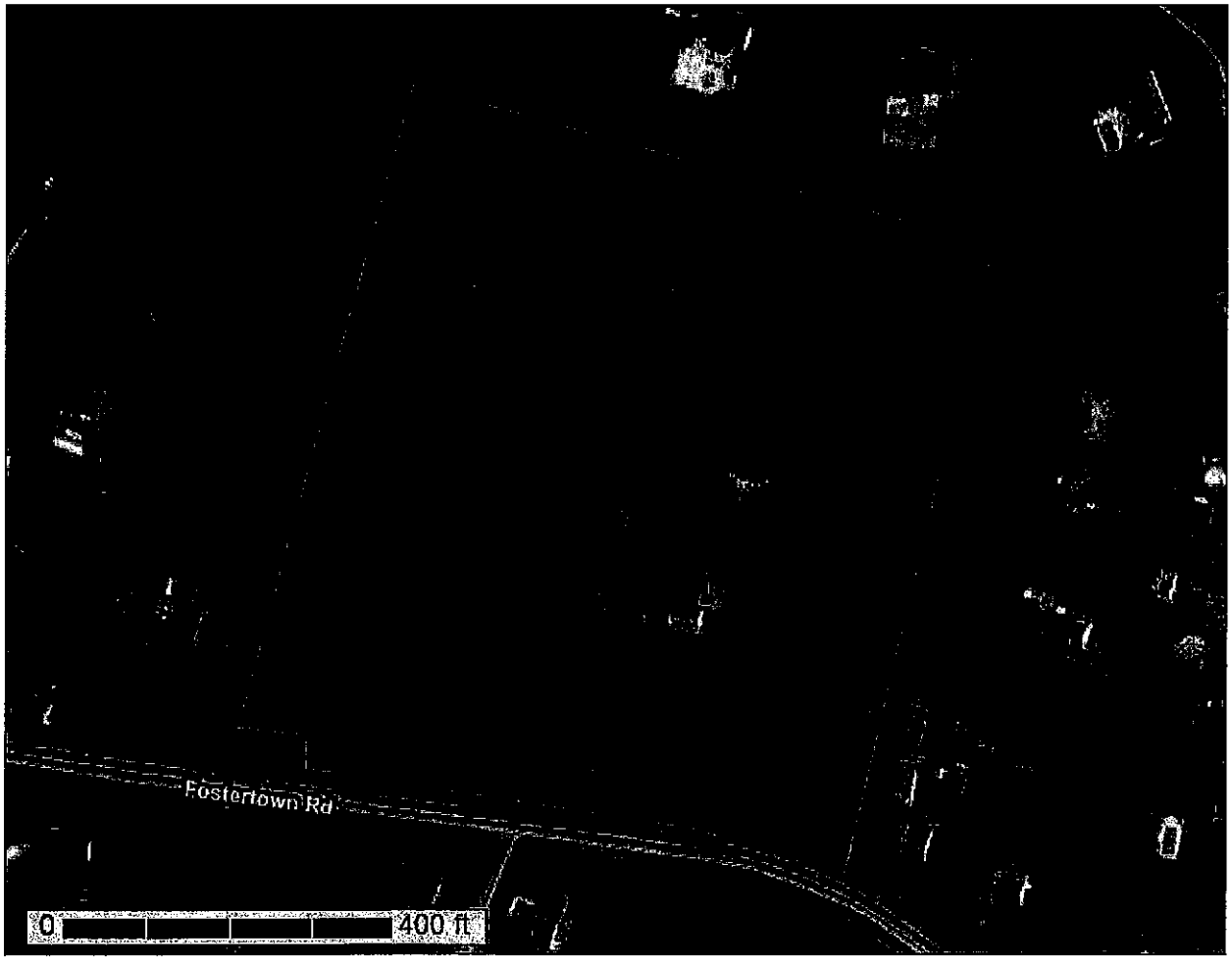
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Orange County, New York

Lands of Zazon Soils Report



February 9, 2021

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,150 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N 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 1:15,800.

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: Orange County, New York
Survey Area Data: Version 21, Jun 11, 2020

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

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ESB	Erie extremely stony soils, gently sloping	3.2	23.7%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	5.7	42.6%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	2.9	21.6%
SXC	Swartswood and Mardin soils, sloping, very stony	1.6	12.1%
Totals for Area of Interest		**13.4**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Orange County, New York

ESB—Erie extremely stony soils, gently sloping

Map Unit Setting

National map unit symbol: 9vvb
Elevation: 180 to 1,460 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Erie, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie, Extremely Stony

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 4 inches: gravelly silt loam
H2 - 4 to 18 inches: channery silt loam
H3 - 18 to 50 inches: channery silt loam
H4 - 50 to 70 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Mardin

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

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wurtsboro

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

Bath

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

MdB—Mardin gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2v30j
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

MdC—Mardin gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v30l
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

SXC—Swartswood and Mardin soils, sloping, very stony

Map Unit Setting

National map unit symbol: 2v30r
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Swartswood, very stony, and similar soils: 41 percent
Mardin, very stony, and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swartswood, Very Stony

Setting

Landform: Hills, till plains
Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from quartzite, conglomerate, and sandstone

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 31 inches: gravelly fine sandy loam
H3 - 31 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 23 to 31 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Description of Mardin, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: gravelly silt loam
Bw - 4 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Volusia, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wurtsboro, very stony

Percent of map unit: 5 percent
Landform: Hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

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APPENDIX 8

Stormwater Quality and Runoff Reduction – Calculations & Supporting Data

Lands of Zazon

Water Quality Volume (WQ_v) Calculation for Entire Project Drainage Area

Utilize 90% Rule:

$$WQ_v = [(P) (R_v) (A)] / 12$$

WQ_v = Water Quality Volume (acre-feet)
$R_v = 0.05 + 0.009 (I)$
I = Impervious Cover (Percent)
P = 90% Rainfall Event Number = 1.39 inches
A = Drainage Area in acres

Calculate Impervious Cover (%):

Drainage Area (A) =	13.56	acres
New Impervious area within Site Area =	1.49	acres

Impervious Cover (I) = 11.0 %

Calculate Volumetric Runoff Coefficient (R_v):

$$R_v = 0.05 + 0.009 (I)$$
R_v = 0.15

Use R_v -> 0.15

90% Rainfall Event Number Utilized:

P = 1.39 inches

Calculate Water Quality Volume:

$$WQ_v = [(P) (R_v) (A)] / 12$$

WQ_v = 0.234 acre-feet
= **10187** **ft^3**

Lands of Zazon

Minimum Runoff Reduction Volume (RRv) Calculation

$$RRv = [(P) (R_v) (Ai)] / 12$$

RRv = Runoff Reduction Volume (acre-feet)

$R_v = 0.05 + 0.009 (I)$

(Where I = 100%)

I = Impervious Cover (Percent)

P = 90% Rainfall Event Number = 1.39 inches

Ai = Impervious Cover Targeted for Runoff Reduction = (S) (Aic)

Aic = Total Area of New Impervious Cover

S = Hydrologic Soil Group (HSG) Specific Reduction Factor

S for HSG A =0.55

S for HSG B =0.40

S for HSG C =0.30

S for HSG D =0.20

Calculate Specific Reduction Factor (S)

Total Drainage Area (A) =	13.56	acres
Total Area of HSG A	0.00	acres
Total Area of HSG B	0.00	acres
Total Area of HSG C	1.60	acres
Total Area of HSG D	11.96	acres

$$S = [(HSG\ A)(0.55) + (HSG\ B)(0.40) + (HSG\ C)(0.30) + (HSG\ D)(0.20)] / A$$

S = 0.2118

Calculate Impervious Cover Targeted for Runoff Reduction (Ai)

$$Ai = (S) (Aic)$$

Aic = Total Area of New Impervious Cover = 1.49 acres

Ai = 0.32 acres

Calculate Volumetric Runoff Coefficient (R_v):

$$R_v = 0.05 + 0.009 (I)$$

R_v = 0.95

90% Rainfall Event Number Utilized:

P = 1.39 inches

Calculate Minimum Runoff Reduction Volume:

$RRv = [(P) (R_v) (Ai)] / 12$

RRv = 0.035 acre-feet

RRv = 1513 ft^3

Lands of Zazon

Rain Garden Design

Step 1: Calculate the Water Quality Volume (WQ_v)

$$WQ_v = [\ (P)\ (R_v)\ (A)\ ] / 12$$

WQ_v = Water Quality Volume (acre-feet)
P = 90% Rainfall Event Number = 1.39 inches
$R_v = 0.05 + 0.009\ (I) = 0.05+0.009(100) = 0.95$
I = Impervious Cover (Percent) = 100%
A = Drainage Area = 750 ft^2

WQ_v = 83 ft^3

Step 2: Solve for Drainage Layer and Soil Media Storage Volume:

$$V_{SM} = A_{RG} \times D_{SM} \times P_{SM}$$
$$V_{DL} = A_{RG} \times D_{DL} \times P_{DL}$$

A_{RG} = Proposed Rain Garden Surface Area =	200	ft^2
D_{SM} = Depth of Soil Media =	1.0	ft
D_{DL} = Depth of Drainage Layer =	0.5	ft
P_{SM} = Porosity of Soil Media =	0.20	
P_{DL} = Porosity of Drainage Layer =	0.40	

V_{SM} = 40 ft^3
V_{DL} = 40 ft^3

Step 3: Calculate the Provided Water Quality:

$$WQ_v = V_{SM} + V_{DL} + (\ D_P \times A_{RG}\ )$$

D_P = Ponding Depth = 0.50 ft

WQ_v =	180	ft^3

180 ft^3 is added to the Runoff Reduction Volume (RRv)

Lands of Zazon

Total Runoff Reduction Volume (RRv) Contributed by Rain Gardens on Lots 1, 2, 3, 4, 5, 6, 7, 8, and 10

Total RRv = 40% of the sum of Rain Garden WQ_v

Total Rain Garden RRv = 0.40 x (180 ft^3 x 18) = 1296 ft^3

Total Rain Garden RRv =	**0.030**	**acre-feet**

Remaining Required RRv:

Previous Calculated WQv = 0.035 acre-feet

Remaining RRv = Previous Calculated WQv - Rain Garden RRv

Remaining RRv =	**0.005**	acre-feet
=	**229**	**ft^3**

Lands of Zazon

Bioretention Basin Design (Pond 3P)

Step 1: Calculate the Water Quality Volume (WQ_v)

$$WQ_v = [\ (P)\ (R_v)\ (A)\ ] / 12$$

WQ_v = Water Quality Volume (acre-feet)
P = 90% Rainfall Event Number = 1.39 inches
$R_v = 0.05 + 0.009\ (I)$

I = Impervious Cover (Percent) =	27.1	%
A = Drainage Area =	3.9	acres

WQ_v =	0.13	ac-ft
WQ_v =	5738.94	ft^3

Step 2: Determine size of bioretention filter area:

$$A_f = (WQ_v)\ (d_f) / [(k)\ (h_f + d_f)\ (t_f)]$$

d_f = filter bed depth =	2.5	ft
k = coefficient of permeability of filter media =	0.5	ft/day
h_f = average height of water above filter bed =	0.5	ft
t_f = design filter bed drain time =	2.00	days

A_f (Required) =	4782.45
A_f (Provided) =	5940.00

Step 3: Determine size of pretreatment:

Pretreatment size = 1/4 of the WQ_v =	1435	ft^3
Pretreatment Provided =	1841	ft^3 Sedimentation Basin

Step 4: Determine size of underdrain area:

Underdrain size = (10% of A_f)/3' zone of influence =	159	ft
Provided =	165	ft

Step 4: Calculate Stream Channel Protection Volume (Cp_v):

Stream Channel Protection Volume (Cp_v) Calculated using HydroCAD Software:

Cp_v = 0.305 acre-feet

Step 6: Calculate Stream Channel Protection Volume (Cp_v) Release Rate:

Release Cp_v over a 24 hour period:

(Cp_v acre-feet * 43560 ft^2 / acre) / (24 hours * 3600 sec / hour)

Required Release Rate =	0.15	ft^3 / sec
Provided Release Rate =	0.14	ft^3 / sec

Lands of Zazon

Total Runoff Reduction Volume (RRv) Contributed by Bioretention Utilization:

Total RRv = 40% of the WQ_v provided by the practice (HSG C & D)

Bioretention WQv Required=	5738.94	ft^3
Bioretention WQv Provided=	7128.00	ft^3
Total Bioretention RRv:	2851.20	ft^3

Total Bioretention RRv =	**0.065**	**acre-feet**

Lands of Zazon

Runoff Reduction Volume (RRv) Summary:

Total RRv Calculated =

Total RRv Required per Calculation =	10,187	ft^3
Minimum RRv Required per Calculation =	1,513	ft^3
RRv Provided Utilizing Rain Gardens =	1296	ft^3
RRv Provided Utilizing Bioretention Pond =	2,851	ft^3
Total RRv Provided =	4,147	ft^3

:. Meets Minimum RRv Required, Utilized SMP for remaining RRv:

Remaining Required RRv:

Total RRv Required - RRv Provided Utilizing GI =	6,040	ft^3

APPENDIX 9

Soil Restoration

5.1.6 Soil Restoration

Description

Soil Restoration is a required practice applied across areas of a development site where soils have been disturbed and will be vegetated in order to recover the original properties and porosity of the soil. Healthy soil is vital to a sustainable environment and landscape. A deep, well drained soil, rich in organic matter, absorbs rainwater, helps prevent flooding and soil erosion, filters out water pollutants, and promotes vigorous plant growth that requires less irrigation, pesticides, and fertilizer.

Soil Restoration is applied in the cleanup, restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate, deep-rooted groundcover to help maintain the restored soil structure. Soil restoration includes mechanical decompaction, compost amendment, or both.

Many runoff reduction practices need Soil Restoration measures applied over and adjacent to the practice to achieve runoff reduction performance. (See typical compacted soil in Figure 5.15). Consult individual profile sheets for specific design criteria.

Figure 5.14 Shows typical compacted soils that nearly reach the bulk density of concrete (Schueler et al 2000)

Key Benefits

- More marketable buildings and landscapes
- Less stormwater runoff, better water quality
- Healthier, aesthetically pleasing landscapes
- Increased porosity on redevelopment sites where impervious cover is converted to pervious
- Achieves performance standards on runoff reduction practices
- Decreases runoff volume generated and lowers the demand on runoff control structures
- Enhances direct groundwater recharge
- Promotes successful long-term revegetation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout during dry periods

Typical Perceived Obstacles and Realities

- Higher cost due to soil restoration- *application of soil de-compaction and enhancement may have additional initial cost; however, they provide benefit in reducing the need for conveyance structures.*

- Space constraints and obstruction for use of equipment - *post construction space may limit the ability of some of the de-compaction equipment, however, alternative equipment and sensible planning help overcome this obstacle.*

Discussion

Tilling exposes compacted soil devoid of oxygen to air and recreates temporary air space. In addition, research has shown that the incorporation of organic compost, can greatly improve temporary water storage in the soil and subsequent runoff reduction through infiltration and evapotranspiration.

Soils that have a permanent high water table close to the surface (0-12 inches), either influenced by a clay or other highly impervious layer of material, may have bulk densities so naturally high that compaction has little added impact on infiltration (Lacey 2008). However, these soils will still benefit from the addition of compost. The water holding capacity, penetration, structural stability, and fertility of clay soils were improved with compost mixing (Avnimelech and Cohen 1988).

Table 5.3 describes various soil disturbance activities related to land development, soil types and the requirements for soil restoration for each activity. Soil Restoration or modification of curve numbers is a required practice. Restoration is applied across areas of a development site where soils have been compacted and will be vegetated according to the criteria defined in Table 5.3. If Soil Restoration is not applied according to these criteria, designers are required to:

a) Increase the calculated WQv by factoring in the compacted areas that have not been kept as impervious cover (including areas of cut or fill, heavy traffic areas on site, or Impervious Cover reduction in redevelopment projects unless aeration or full soil restoration is applied, per Table 5.3).

b) Change by one level the post-construction hydrologic soil group (HSG) to a less permeable group than the original condition. This is applied to all volumetric and discharge rate control computations.

Table 5.3 Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A &B	HSG C&D	Protect area from any ongoing construction activities.
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A &B	HSG C & D	
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per "Deep Ripping and De-compaction, DEC 2008".

Using this Practice

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1) Apply 3 inches of compost over subsoil

2) Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller, mixing, and circulating air and compost into subsoils

3) Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site

4) Apply topsoil to a depth of 6 inches

5) Vegetate as required by approved plan.

Figure 5.15 Soil aerator implement

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. Figures 5.16 and 5.17 show two attachments used for soil decompaction. Tilling (step 2 above) should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

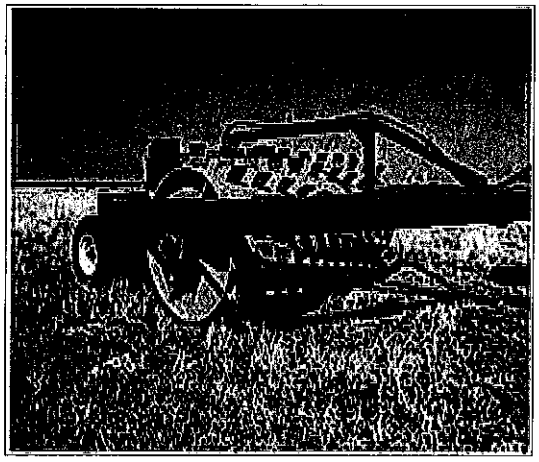
COMPOST SPECIFICATIONS

Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

Maintenance

A simple maintenance agreement should identify where Soil Restoration is applied, where newly restored areas are/cannot be cleared, who the responsible parties are to ensure that routine vegetation improvements are made (i.e., thinning, invasive plant removal, etc.). Soil compost amendments within a filter strip or grass channel should be located in public right of way, or within a dedicated stormwater or drainage easement.

Figure 5.16 Soil aerator implement



First year maintenance operations includes:

- Initial inspections for the first six months (once after each storm greater than half- inch)

- Reseeding to repair bare or eroding areas to assure grass stabilization
- Water once every three days for first month, and then provide a half inch of water per week during first year. Irrigation plan may be adjusted according to the rain event.
- Fertilization may be needed in the fall after the first growing season to increase plant vigor
- Ongoing Maintenance:

  Two points help ensure lasting results of decompaction:

  1) Planting the appropriate ground cover with deep roots to maintain the soil structure
  2) Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few years)

References/Further Resources

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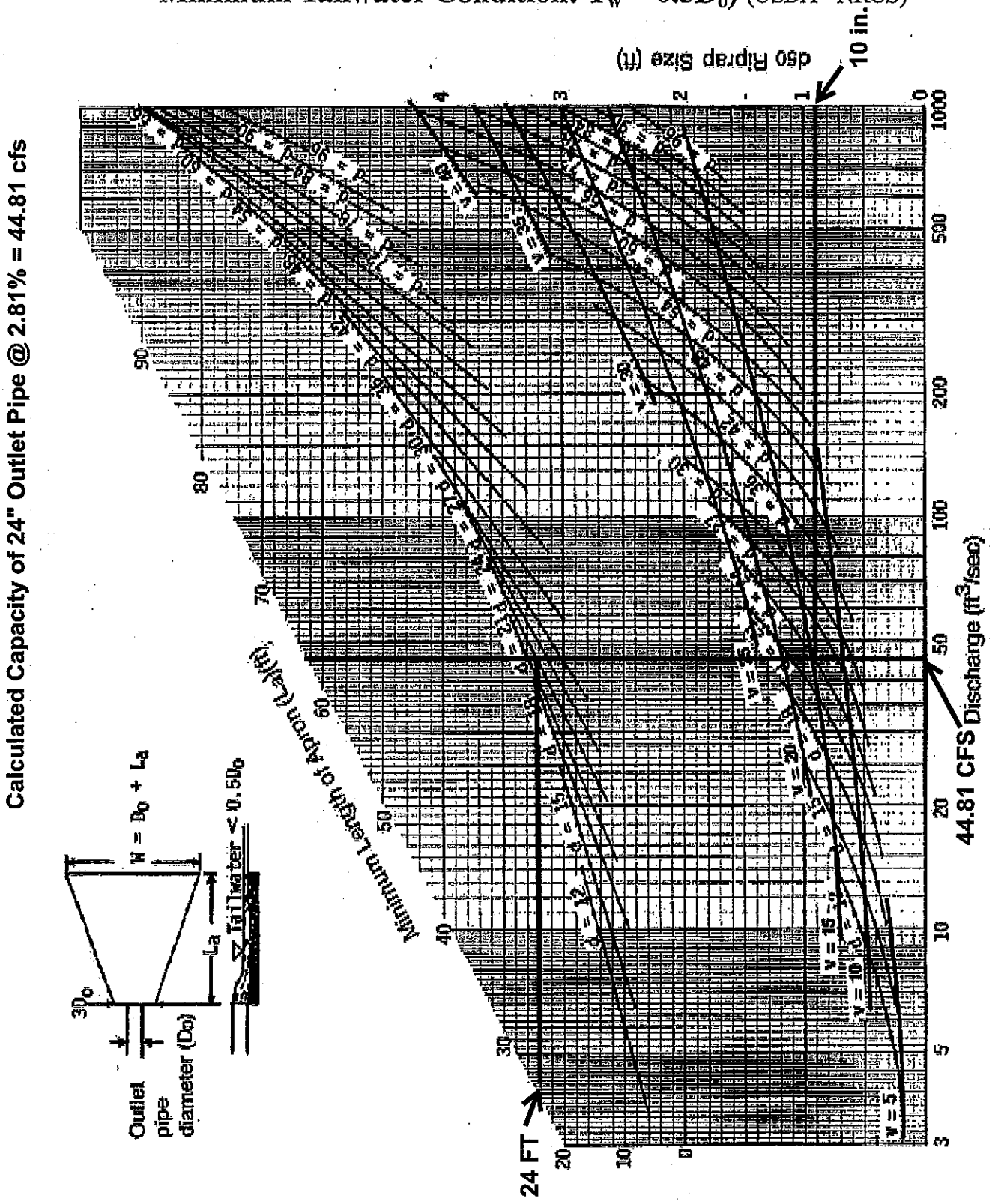
US Composting Council, www.compostingcouncil.org

APPENDIX 10

Outlet Protection Calculations

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



APPENDIX 11

Pipe Sizing Calculations

PROPOSED CONDITIONS OFF SITE CULVERTS

LANDS OF ZAZON
NEWBURGH
ORANGE COUNTY, NEW YORK

23153.01

ASSUMED VALUES					RUNOFF COEFFICIENTS			GENERAL INFORMATION	
TIME OF CONCENTRATION:	10	min	IMPERVIOUS:	0.9	CALCULATED BY:	TBE
RAINFALL INTENSITY:	6.5	in/hr	PERVIOUS:	0.3	CHECKED BY:	
n FACTOR:	0.01				DATE OF COMPLETION:	2/1/2005

PIPE RUN		CONTRIBUTING AREAS (ac)			AREAS (ac)		STORM FLOWS (cfs)		PIPE DESIGN INFORMATION			PIPE ANALYSIS		
FROM	TO	PERVIOUS AREA	IMPERVIOUS AREA	WEIGHTED C VALUE	SUBBASIN	CUMULATIVE	PEAK FLOW (SB ONLY)	CUMULATIVE FLOW	SIZE (in)	SLOPE (ft/ft)	MAX Q (cfs)	CALC. Q (cfs)	MAX Q (cfs)	UTILIZED CAP (%)
POND OUTLET	SWALE	-	-	-	7.11	7.11	7.11	7.11	18	0.0172	14.90	7.11	14.90	47.72%
	DRIVEWAY 1 CULVERT	0.60	0.01	0.89	0.61	7.72	3.53	10.64	15	0.1100	23.30	10.64	23.30	45.66%
	DRIVEWAY 2 CULVERT	-	-	-	-	7.72	3.53	10.64	15	0.0860	22.30	10.64	22.30	47.71%
	DRIVEWAY 13 CULVERT	-	-	-	-	7.72	3.53	10.64	15	0.0420	15.60	10.64	15.60	68.21%
	DRIVEWAY 4 CULVERT	-	-	-	-	7.72	3.53	10.64	15	0.0520	17.40	10.64	17.40	61.15%
	DRIVEWAY 15 CULVERT	-	-	-	-	7.72	3.53	10.64	15	0.0500	17.00	10.64	17.00	62.59%
	FROZEN RIDGE RD. CULVERT	-	-	-	21.50	21.50	21.50	21.50	18	0.0477	24.80	21.50	24.80	86.69%

EXISTING CONDITIONS OFF SITE CULVERTS

LANDS OF ZAZON
NEWBURGH
ORANGE COUNTY, NEW YORK

23153.01

ASSUMED VALUES

TIME OF CONCENTRATION:	10	min
RAINFALL INTENSITY:	6.5	in/hr
n FACTOR:	0.01	

RUNOFF COEFFICIENTS

IMPERVIOUS:	0.9
PERVIOUS:	0.3

GENERAL INFORMATION

CALCULATED BY:	TBE
CHECKED BY:	
DATE OF COMPLETION:	5/20/2005

PIPE RUN	CONTRIBUTING AREAS (ac)			AREAS (ac)		STORM FLOWS (cfs)		PIPE DESIGN INFORMATION			PIPE ANALYSIS		
	PERVIOUS AREA	IMPERVIOUS AREA	WEIGHTED C VALUE	SUBBASIN	CUMULATIVE	PEAK FLOW (SB ONLY)	CUMULATIVE FLOW	SIZE (in)	SLOPE (ft/ft)	MAX Q (cfs)	CALC. Q (cfs)	MAX Q (cfs)	UTILIZED CAP (%)
DRIVEWAY 1 CULVERT	0.60	0.01	0.89	0.61	0.61	3.53	3.53	12	0.1100	12.80	3.53	12.80	27.57%
DRIVEWAY 2 CULVERT	-	-	-	-	0.61	3.53	3.53	12	0.0860	11.30	3.53	11.30	31.24%
DRIVEWAY 13 CULVERT	-	-	-	-	0.61	3.53	3.53	12	0.0420	7.90	3.53	7.90	44.68%
DRIVEWAY 4 CULVERT	-	-	-	-	0.61	3.53	3.53	12	0.0520	8.80	3.53	8.80	40.11%
DRIVEWAY 15 CULVERT	-	-	-	-	0.61	3.53	3.53	12	0.0500	8.60	3.53	8.60	41.05%
FROZEN RIDGE RD. CULVERT	-	-	-	23.83	23.83	23.83	23.83	18	0.0477	24.80	23.83	24.80	96.09%

ZAZON SWALE-PROP(min. slope)

PROPOSED CONDITIONS FOSTER TOWN ROAD SWALE CALCULATIONS(min. slope)

Given Input Data:

Shape	Advanced
Solving for	Depth of Flow
Flowrate(25 YEAR STORM)	10.6400 cfs
Slope	0.0400 ft/ft
Manning's n	0.0350
Height	18.0000 in
Bottom width	36.0000 in
Left radius	0.0000 in
Right radius	0.0000 in
Left slope	0.5000 ft/ft (V/H)
Right slope	0.5000 ft/ft (V/H)

Computed Results:

Depth	6.6069 in
Velocity	4.7121 fps
Full Flowrate	72.6595 cfs
Flow area	2.2580 ft2
Flow perimeter	65.5471 in
Hydraulic radius	4.9606 in
Top width	62.4278 in
Area	9.0000 ft2
Perimeter	116.4984 in
Percent full	36.7052 %

Critical Information

Critical depth	7.5705 in
Critical slope	0.0243 ft/ft
Critical velocity	3.9574 fps
Critical area	2.6886 ft2
Critical perimeter	69.8563 in
Critical hydraulic radius	5.5423 in
Critical top width	66.2820 in
Specific energy	0.8956 ft
Minimum energy	0.9463 ft
Froude number	1.2610
Flow condition	Supercritical

ZAZON SWALE-PROP(max slope)

PROPOSED CONDITIONS FOSTER TOWN ROAD SWALE CALCULATIONS(max. slope)

Given Input Data:

Shape	Advanced
Solving for	Depth of Flow
Flowrate(25 YEAR STORM)	10.6400 cfs
Slope	0.1100 ft/ft
Manning's n	0.0350
Height	18.0000 in
Bottom width	36.0000 in
Left radius	0.0000 in
Right radius	0.0000 in
Left slope	0.5000 ft/ft (V/H)
Right slope	0.5000 ft/ft (V/H)

Computed Results:

Depth	4.9826 in
Velocity	6.6899 fps
Full Flowrate	120.4921 cfs
Flow area	1.5905 ft2
Flow perimeter	58.2828 in
Hydraulic radius	3.9295 in
Top width	55.9303 in
Area	9.0000 ft2
Perimeter	116.4984 in
Percent full	27.6810 %

Critical Information

Critical depth	7.5705 in
Critical slope	0.0243 ft/ft
Critical velocity	3.9574 fps
Critical area	2.6886 ft2
Critical perimeter	69.8563 in
Critical hydraulic radius	5.5423 in
Critical top width	66.2820 in
Specific energy	1.1107 ft
Minimum energy	0.9463 ft
Froude number	2.0190
Flow condition	Supercritical

ZAZON SWALE-EX

EXISTING CONDITIONS FOSTER TOWN ROAD SWALE CALCULATIONS

Given Input Data:

Shape	Advanced
Solving for	Depth of Flow
Flowrate(25 YEAR STORM)	3.5300 cfs
Slope	0.0400 ft/ft
Manning's n	0.0350
Height	18.0000 in
Bottom width	36.0000 in
Left radius	0.0000 in
Right radius	0.0000 in
Left slope	0.5000 ft/ft (V/H)
Right slope	0.5000 ft/ft (V/H)

Computed Results:

Depth	3.5441 in
Velocity	3.3287 fps
Full Flowrate	72.6595 cfs
Flow area	1.0605 ft2
Flow perimeter	51.8497 in
Hydraulic radius	2.9452 in
Top width	50.1764 in
Area	9.0000 ft2
Perimeter	116.4984 in
Percent full	19.6895 %

Critical Information

Critical depth	3.8972 in
Critical slope	0.0287 ft/ft
Critical velocity	2.9783 fps
Critical area	1.1852 ft2
Critical perimeter	53.4287 in
Critical hydraulic radius	3.1944 in
Critical top width	51.5887 in
Specific energy	0.4675 ft
Minimum energy	0.4871 ft
Froude number	1.1653
Flow condition	Supercritical

LANDS OF ZAZON

NEWBURGH

ORANGE COUNTY, NEW YORK

23153.01

ASSUMED VALUES

TIME OF CONCENTRATION:	10	min
RAINFALL INTENSITY:	6.5	in/hr
n FACTOR:	0.01	

RUNOFF COEFFICIENTS

IMPERVIOUS:	0.9
PERVIOUS:	0.3

GENERAL INFORMATION

CALCULATED BY:	TBE
CHECKED BY:	
DATE OF COMPLETION:	2/22/2005

PIPE RUN		CONTRIBUTING AREAS (ac)			AREAS (ac)		STORM FLOWS (cfs)		PIPE DESIGN INFORMATION			PIPE ANALYSIS		
FROM	TO	PERVIOUS AREA	IMPERVIOUS AREA	WEIGHTED C VALUE	SUBBASIN	CUMULATIVE	PEAK FLOW (SB ONLY)	CUMULATIVE FLOW	SIZE (in)	SLOPE (ft/ft)	MAX Q (cfs)	CALC. Q (cfs)	MAX Q (cfs)	UTILIZED CAP (%)
CB-1A	CB-1	1.43	0.49	0.75	1.92	1.92	9.32	9.32	18	0.0100	11.37	9.32	11.37	81.98%
CB-1	CB-2	0.51	0.25	0.70	0.76	2.68	3.47	12.79	18	0.0580	27.40	12.79	27.40	46.69%
CB-2A	CB-2	0.11	0.07	0.67	0.18	0.18	0.78	0.78	15	0.0100	6.90	0.78	6.90	11.30%
CB-2	CB-3	0.00	0.12	0.30	0.12	2.98	0.23	13.81	18	0.0170	15.00	13.81	15.00	92.04%
CB-5A	CB-5	0.00	0.02	0.30	0.02	0.02	0.04	0.04	15	0.0100	6.99	0.04	6.99	0.56%
CB-5	CB-4	0.00	0.03	0.30	0.03	0.05	0.06	0.10	15	0.0100	6.99	0.10	6.99	1.39%
CB-4	CB-3	0.00	0.01	0.30	0.01	0.06	0.02	0.12	15	0.0160	8.85	0.12	8.85	1.32%
CB-3A	CB-3	0.46	0.26	0.68	0.72	0.72	3.20	3.20	15	0.0240	10.80	3.20	10.80	29.61%
CB-3	DET. POND	0.00	0.16	0.30	0.16	3.92	0.31	17.43	18	0.1830	48.60	17.43	48.60	35.87%

APPENDIX 12

State Pollutant Discharge Elimination System for Construction Activities
Construction Site Log Book

APPENDIX F
CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG BOOK

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

SAMPLE CONSTRUCTION SITE LOG BOOK

Table of Contents

I. **PRE-CONSTRUCTION MEETING DOCUMENTS**

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. **Preamble to Site Assessment and Inspections**

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. **Directions:**

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

CONSTRUCTION DURATION INSPECTIONS Page 1 of _____

SITE PLAN/SKETCH

_____ _____

Inspector (print name) Date of Inspection

_____ _____

Qualified Inspector (print name) Qualified Inspector Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA
[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.

Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

APPENDIX 13

New York State Department of Environmental Conservation Permit No. GP-0-20-002

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;

   (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharges* from the site;

   (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

   a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards.* Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

   c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

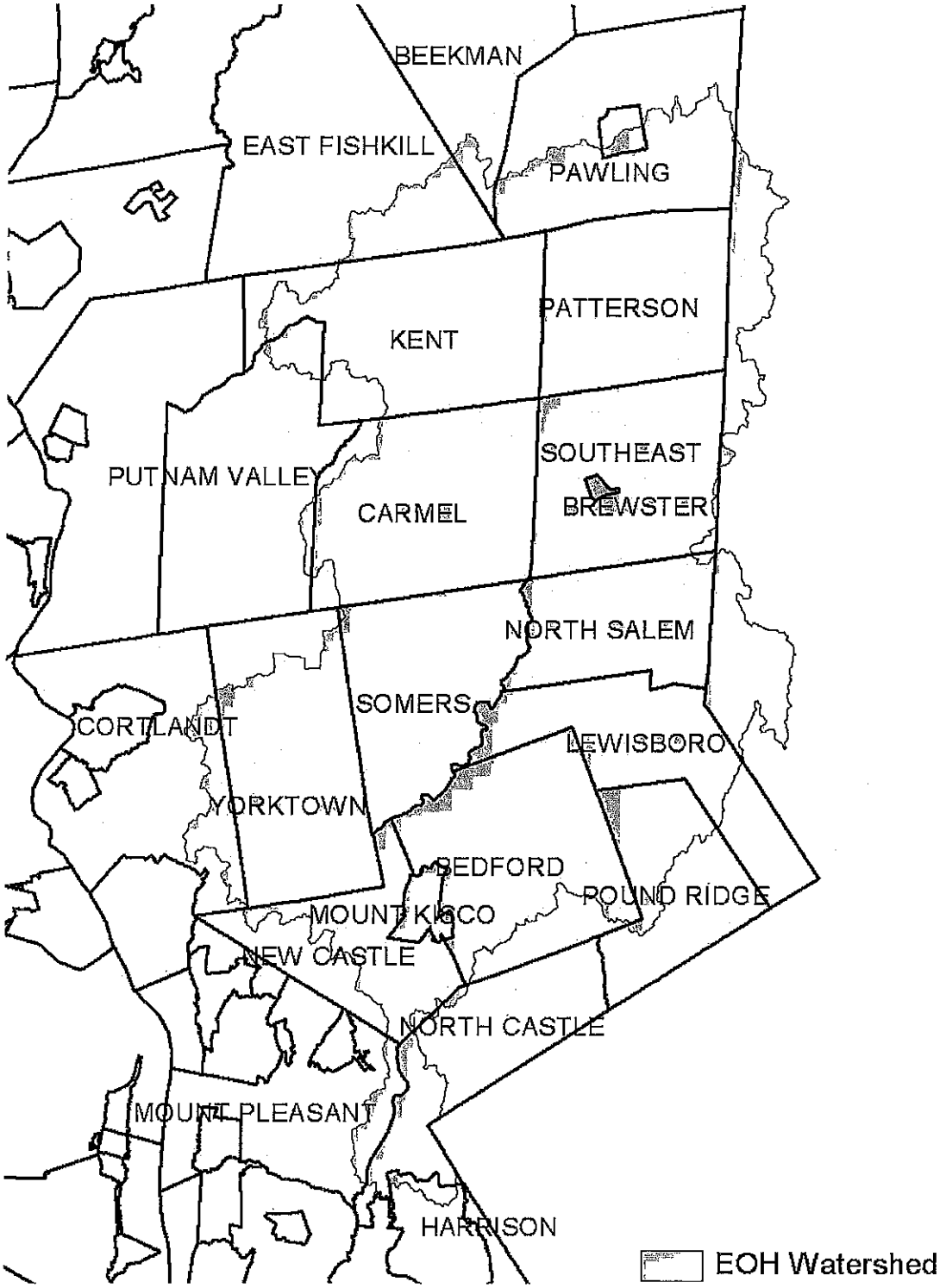


Figure 2 - Onondaga Lake Watershed

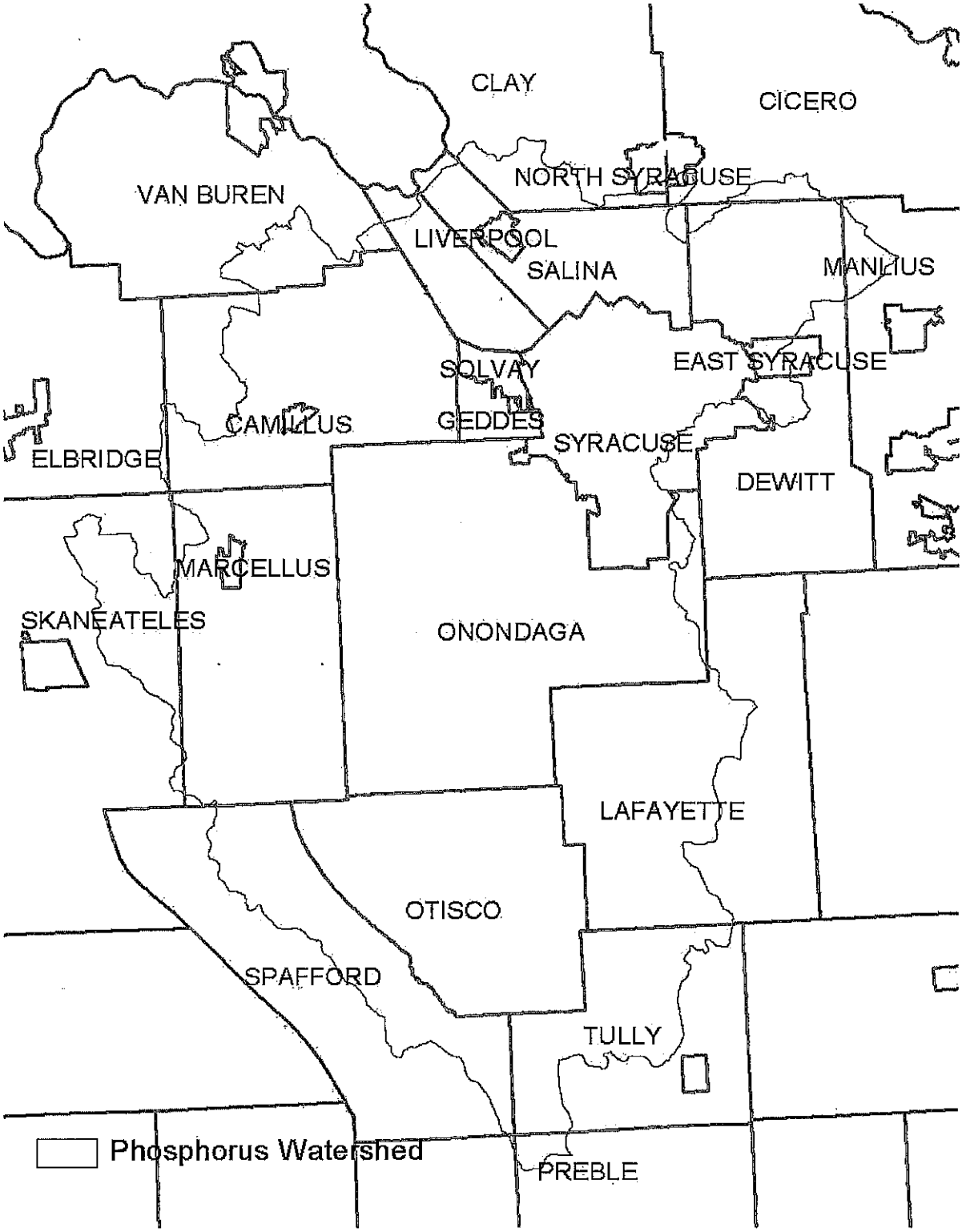


Figure 3 - Greenwood Lake Watershed

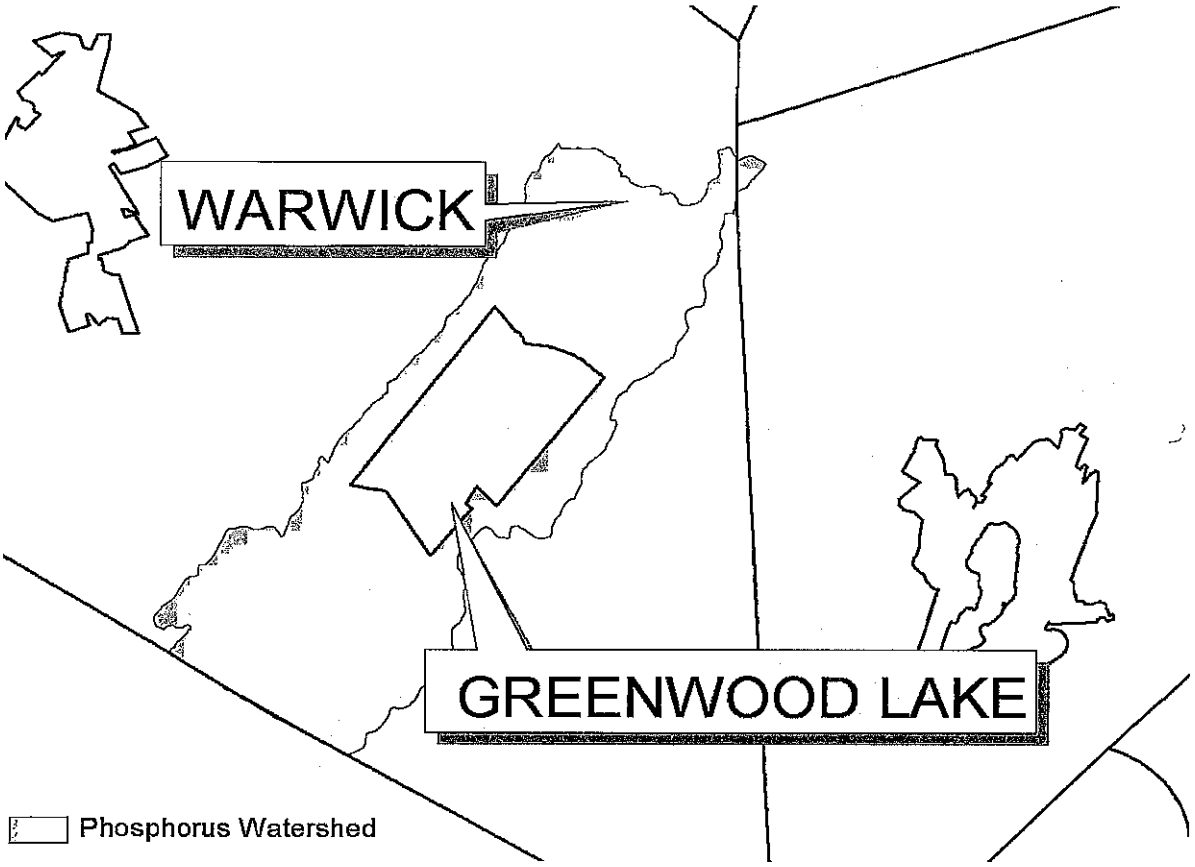


Figure 4 - Oscawana Lake Watershed

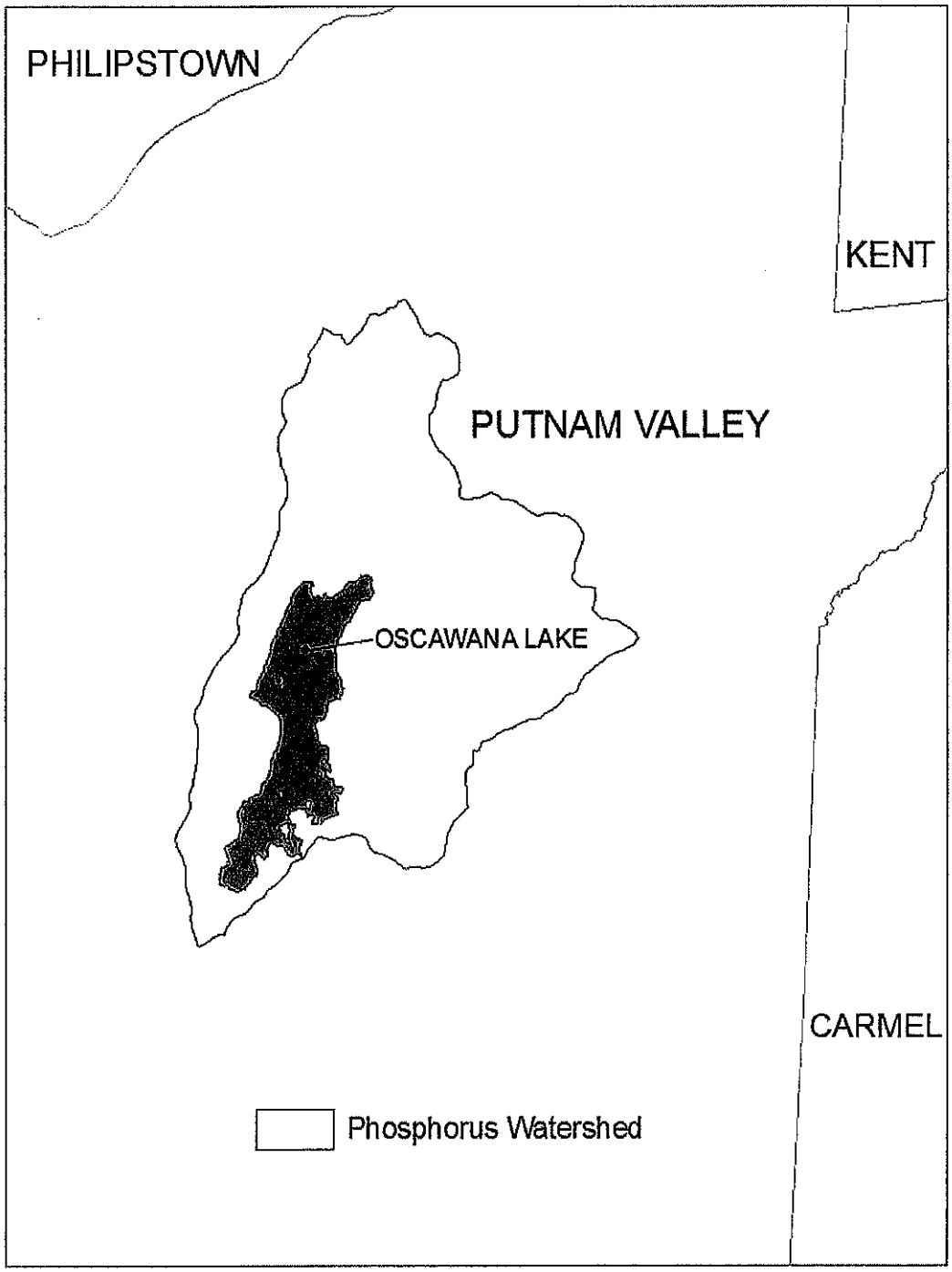
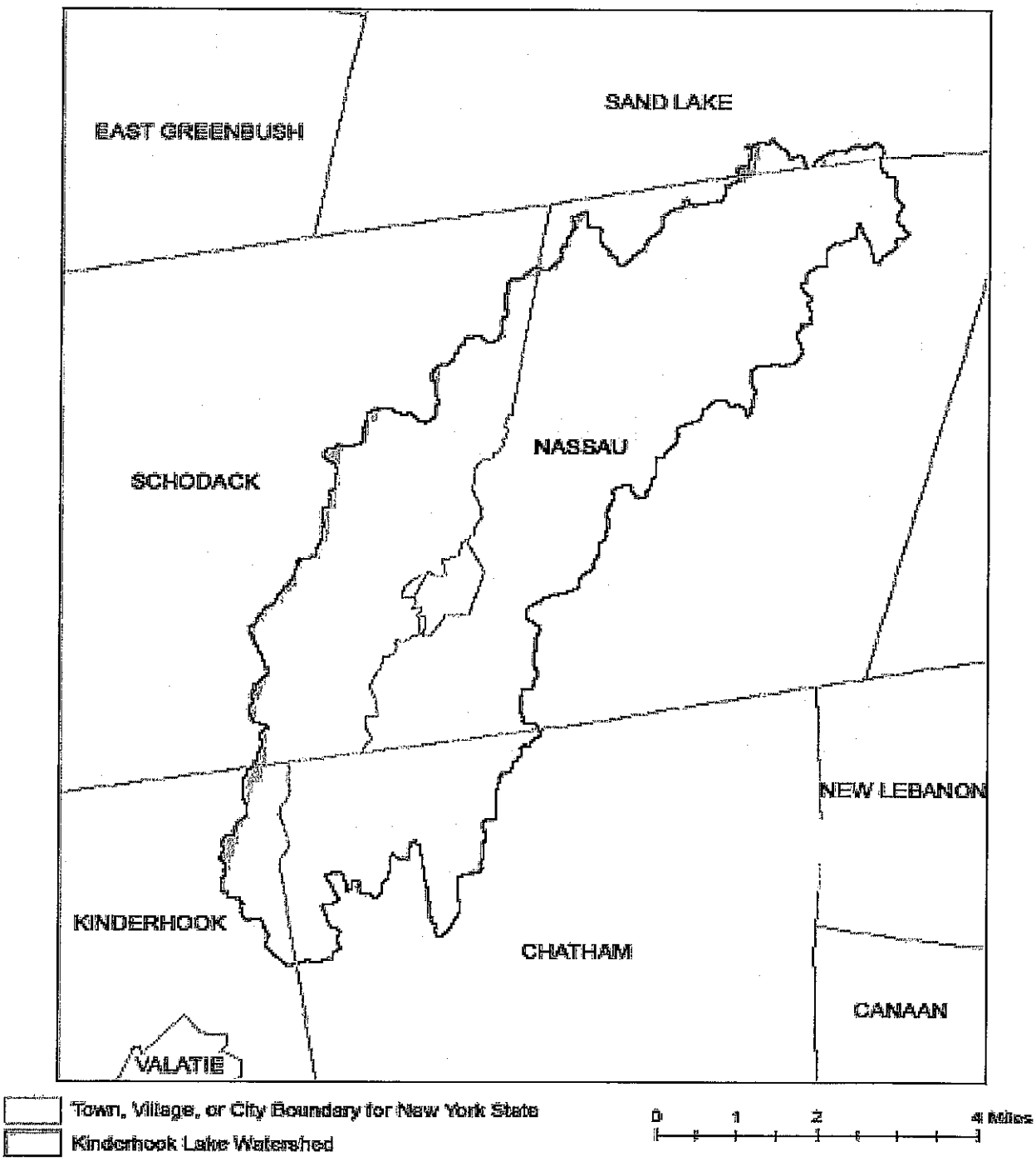


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

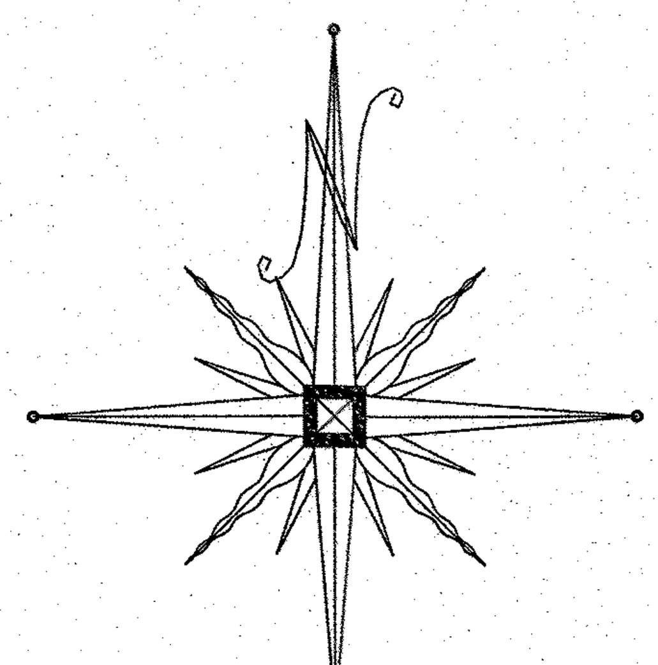
303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

LANDS OF ZAZON



PLAN INDEX

SHEET NO.	TITLE
1	COVER SHEET
2	SURVEY SHEET
3	GRADING SHEET
4	UTILITY SHEET
5	TREE LOCATION SHEET
6	EROSION CONTROL SHEET
7	DETAILS SHEET
8	DETAILS/PROFILE SHEET
9	STORMWATER DETAILS
10	LANDSCAPE PLAN
11	LANDSCAPE DETAILS

LEGEND

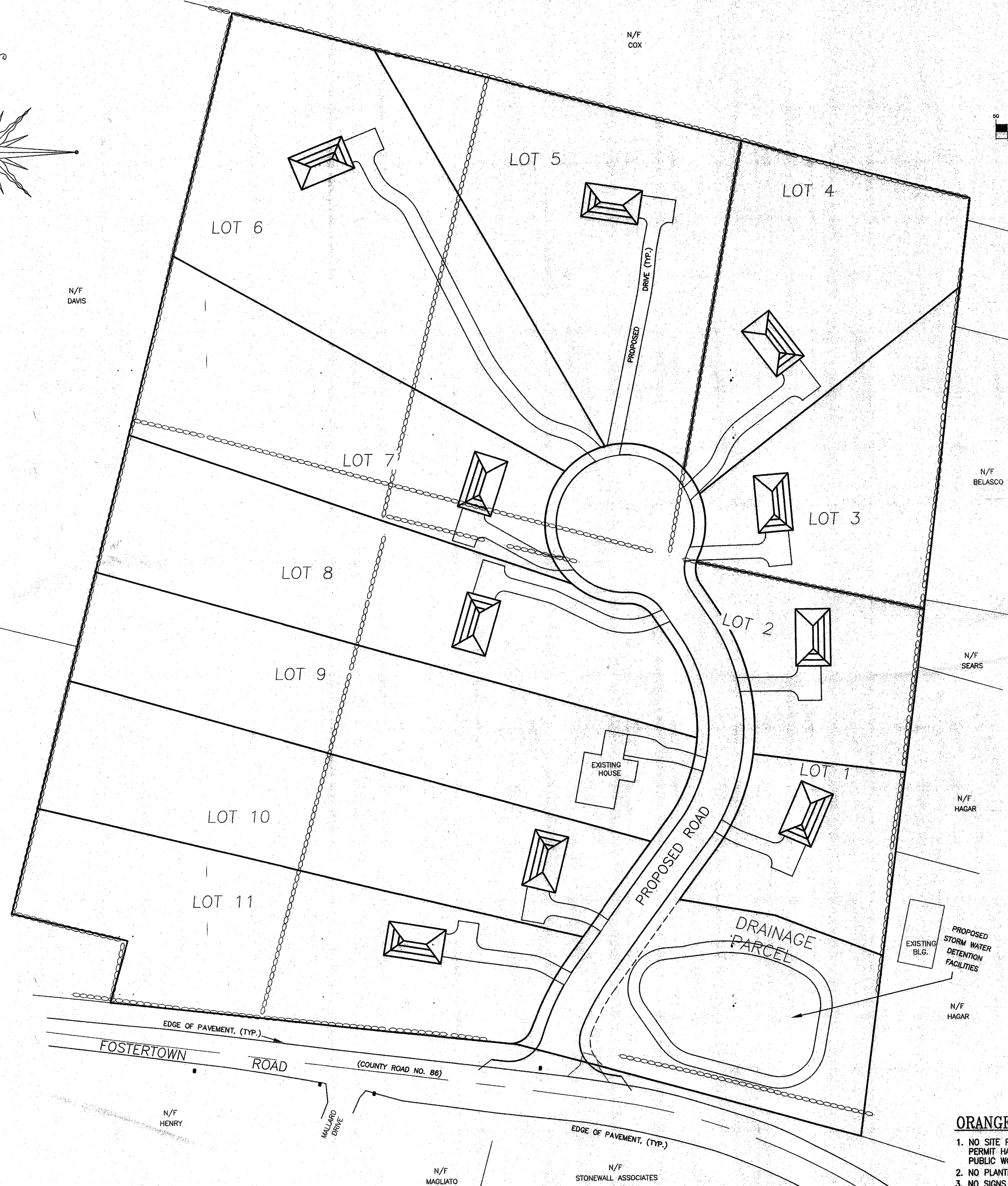
EXISTING LOT LINE

PROPOSED LOT LINE

PROPOSED DWELLING

STONE WALL TO REMAIN

STONE WALL TO BE REMOVED



RECORD OWNER/APPLICANT

JOSEPH ZAZON,
S&E CONSTRUCTION
5 SUHL LANE
MONSEY, NY 10952

I HEREBY CERTIFY TO THE TOWN OF NEWBURGH THAT THE SEWERAGE SYSTEM DEPICTED ON THIS PLAT HAS BEEN DESIGNED IN ACCORDANCE WITH THE NEW YORK STATE PUBLIC HEALTH LAW AND ALL LAW PROMULGATED THEREUNDER.

SIGNATURE DATE

I HEREBY CERTIFY THAT I HAVE REVIEWED AND CONCUR WITH THE INFORMATION PRESENTED ON THIS PLAT.

OWNERS SIGNATURE DATE

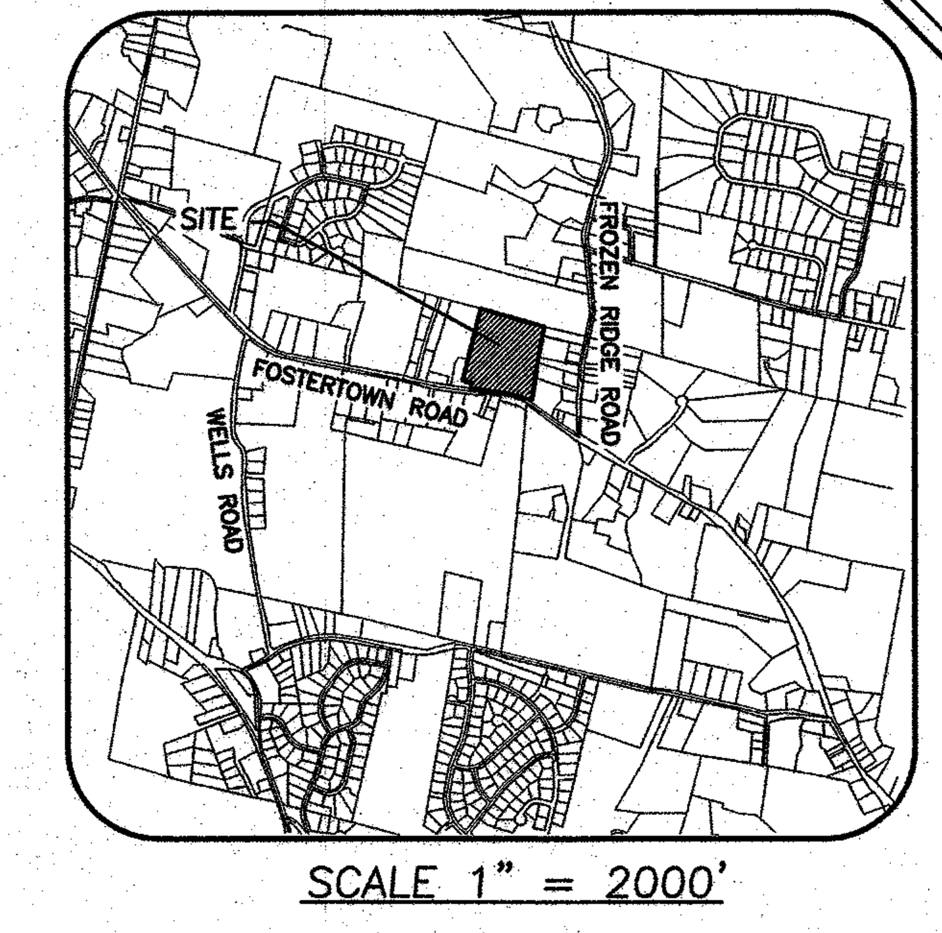
FOR HEALTH DEPARTMENT APPROVAL

THIS SHEET IS INCOMPLETE AND INVALID WITHOUT EACH AND EVERY OTHER SHEET LISTED IN THE TITLE BOX UNDER THE HEADING O.C.H.D. SHEET NO. – OF –.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.



SCALE 1" = 2000'

NOTES:

1. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.
2. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S INKED SEAL OR HIS EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.
3. CERTIFICATION INDICATED HEREON SIGNIFY THAT THIS SURVEY WAS PREPARED IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE FOR LAND SURVEYS ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS. SAID CERTIFICATION SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED, AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY, AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.
4. UNDERGROUND IMPROVEMENTS OR ENCROACHMENTS, IF ANY, ARE NOT SHOWN HEREON.
5. CONTACT UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION AS UNDERGROUND IMPROVEMENTS MAY EXIST WHICH WERE NOT LOCATED AT THE TIME OF THIS SURVEY.
6. SUBJECT TO AN UP TO DATE AND ACCURATE TITLE REPORT.
7. SUBJECT TO ANY EASEMENTS OR AGREEMENTS IF ANY.
8. SUBJECT TO ANY RIGHTS, TITLE, OR INTEREST BY OTHERS TO PROPERTY IN AND/OR ALONG THE ROADWAYS SHOWN HEREON.
9. TOPOGRAPHY BASED ON A SURVEY PREPARED BY PIETRZAK & PFAU ENGINEERING & SURVEYING, PLLC.
10. ALL INTERIOR FEATURES MAY NOT BE SHOWN OR VISIBLE AT THE TIME OF THIS SURVEY.
11. TOTAL AREA OF PARCEL: 13.56± ACRES
12. PARCEL IS LOCATED IN THE R-2 ZONING DISTRICT.
13. TOTAL NUMBER OF PROPOSED RESIDENTIAL BUILDING LOTS: 11
14. ALL LOTS TO BE SERVED BY INDIVIDUAL SEPTIC.
15. TAX MAP DESIGNATION: SECTION 20 BLOCK 1 LOT 24.
16. PARCEL IS LOCATED WITHIN THE NEWBURGH CENTRAL SCHOOL DISTRICT.
17. PARCEL IS LOCATED OUTSIDE ANY 100 YEAR FLOOD PLAINS.
18. A ROAD AGREEMENT IS TO BE FILED W/ COUNTY CLERKS OFFICE PRIOR TO CONSTRUCTION.
19. ALL UTILITIES TO BE UNDER GROUND.
20. ALL SEWAGE DISPOSAL SYSTEMS AND WELLS WITHIN 200' OF THE PROJECT HAVE BEEN LOCATED AND ARE SHOWN ON THE PLANS.
21. INDIVIDUAL WELLS AND SEWAGE DISPOSAL SYSTEMS SHALL NO LONGER BE CONSTRUCTED OR USED FOR HOUSEHOLD DOMESTIC PURPOSES WHEN PUBLIC FACILITIES BECOME AVAILABLE. CONNECTION TO THE PUBLIC SEWER SYSTEM IS REQUIRED WITHIN ONE YEAR OF AVAILABILITY.
22. ORANGE COUNTY DEPARTMENT OF HEALTH PLAN APPROVAL IS LIMITED TO FIVE YEARS. TIME EXTENSIONS FOR PLAN APPROVAL MAY BE GRANTED BY THE ORANGE COUNTY DEPARTMENT OF HEALTH BASED UPON DEVELOPMENT FACTS AND THE REALTY SUBDIVISION REGULATIONS IN EFFECT AT THAT TIME. A NEW PLAN SUBMISSION MAY BE REQUIRED TO OBTAIN A TIME EXTENSION.
23. THE APPROVED PLANS MUST BE FILED WITH THE ORANGE COUNTY CLERKS OFFICE PRIOR TO OFFERING LOTS FOR SALE AND WITHIN 90 DAYS OF THE LAST APPROVAL OF FINAL PLANS.
24. NO LOT IS TO BE FURTHER SUBDIVIDED WITHOUT ORANGE COUNTY DEPARTMENT OF HEALTH REVIEW AND APPROVAL.
25. THE PURCHASER OF EACH LOT SHALL BE PROVIDED WITH A COPY OF THE APPROVED PLANS AND AN ACCURATE AS-BUILT DRAWING OF ANY EXISTING SANITARY FACILITIES. THE PURCHASER SHALL ALSO BE ADVISED OF ANY ROUTINE OR SPECIAL MAINTENANCE PROCEDURES THAT MAY BE NECESSARY (REFER TO PAGES 58-61 OF THE NYSDOH DESIGN HANDBOOK FOR RECOMMENDED ROUTINE OPERATION AND MAINTENANCE ITEMS).
26. THERE ARE NO N.Y.S.D.E.C. WETLANDS ON THE PARCEL. FEDERAL WETLANDS HAVE BEEN DELINEATED AND MAPPED IN ACCORDANCE WITH A.C.O.E. REGULATIONS.
27. THIS PROJECT DOES NOT FALL INTO A PUBLIC WATER SUPPLY WATER SHED.
28. FOR EACH RESIDENCE, PRIOR TO ISSUING A CERTIFICATE OF OCCUPANCY, THE SEPTIC SYSTEM SHALL BE INSPECTED AND A MAP SHALL BE PREPARED BY A LICENSED DESIGN PROFESSIONAL FOR SUBMISSION TO THE CODE ENFORCEMENT OFFICER.
29. THE CLEARING LIMIT AREAS SHALL BE CLEARLY MARKED IN THE FIELD (WITH PROTECTIVE FENCING) BEFORE COMMENCEMENT OF ANY SITE WORK. THE AREAS SO MARKED SHALL PROVIDE SUFFICIENT ARE TO PROTECT THE ROOT SYSTEMS OF THE TREES TO BE PROTECTED. IF THESE LIMITS ARE VIOLATED, THE DEVELOPER OR LOT OWNER SHALL BE REQUIRED TO PROVIDE ADDITIONAL OR REPLACEMENT LANDSCAPING OF EQUIVALENT BASAL AREA.

DATE	DESCRIPTION	INITIALS
02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/6/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS

REVISIONS

MAP CHECK DATE: 00/00/00 INITIALED BY: –_–

BULK REQUIREMENTS

ZONE R-2 (RESIDENTIAL DISTRICT)
USE GROUP–ONE FAMILY DETACHED DWELLINGS
(WITHOUT PUBLIC SEWER)

	MIN. REQUIRED	PROVIDED
LOT AREA (SF)	17,500	>17,500
LOT WIDTH (FT.)	100	>100
LOT DEPTH (FT.)	125	>125
FRONT SETBACK (FT)*	40	>40
REAR SETBACK (FT.)	40	>40
SIDE SETBACK (FT.)	15	>15
TOTAL SIDE SETBACK (FT.)	30	>30
	MAX. PERMITTED	
BLDG. COVERAGE (%)	15	<15
LOT COVERAGE (%)	30	<30
BLDG. HEIGHT (FT).	35	<35
* FRONT YARD SET BACK ALONG FOSTER TOWN ROAD	60	<60

AREA=590,807± sq.ft.

=13.56± acres

ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS NOTES:

1. NO SITE PREPARATION OR CONSTRUCTION SHALL COMMENCE UNTIL A VALID PERMIT HAS BEEN SECURED FROM THE ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS UNDER SECTION 136 OF THE HIGHWAY LAW
2. NO PLANTING SHALL HAVE THE DRIP EDGE PROJECT WITHIN THE COUNTY R.O.W.
3. NO SIGNS SHALL BE PLACED OR PROJECT INTO THE COUNTY R.O.W.

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC

262 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(845) 294-0606

2 HAMILTON AVENUE
MONTICELLO, NEW YORK 12701
(845) 796-4646

MICHAEL F. GREEGAN P.E.
LICENSE NO. 059825
JOSEPH J. PFAU P.E.
LICENSE NO. 068949

VINCENT A. PIETRZAK P.E., P.L.S.
P.E. LICENSE NO. 076936
P.L.S. LICENSE NO. 050075
N.J.P.L.S. LICENSE NO. 35396

SIGNATURE DATE

LANDS OF ZAZON

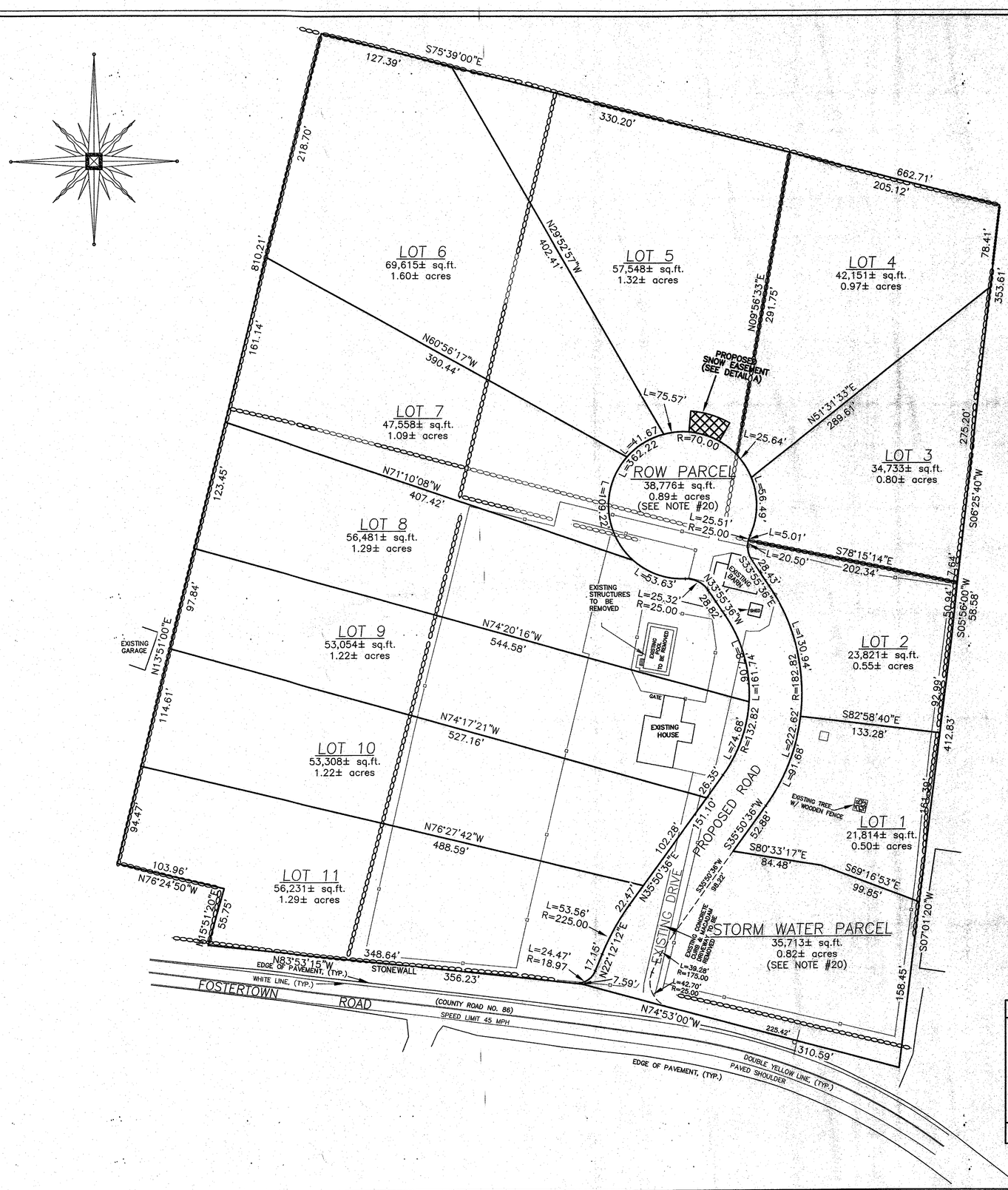
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

SUBDIVISION COVER SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
1 OF 6	# OF #	1 OF 11
SCALE 1"=50'	CAD REFERENCE 23153COV	PROJECT NUMBER 23153.01



LEGEND

- EXISTING LOT LINE
- PROPOSED LOT LINE
- EXISTING PAVEMENT
- SURVEY PIN
- MONUMENT
- EXISTING STONE WALL
- WOOD FENCE

NOTES:

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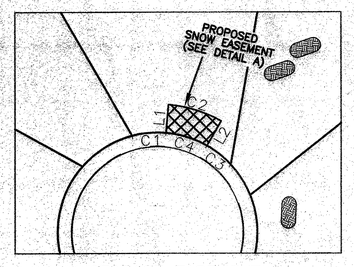
17. PARCEL IS LOCATED OUTSIDE ANY 100 YEAR FLOOD PLAINS.
18. A ROAD AGREEMENT IS TO BE FILED W/ COUNTY CLERKS OFFICE PRIOR TO CONSTRUCTION.
19. ALL UTILITIES TO BE UNDER GROUND.
20. THE ROW PARCEL AND STORMWATER PARCEL ARE TO BE OFFERED FOR DEDICATION TO THE TOWN OF NEWBURGH AS ONE LOT. THE DIVISION LINE SHOWN HAS BEEN ADDED AT THE REQUEST OF THE TOWN OF NEWBURGH, BUT IS NOT TO BE INTENDED AS A PROPERTY LINE.



SNOW STORAGE EASEMENT

LINE TABLE		
LINE	LENGTH	BEARING
L1	20.00	N05°02'04"E
L2	20.00	S29°46'54"W

CURVE TABLE		
CURVE	LENGTH	RADIUS
C1	23.92	70.00
C2	38.87	90.00
C3	21.41	70.00
C4	30.24	70.00

AREA=590,807± sq.ft.

=13.56± acres

ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS NOTES:

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3. NO SIGNS SHALL BE PLACED OR PROJECT INTO THE COUNTY R.O.W.

RECORD OWNER/APPLICANT
JOSEPH ZAZON,
S&E CONSTRUCTION
5 SUHL LANE
MONSEY, NY 10952

BULK REQUIREMENTS
ZONE R-2 (RESIDENTIAL DISTRICT)
USE GROUP-ONE FAMILY DETACHED DWELLINGS
(WITHOUT PUBLIC SEWER)

	MIN. REQUIRED	PROVIDED
LOT AREA (SF)	17,500	>17,500
LOT WIDTH (FT.)	100	>100
LOT DEPTH (FT.)	125	>125
FRONT SETBACK (FT)	40	>40
FRONT SETBACK (FT) (TO FOSTER TOWN RD)	60	>60
REAR SETBACK (FT.)	40	>40
SIDE SETBACK (FT.)	15	>15
TOTAL SIDE SETBACK (FT.)	30	>30
	MAX. PERMITTED	
BLDG. COVERAGE (%)	15	<15
LOT COVERAGE (%)	30	<30
BLDG. HEIGHT (FT).	35	<35

FOR HEALTH DEPARTMENT APPROVAL

THIS SHEET IS INCOMPLETE AND INVALID WITHOUT EACH AND EVERY OTHER SHEET LISTED IN THE TITLE BOX UNDER THE HEADING O.C.H.D. SHEET NO. - OF - .

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

I HEREBY CERTIFY THAT THIS MAP HAS BEEN PREPARED FROM AN ACTUAL FIELD SURVEY COMPLETED ON FEBRUARY 12, 2003;

DATE	DESCRIPTION	INITIALS
02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/6/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS
REVISIONS		
MAP CHECK DATE: 00/00/00	INITIALED BY: -.-	

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
282 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(845) 294-3600
2 HAMILTON AVENUE
MONTICELLO, NEW YORK 12701
(845) 796-4646
MICHAEL F. PIETRZAK P.E.
LICENSE NO. 070552
JOSEPH L. PFAU P.E.
LICENSE NO. 075075
CHRISTOPHER A. PIETRZAK P.E. P.L.S.
LICENSE NO. 070552
P.E. LICENSE NO. 070552
P.L.S. LICENSE NO. 050075
N.Y.S.L.L.S. LICENSE NO. 49386
SIGNATURE
2/11/21
DATE

LANDS OF ZAZON

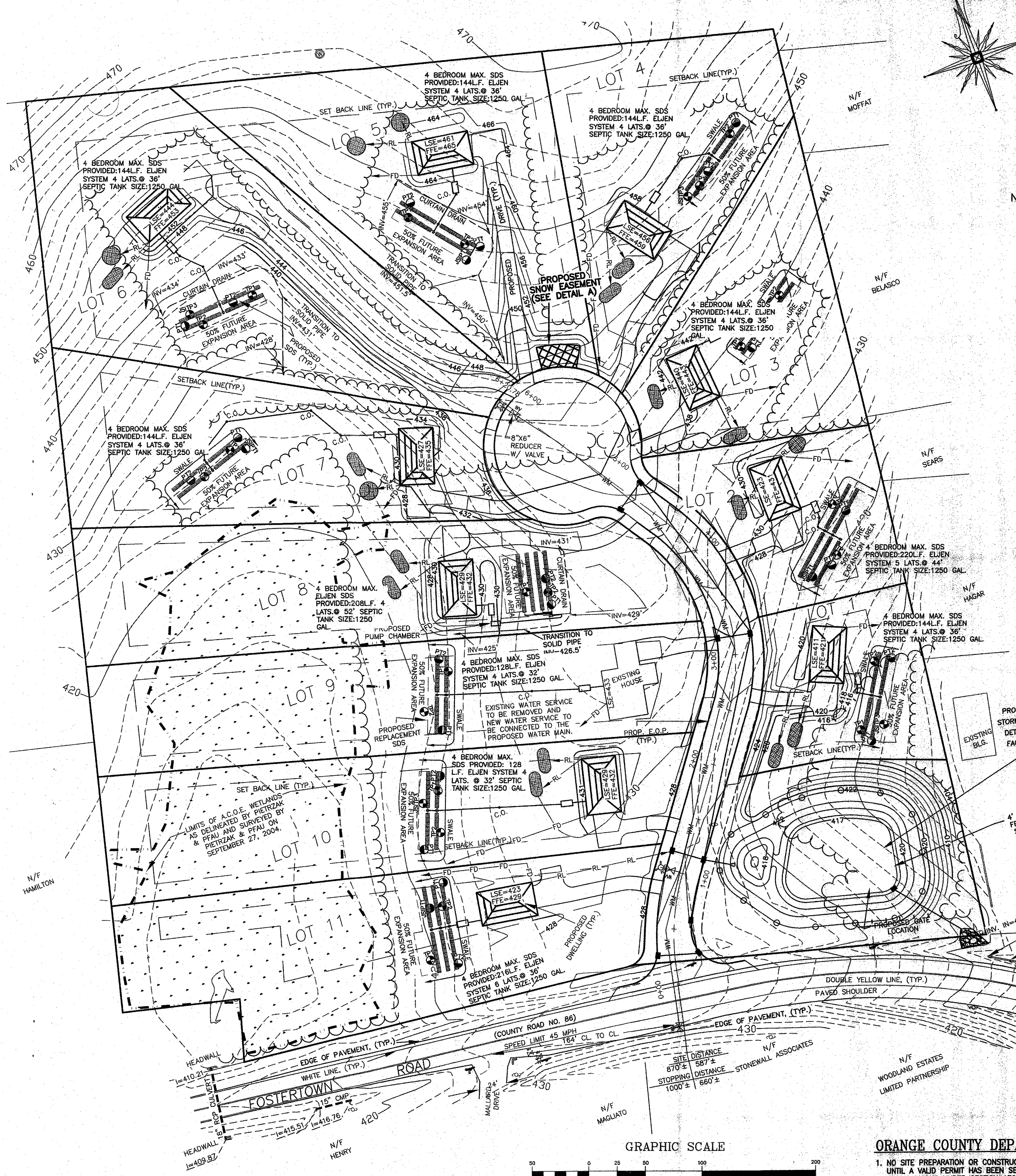
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

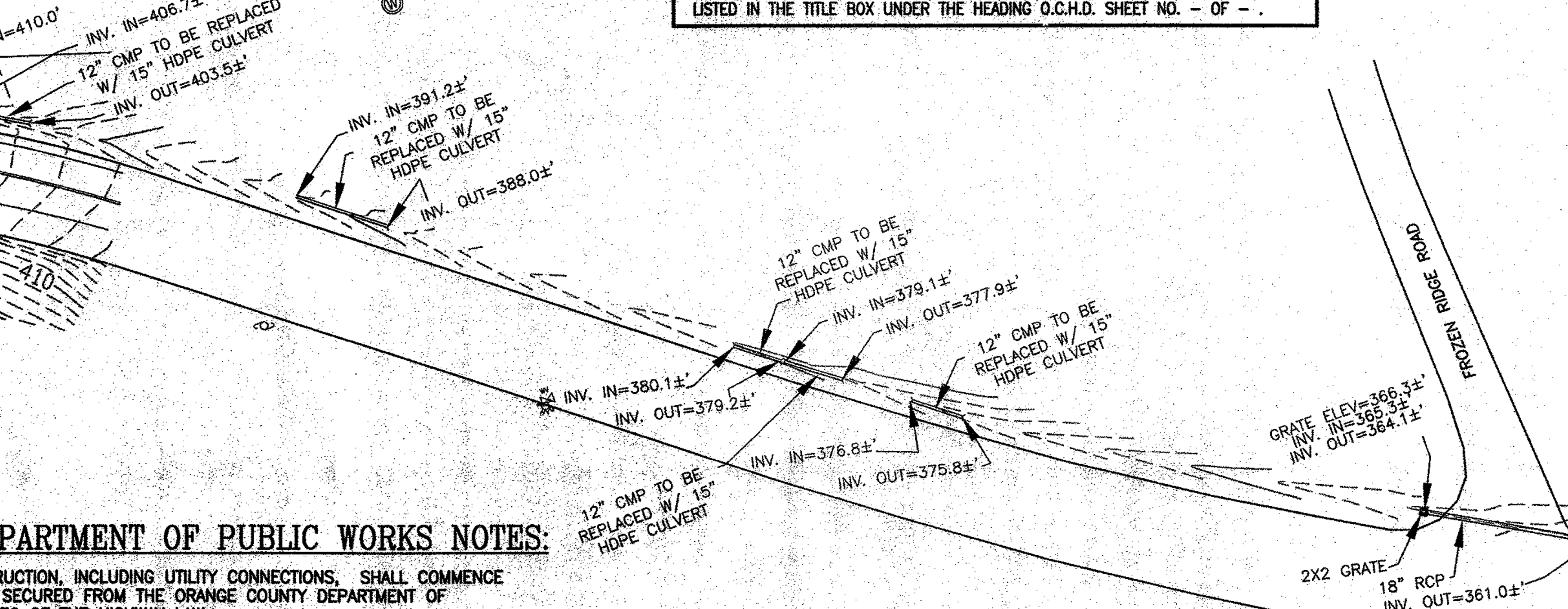
PROJECT TITLE

SUBDIVISION SURVEY SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

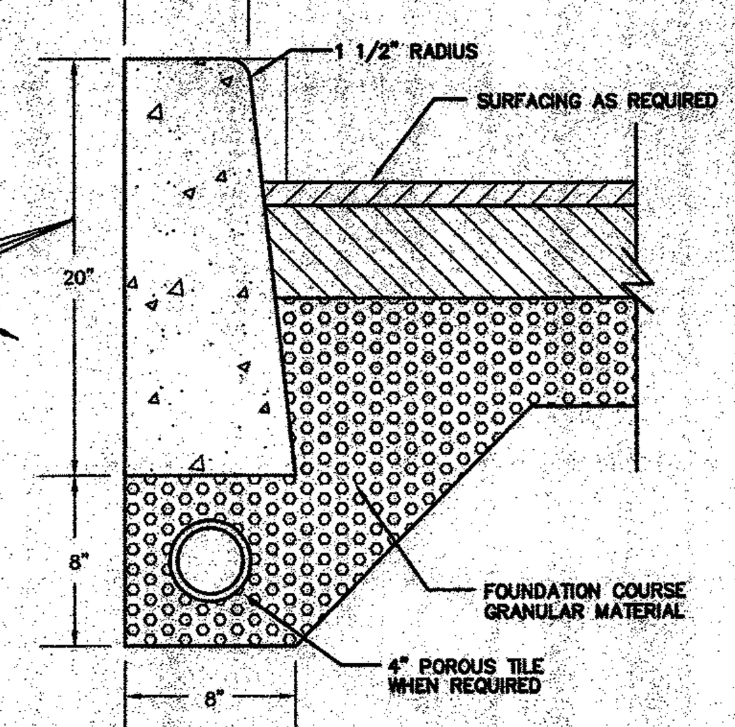
O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
2 OF 6	# OF #	2 OF 11
SCALE	CAD REFERENCE	PROJECT NUMBER
1"=50'	2315300V	23153.01





GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

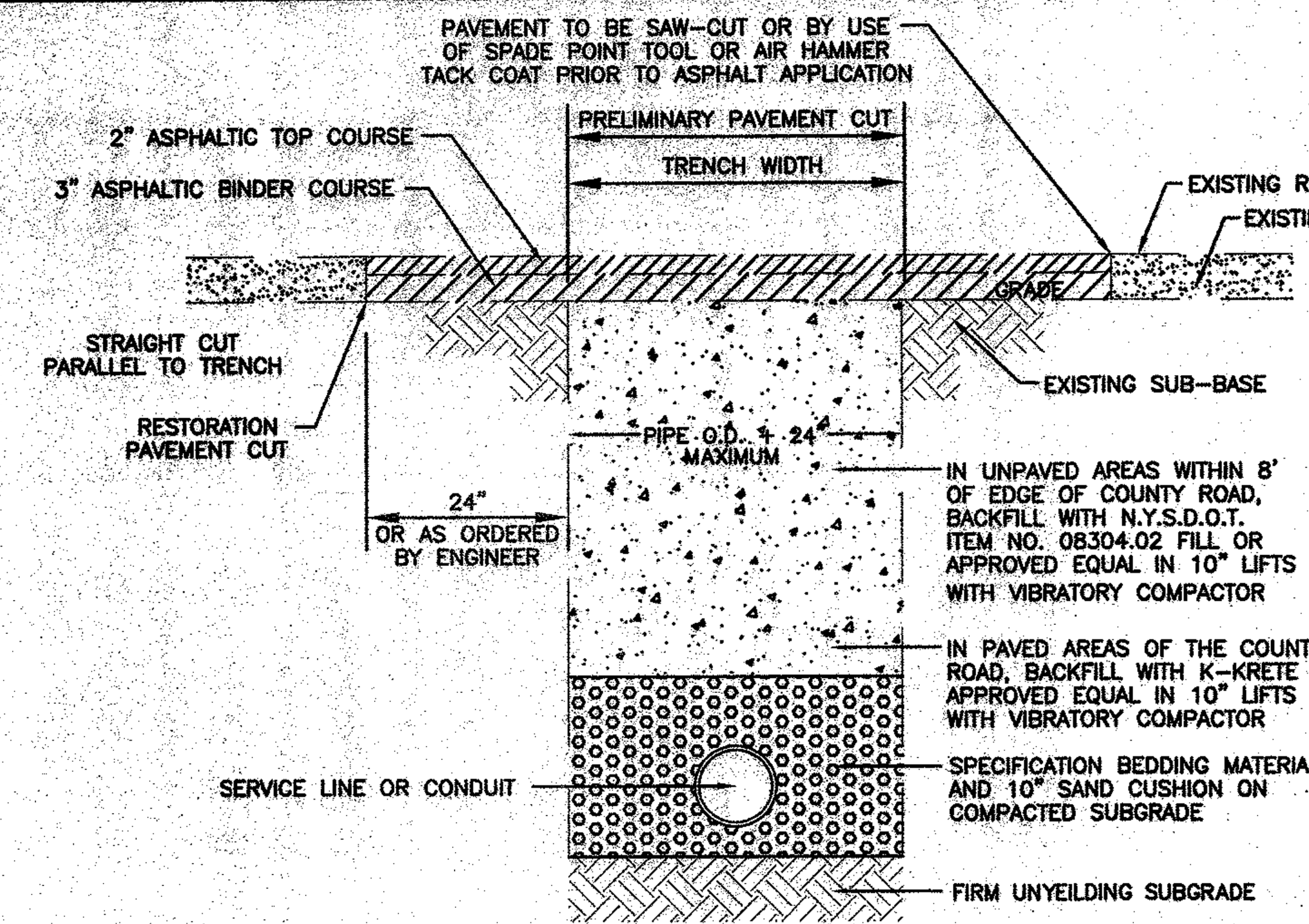


NOTES:
1. CURB SHALL BE CAST IN PLACE. EXPANSION JOINTS OF 3/16" CELLULOSE OR SIMILAR MATERIAL SHALL BE PLACED AT TEN (10) FOOT INTERVALS. CONCRETE TO BE 1:2:3 MIX DESIGN, AIR ENTRAINED WITH DUREX OR EQUAL.
2. CONCRETE TO TEST 4000 PSI AT 28 DAYS

CONCRETE CURB DETAIL IN COUNTY R.O.W.

N.T.S. CAD/CIV43

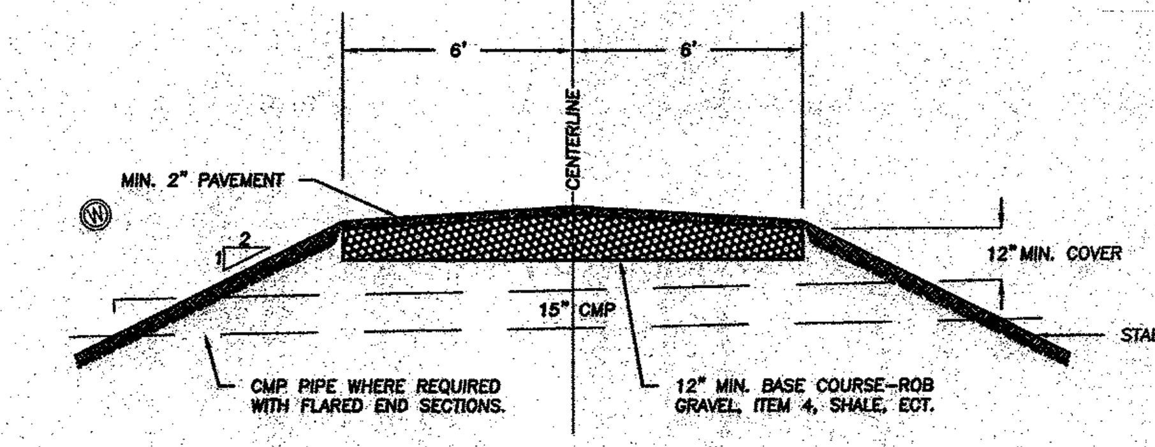
NOT FOR HEALTH DEPARTMENT REVIEW



BACKFILL DETAIL WITHIN COUNTY R.O.W.

N.T.S. CAD/CIV22

NOT FOR HEALTH DEPARTMENT REVIEW



NOTE:
12' WIDE DRIVE MAXIMUM FOR 24' LENGTH OF CULVERT PIPE.

ALL PIPE SHALL BE ALUMINIZED STEEL TYPE II WITH FLARED END SECTIONS, OR AS APPROVED BY ORANGE COUNTY DEPT. OF TRANSPORTATION.

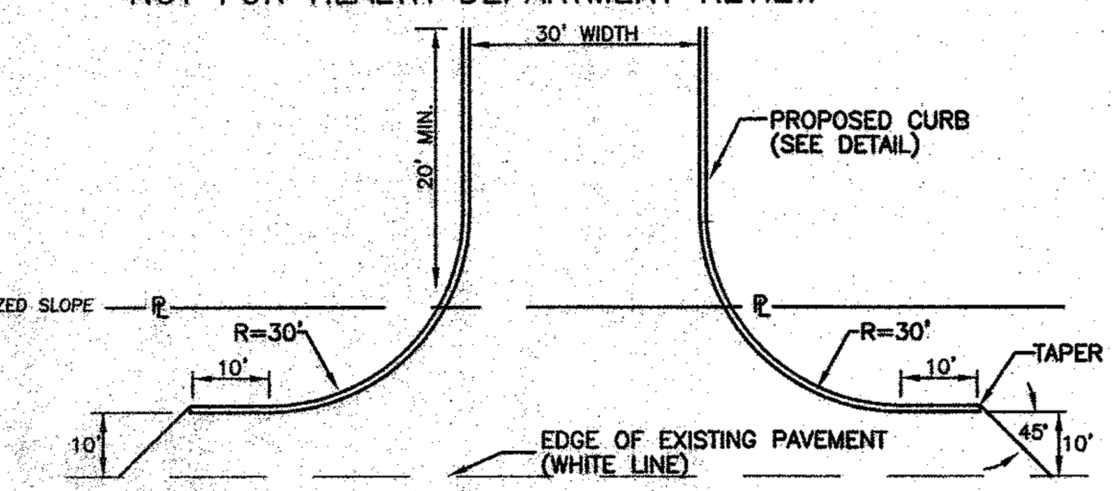
SEE PLANS AND PROFILES FOR SPECIFIC PIPE INVERT INFORMATION AND CENTERLINE OF DRIVE ELEVATION INFORMATION.

DRIVEWAY FILL – CROSS SECTION

NTS CAD/CIV28

* TO BE USED FOR DRIVEWAY CULVERT IMPROVEMENTS ALONG FOSTER TOWN ROAD(AS NOTED)

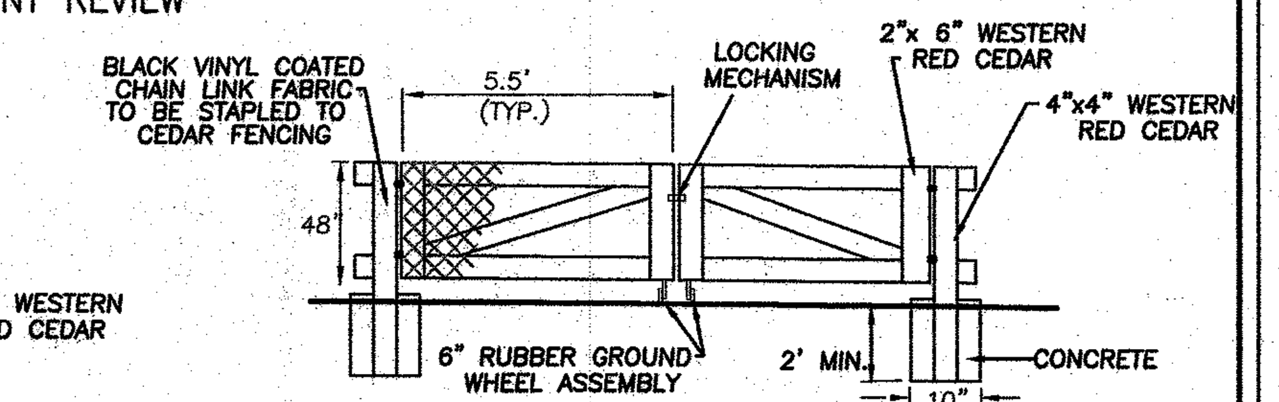
NOT FOR HEALTH DEPARTMENT REVIEW



O.C.D.P.W. ROAD ENTRANCE DETAIL

N.T.S. CAD/CIV40

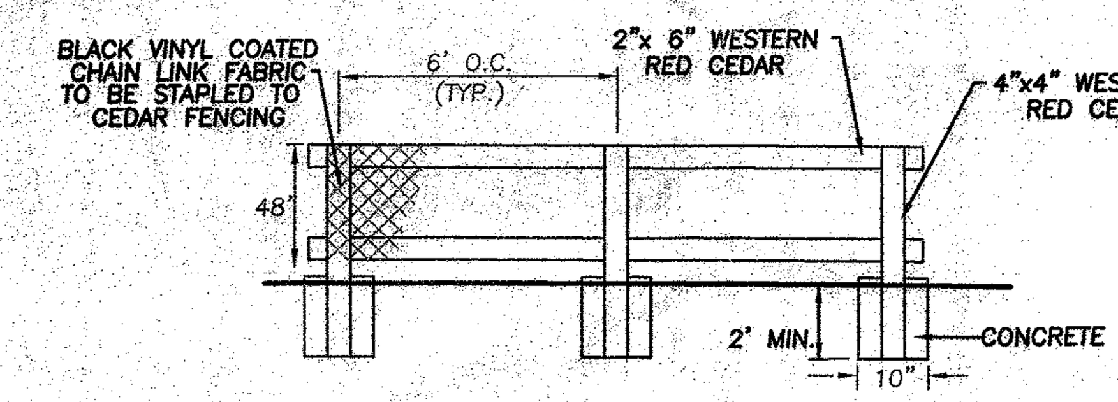
NOT FOR HEALTH DEPARTMENT REVIEW



TIMBER POST RAIL GATE

NTS

NOT FOR HEALTH DEPARTMENT REVIEW



TIMBER POST RAIL

NTS

NOT FOR HEALTH DEPARTMENT REVIEW

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3. NO SIGNS SHALL BE PLACED OR PROJECT INTO THE COUNTY R.O.W.

LEGEND

- EXISTING WATER VALVE
- EXISTING HYDRANT
- EXISTING MAIL BOX
- EXISTING SIGN
- EXISTING HEAD WALL
- EXISTING UTILITY POLE
- (420) EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING TREE LINE
- PROPOSED TREE LINE & LIMITS OF PROJECT DISTURBANCE
- PROPOSED GRADE
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED 1250 GAL. SEPTIC TANK
- SWALE / 50% FUTURE EXPANSION AREA — PROPOSED ELJEN SDS
- PROPOSED DWELLING
- PROP. 20'x30' SNOW STORAGE AREA STABILIZED W/ GRASS COVER & CURB CUT.
- PROPOSED STORM WATER CATCH BASIN
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- A.C.O.E. WETLANDS
- RAIN GARDEN W/ CONVEYANCE SWALE
- TEST PIT LOCATION
- PERCOLATION TEST LOCATION
- EXISTING WELL

FOR HEALTH DEPARTMENT APPROVAL

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DATE	DESCRIPTION	INITIALS
02/11/21	UPDATE POND DESIGN	CJP
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11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/6/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS

REVISIONS

MAP CHECK DATE: 00/00/00 INITIALED BY: –.–

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC

262 GREENWICH AVENUE, SUITE A, GOSHEN, NEW YORK 10924, (845) 294-0606
2 HAMILTON AVENUE, MONTICELLO, NEW YORK 12701, (845) 796-4646

MICHAEL F. CREEGAN P.L.S. LICENSE NO. 050533
JOSEPH J. PFAU P.E. LICENSE NO. 068946
VINCENT A. PIETRZAK P.E., P.L.S. P.E. LICENSE NO. 076936, P.L.S. LICENSE NO. 050075, N.J.P.L.S. LICENSE NO. 35396

SIGNATURE DATE 2/11/21

LANDS OF ZAZON

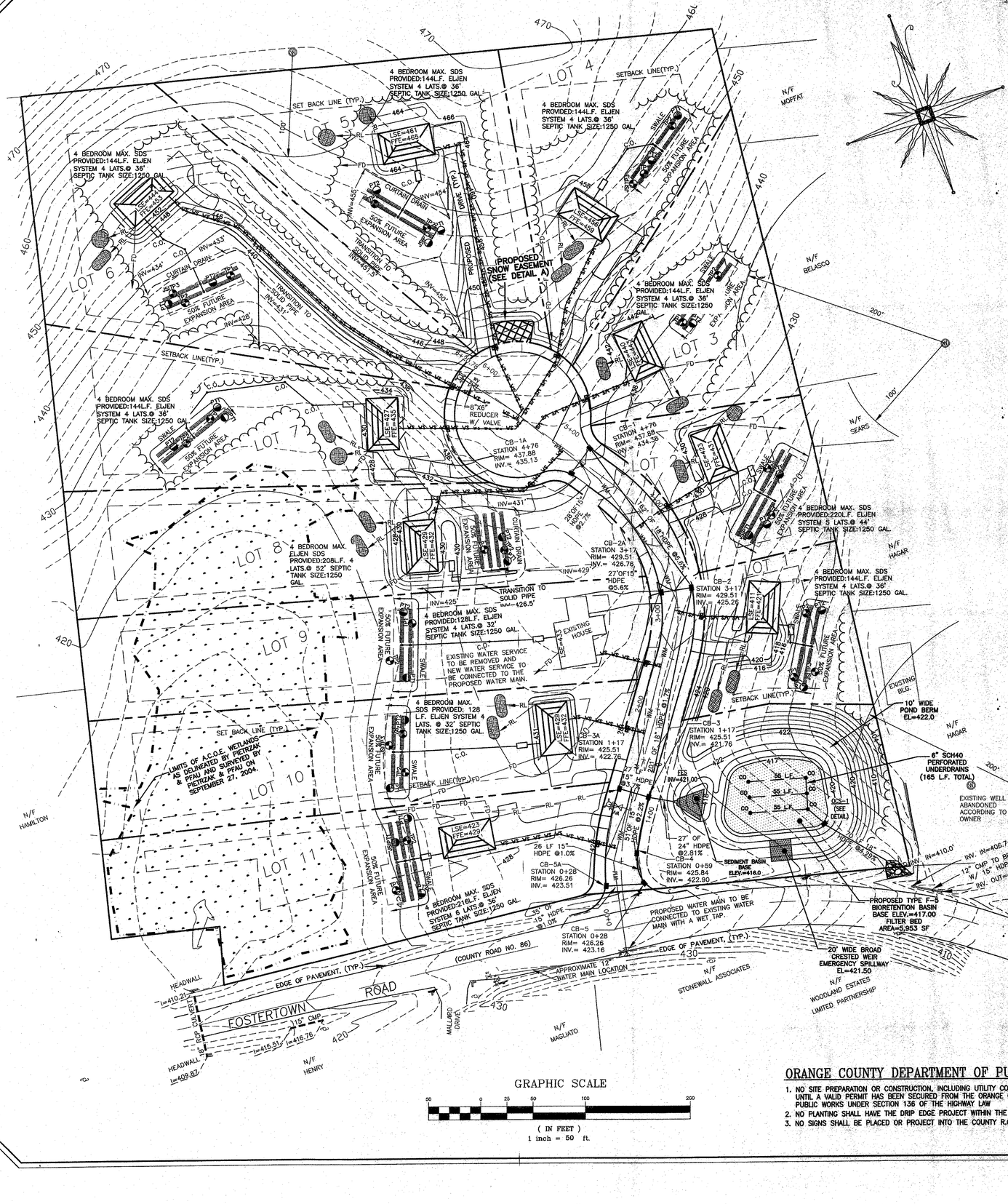
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

GRADING SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
3 OF 6	# OF #	3 OF 11
SCALE 1"=50'	CAD REFERENCE 23153COV	PROJECT NUMBER 23153.01



TOWN OF NEWBURGH WATER SYSTEM NOTES

1. CONSTRUCTION OF POTABLE WATER UTILITIES AND CONNECTION TO THE TOWN OF NEWBURGH WATER SYSTEM REQUIRES A PERMIT FROM THE TOWN OF NEWBURGH WATER DEPARTMENT. ALL REQUIREMENTS SHALL CONFORM TO THE REQUIREMENTS OF THE NEW YORK STATE DEPARTMENT OF HEALTH AND THE TOWN OF NEWBURGH.
2. ALL WATER SERVICE LINES FOUR (4) INCHES AND LARGER IN DIAMETER SHALL BE CEMENT LINED, CLASS 52, DUCTILE IRON PIPE CONFORMING TO ANSI/AWWA C151/A21.51-91 OR LATER REVISIONS FOR DUCTILE IRON PIPE JOINTS SHALL BE EITHER PUSH-ON OR MECHANICAL JOINT AS REQUIRED.
3. THRUST RESTRAINT OF THE PIPE SHALL BE THROUGH THE USE OF JOINT RESTRAINT. THRUST BLOCKS ARE NOT ACCEPTABLE. JOINT RESTRAINTS SHALL BE THROUGH THE USE OF MECHANICAL JOINT PIPE WITH RETAINER GLANDS. ALL FITTINGS AND VALVES SHALL ALSO BE INSTALLED WITH RETAINER GLANDS FOR JOINT RESTRAINT. RETAINER GLANDS SHALL BE EBBA IRON MEGALUG SERIES 1100 OR APPROVED EQUAL. THE USE OF A MANUFACTURED RESTRAINED JOINT PIPE IS ACCEPTABLE WITH PRIOR APPROVAL OF THE WATER DEPARTMENT.
4. ALL FITTINGS SHALL BE CAST IRON OR DUCTILE IRON, MECHANICAL JOINT, CLASS 250 AND CONFORM TO ANSI/AWWA C110/A21.10-87 OR LATEST REVISIONS FOR DUCTILE AND GRAY IRON FITTINGS OR ANSI/AWWA C153/A21.53-94 FOR LATEST REVISION FOR DUCTILE IRON COMPACT FITTINGS.
5. ALL VALVES SHALL BE RESILIENT WEDGE, MECHANICAL JOINT GATE VALVES CONFORMING TO ANSI/AWWA C509 FOR LATEST REVISIONS SUCH AS MUELLER A-2360-23 OR APPROVED EQUAL. ALL GATE VALVES SHALL OPEN LEFT (COUNTER CLOCK WISE).
6. TAPPING SLEEVE SHALL BE MECHANICAL JOINT SUCH AS MUELLER H-615 OR EQUAL. TAPPING VALVE SHALL BE RESILIENT WEDGE GATE VALVES CONFORMING TO ANSI/AWWA C509 SUCH AS MUELLER MODEL T-2360-19 OR APPROVED EQUAL. ALL TAPPING SLEEVES AND VALVES SHALL BE TESTED TO 150 PSI MINIMUM; TESTING OF THE TAPPING SLEEVE AND VALVE MUST BE WITNESSED AND ACCEPTED BY THE TOWN OF NEWBURGH WATER DEPARTMENT PRIOR TO CUTTING INTO THE PIPE.
7. ALL WATER SERVICES LINES TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING. CORPORATION STOPS SHALL BE MUELLER H-15020 FOR ¾ INCH AND 1 INCH, MUELLER H-15000 OR B-25000 FOR 1 ½ FOR 2 INCH SIZES. CURB VALVES SHALL BE MUELLER H-1501-2 FOR ¾ AND 1 INCH AND MUELLER B-25204 FOR 1 ½ AND 2 INCH SIZES. CURB BOXES SHALL BE MUELLER H-10312 FOR ¾ AND 1 INCH AND MUELLER H-10310 FOR 1 ½ AND 2 INCH SIZES.
8. ALL PIPE INSTALLATION SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF NEWBURGH WATER DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS AS REQUIRED WITH THE TOWN OF NEWBURGH WATER DEPARTMENT.
9. THE WATER MAIN SHALL BE TESTED, DISINFECTED AND FLUSHED IN ACCORDANCE WITH THE TOWN OF NEWBURGH REQUIREMENTS. ALL TESTING, DISINFECTING AND FLUSHING SHALL BE COORDINATED WITH THE TOWN OF NEWBURGH WATER DEPARTMENT. PRIOR TO PUTTING THE WATER MAIN IN SERVICE, SATISFACTORY SANITARY RESULTS FROM A CERTIFIED LAB MUST BE SUBMITTED TO THE TOWN OF NEWBURGH WATER DEPARTMENT. THE TEST SAMPLES MUST BE COLLECTED BY A REPRESENTATIVE OF THE TESTING LABORATORY AND WITNESSED BY THE WATER DEPARTMENT.
10. THRUST RESTRAINT SHALL BE PROVIDED BY THE RODS AND RETAINER GLANDS. THE LENGTH OF RESTRAINED PIPE SHALL BE DETERMINED BASED UPON WORKING PRESSURES, SOIL CONDITIONS AND DEPTH OF BURY ACCORDING TO DIPPA STANDARDS.
11. PRESSURE AND LEAKAGE TESTS ARE REQUIRED AND SHALL BE DONE IN ACCORDANCE WITH AWWA C-600 STANDARDS.
12. DISINFECTING OF ALL NEW WORK SHALL BE DONE IN ACCORDANCE WITH AWWA C-651 – YEAR LATEST REVISION STANDARDS.
13. ALL WATER MAINS SHALL BE 8", CLASS 52, DUCTILE IRON PIPE, UNLESS OTHERWISE NOTED.

LEGEND

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- EXISTING HYDRANT
- EXISTING MAIL BOX
- EXISTING SIGN
- EXISTING HEAD WALL
- EXISTING UTILITY POLE
- EXISTING PROPERTY LINE
- PROPOSED LOT LINE
- PROPOSED 1250 GAL. SEPTIC TANK
- PROPOSED ELJEN SDS (SWALE; 50% FUTURE EXPANSION AREA)
- C.O. PROPOSED SDS CLEAN OUT
- PROPOSED DWELLING
- PROP. 20'x30' SNOW STORAGE AREA STABILIZED W/ GRASS COVER & CURB CUT.
- PERC PERCOLATION TEST LOCATION
- TP TEST PIT LOCATION
- PROPOSED STORM WATER CATCH BASIN
- PROPOSED CURBED STOP
- WM PROPOSED WATER MAIN
- WS PROPOSED WATER SERVICE
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- A.C.O.E. WETLANDS
- RAIN GARDEN W/ CONVEYANCE SWALE
- FD PROPOSED FOOTING DRAIN W/ RODENT SCREEN
- RL PROPOSED ROOF LEADER W/ RODENT SCREEN
- W EXISTING WELL

FOR HEALTH DEPARTMENT APPROVAL

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REVISIONS

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SIGNATURE AND SEAL OF NEW YORK LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR
DATE 2/11/21

LANDS OF ZAZON

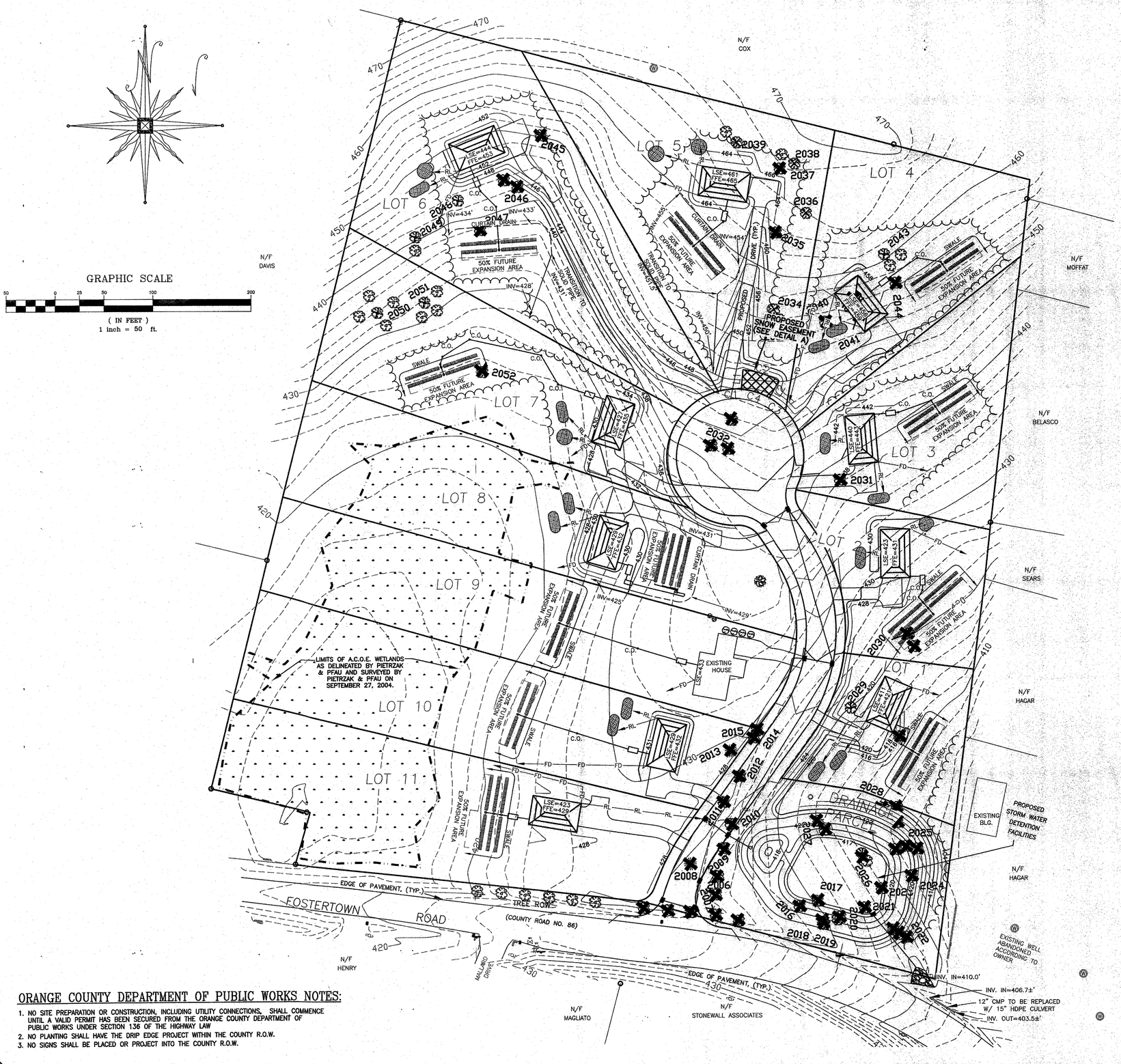
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

UTILITY SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
4 OF 6	# OF #	4 OF 11
SCALE	CAD REFERENCE	PROJECT NUMBER
1"=50'	23153COV	23153.01



TREES TO BE REMOVED	POINT NUMBER*	TREE DESCRIPTION
TO BE REMOVED	2006	28" DBH SUGAR MAPLE
TO BE REMOVED	2007	26" DBH SUGAR MAPLE
TO BE REMOVED	2008	40" DBH NORWAY SPRUCE
TO BE REMOVED	2009	30" DBH SUGAR MAPLE
TO BE REMOVED	2010	42" DBH SUGAR MAPLE
TO BE REMOVED	2011	44" DBH WHITE PINE
TO BE REMOVED	2012*	TWIN 30" DBH MAPLES
TO BE REMOVED	2013	26" DBH NORWAY SPRUCE
TO BE REMOVED	2014	36" DBH SUGAR MAPLE
TO BE REMOVED	2015	50" DBH WHITE OAK
TO BE REMOVED	2016	24" DBH SUGAR MAPLE
TO BE REMOVED	2017	18" DBH SUGAR MAPLE
TO BE REMOVED	2018	14" DBH SUGAR MAPLE
TO BE REMOVED	2019	14" DBH BLACK OAK
TO BE REMOVED	2020*	TWIN 24" DBH BASSWOOD
TO BE REMOVED	2021	17" DBH BLACK CHERRY
TO BE REMOVED	2022*	12", 14", AND 15" DBH SUGAR MAPLE
TO BE REMOVED	2023	17" DBH SUGAR MAPLE
TO BE REMOVED	2024	19" DBH SUGAR MAPLE
TO BE REMOVED	2025*	12", 15", AND 16" DBH SUGAR MAPLE
TO BE REMOVED	2026*	TWIN 17" DBH SUGAR MAPLES
TO BE REMOVED	2027*	17" AND 19" DBH BLACK WALNUT
TO BE REMOVED	2028*	(6) 16–20" DBH SUGAR MAPLES
	2029	18" DBH BLACK WALNUT
TO BE REMOVED	2030*	17" AND 19" DBH BLACK WALNUT
TO BE REMOVED	2031	20" DBH BLACK WALNUT
TO BE REMOVED	2032*	16" AND 17" DBH BLACK CHERRY & 19" DBH BLACK WALNUT
	2033	18" DBH RED OAK
	2034	20" DBH RED OAK
TO BE REMOVED	2035	15" DBH RED OAK
	2036	15" DBH BLACK OAK
TO BE REMOVED	2037	18" DBH TULIP POPLAR
	2038*	15" AND 17" DBH RED OAK
	2039*	18" AND 20" DBH RED OAK
TO BE REMOVED	2040	16" DBH BLACK OAK
TO BE REMOVED	2041	16" DBH RED OAK
TO BE REMOVED	2042	19" DBH RED OAK
	2043*	(3) 16 " DBH BLACK OAK
TO BE REMOVED	2044	17" DBH RED OAK
TO BE REMOVED	2045	17" DBH BLACK WALNUT
TO BE REMOVED	2046*	(2) 17" DBH SUGAR MAPLES
TO BE REMOVED	2047	24" DBH SUGAR MAPLE
	2048	18" DBH BLACK OAK
	2049*	18" AND 23" DBH BLACK OAKS
	2050*	(5) BLACK OAK 14–24" DBH
	2051	(4) BLACK OAK 14–20" DBH
TO BE REMOVED	2052	18" DBH BLACK WALNUT

* DENOTES TREE CLUSTER

LEGEND

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- EXISTING HYDRANT
- EXISTING MAIL BOX
- EXISTING SIGN
- EXISTING HEAD WALL
- EXISTING UTILITY POLE
- (420) EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED GRADE
- PROPOSED LOT LINE
- EXISTING PROPERTY LINE
- PROPOSED 1250 GAL. SEPTIC TANK
- PROPOSED SDS
- 50 % EXPANSION
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- PROP. 20'x30' SNOW STORAGE AREA STABILIZED W/ GRASS COVER & CURB CUT.
- PROPOSED STORM WATER CATCH BASIN
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- A.C.O.E. WETLANDS
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

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TREE PROTECTION NOTES:

1. SURVEY AND MARK THE CLEARING LIMIT LINE.
2. INSTALL ORANGE SAFETY FENCING ALONG THE CLEARING LINE.
3. WHEREVER INDIVIDUAL SPECIMEN TREES SHALL BE PRESERVED, INSTALL SAFETY FENCING ALONG OR OUTSIDE OF THE DRIP LINE OF THE TREE CANOPY.
4. THERE SHALL BE NO STORAGE OF EQUIPMENT OR MATERIALS INSIDE CLEARING LIMITS.
5. NO EQUIPMENT IS PERMITTED WITHIN CLEARING LIMITS.
6. THE FENCING SHOULD REMAIN IN GOOD CONDITION FOR THE DURATION OF THE CONSTRUCTION PERIOD.
7. ANY TREES CLEARED WITHOUT AUTHORIZATION WITHIN PROTECTED AREAS SHALL BE REPLACED WITH A TREE EQUAL TO THE BASEL AREA OF THE TREE PREVIOUSLY REMOVED.
8. IF IT IS NECESSARY TO CLEAR OR REMOVE TREES WITHIN THE PROTECTED AREAS, WRITTEN PERMISSION FROM THE TOWN OF NEWBURGH MUST BE RECEIVED PRIOR TO THE REMOVAL.

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N.Y.P.L.S. LICENSE NO. 35386
SIGNATURE
2/11/21
DATE

LANDS OF ZAZON

TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

TREE LOCATION SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
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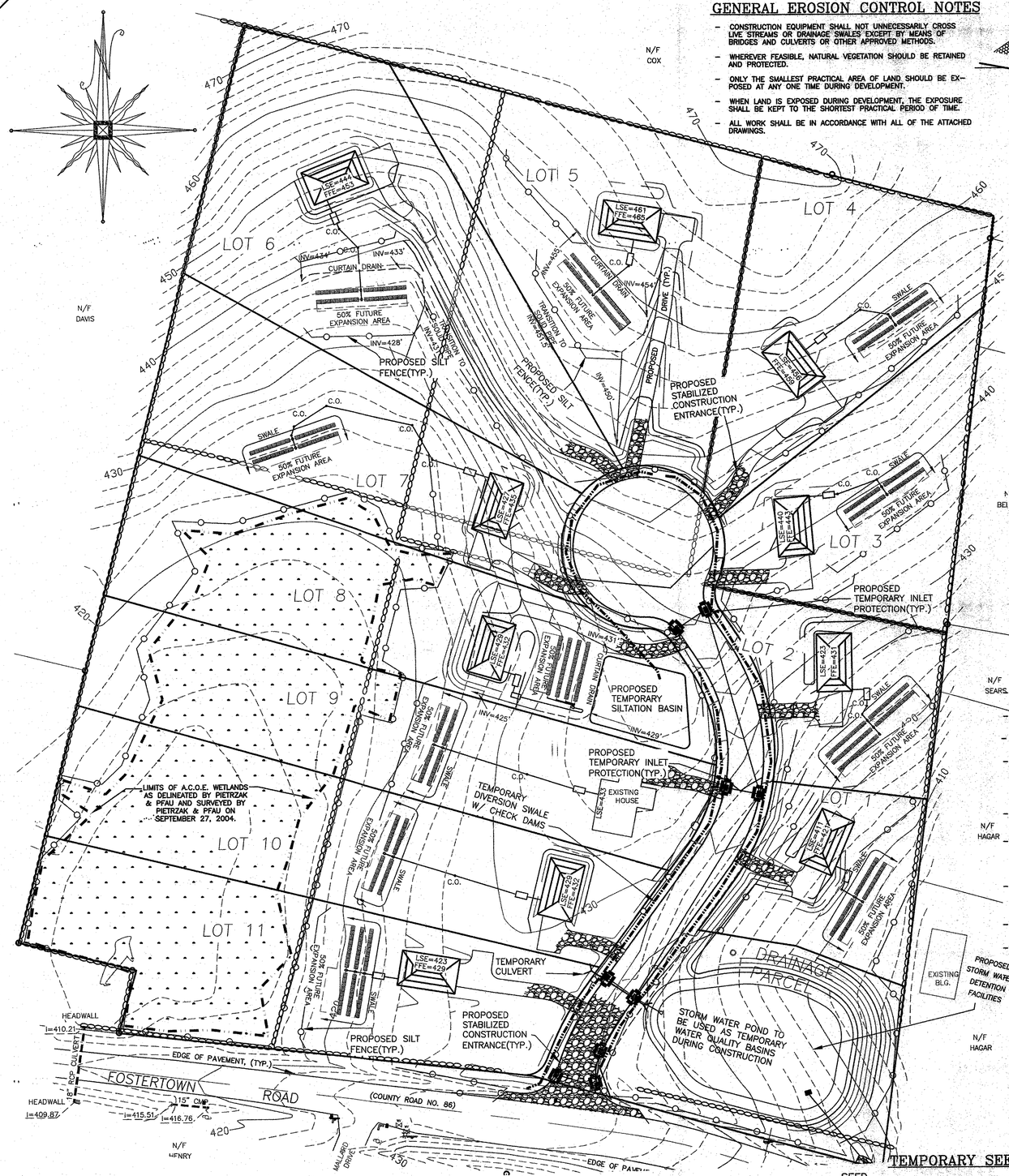
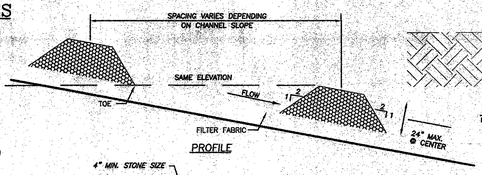
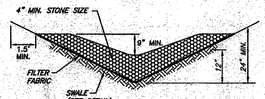


GENERAL EROSION CONTROL NOTES

- CONSTRUCTION EQUIPMENT SHALL NOT UNNECESSARILY CROSS LIVE STREAMS OR DRAINAGE SWALES EXCEPT BY MEANS OF BRIDGES AND CULVERTS OR OTHER APPROVED METHODS.
- WHEREVER FEASIBLE, NATURAL VEGETATION SHOULD BE RETAINED AND PROTECTED.
- ONLY THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT.
- WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHALL BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME.
- ALL WORK SHALL BE IN ACCORDANCE WITH ALL OF THE ATTACHED DRAWINGS.



PROFILE



SECTION

CONSTRUCTION SPECIFICATIONS:

1. STONE WILL BE ON A FILTER FABRIC FOUNDATION TO THE LINES GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

CHECK DAM DETAIL
N.T.S. CAD/CD45

EROSION CONTROL MAINTENANCE REQUIREMENTS

- THE MAINTENANCE OF EROSION CONTROL DEVICES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE JOB SUPERINTENDENT WILL MONITOR THE CONDITION OF ALL THE DEVICES. CLEAN OR REPLACE STRUCTURES AS CLIMATIC CONDITIONS REQUIRE. THE DEVELOPER WILL ALSO BE SUBJECT TO THE DIRECTIVE OF THE DESIGN ENGINEER AND TOWN REPRESENTATIVES TO INCLUDE TOWN ENGINEER, HIGHWAY SUPERINTENDENT AND BUILDING INSPECTOR.
- GENERAL CONTRACTOR AND ALL CONTRACTORS SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE APPROVED PLANS AND MAY BE SUBJECT TO ADDITIONAL EROSION CONTROL REQUIREMENTS AS CONDITIONS MAY ARISE IN THE FIELD OR AS DIRECTED BY THE DESIGN ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED PLANS, MANUFACTURER'S RECOMMENDATIONS AS DIRECTED BY THE DESIGN ENGINEER AND TOWN REPRESENTATIVES INCLUDING TOWN ENGINEER, HIGHWAY SUPERINTENDENT AND BUILDING INSPECTOR.
- NO EROSION CONTROL STRUCTURES SHALL BE REMOVED UNTIL ALL WORK UPSTREAM THEREFROM HAS BEEN COMPLETED, INCLUDING STABILIZATION AND APPROVED BY THE DESIGN ENGINEER AND TOWN REPRESENTATIVES.
- ALL CONSTRUCTION EQUIPMENT SHALL HAVE PROPERLY SIZED MAINTAINED MUFFLERS.
- ALL CONSTRUCTION EQUIPMENT SHALL BE TURNED OFF WHEN NOT IN USE.

STREAMS, DRAINAGE SWALES AND EMBANKMENTS

- FILTER FABRIC IS TO BE MIRAFI 140 AS MANUFACTURED BY THE CELANESE CORPORATION OR APPROVED EQUAL.
- EROSION MATTING IS TO BE ENKAMAT TYPE 7010 AS MANUFACTURED BY THE AMERICAN ENKA COMPANY OR EQUAL.
- STABILIZATION FABRIC IS TO BE G.T.F. 150 EXXON GEOTEXTILE FABRIC AS MANUFACTURED BY THE EXXON CHEMICAL COMPANY OR EQUAL.
- ALL CONSTRUCTION ACTIVITIES IN OR EXISTING AROUND DRAINAGE SWALES OR WETLANDS ARE TO BE PROVIDED WITH TEMPORARY EROSION CONTROL STRUCTURES AS SHOWN IN DETAIL, LOCATED IMMEDIATELY DOWNSTREAM FROM SUCH ACTIVITY. THESE STRUCTURES ARE TO BE IN PLACE AS SHOWN PRIOR TO THE START OF ANY UPSTREAM CONSTRUCTION ACTIVITY.
- CONSTRUCTION OF TEMPORARY EROSION CONTROL STRUCTURES ARE TO BEGIN WITH THE FARTHEST DOWNSTREAM (THE SILT FENCE) AND THENCE PROCEEDING UPSTREAM.
- AFTER CONSTRUCTION, OR AS DIRECTED BY THE ENGINEER, THE TEMPORARY EROSION CONTROL STRUCTURES ARE TO BE REMOVED IN REVERSE ORDER WITH THE MOST UPSTREAM STRUCTURE REMOVED FIRST AND THENCE PROCEEDING DOWNSTREAM TO THE SILT FENCE.
- ALL TEMPORARY EROSION CONTROL STRUCTURES ARE TO BE LEFT IN PLACE, MAINTAINED AND REPLACED AS NEEDED UNTIL ALL WORK UPSTREAM THEREFROM HAS BEEN COMPLETED AND ALL RELATED CONTROL STRUCTURES HAVE BEEN REMOVED.
- ALL EMBANKMENTS TO BE GRADED AND SEEDED IMMEDIATELY UPON BEING LAID BACK.
- STABILIZATION OF THE SWALES WILL INCLUDE SEEDING AND STRAW MULCH ON SLOPES LESS THAN 5% AND JUTE NETTING OR EQUAL ON SLOPES EXCEEDING 5%.
- TOPSOIL AND/OR EARTH STOCKPILE SHALL BE LOCATED OUTSIDE OF EXISTING DRAINAGE SWALES, WETLANDS AND ADJACENT AREAS. SILT FENCES WILL BE PLACED ALONG THE TOE OF THE PILES AND THESE PILES SHALL RECEIVE TEMPORARY SEEDING.

LEGEND

SILT FENCING

TEMPORARY DIVERSION SWALE

TEMPORARY SEEDING SCHEDULE

SEED

1. TEMPORARY SEEDING SEASON: MARCH 1 TO JUNE 15 AUGUST 15 TO SEPT. 15
2. SEEDING: 4 LBS. ANNUAL (OR PERENNIAL) RYE/1000 SF. FERTILIZING: 16 LBS. 10-20-10 COMMERCIAL FERTILIZER/1000 SF.
3. MULCH: ANCHOR W/ CUTBACK ASPHALT MEDIUM CURING 80 LBS. SALT HAY OR STRAW/1000 SF.

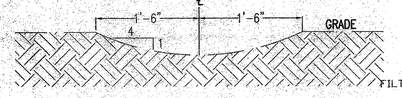
(MC-250 OR MC-800 @ 363 GAL./ACRE)

MULCH

- STRAW, WOOD CHIPS, OR APPROVED FABRICS MAYBE USED AS MULCH
- STRAW MULCH CAN BE APPLIED BY MECHANICAL BLOWERS OR BY HAND TO PRODUCE A LOOSE LAYER 3/4" THICK
- WOOD CHIPS SHALL BE SPREAD EVENLY OVER THE DISTURBED AREA TO A THICKNESS OF 2"
- GENERALLY, 3 TONS OF MULCH PER ACRE ARE SUFFICIENT
- STRAW MULCH SHALL BE FINE GRADE

ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS NOTES:

1. NO SITE PREPARATION OR CONSTRUCTION, INCLUDING UTILITY CONNECTIONS, SHALL COMMENCE UNTIL A VALID PERMIT HAS BEEN SECURED FROM THE ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS UNDER SECTION 136 OF THE HIGHWAY LAW
2. NO PLANTING SHALL HAVE THE DRIP EDGE PROJECT WITHIN THE COUNTY R.O.W.
3. NO SIGNS SHALL BE PLACED OR PROJECT INTO THE COUNTY R.O.W.



SWALE CROSS SECTION
N.T.S. CAD/SDS14

PERMANENT SEEDING MIXTURES

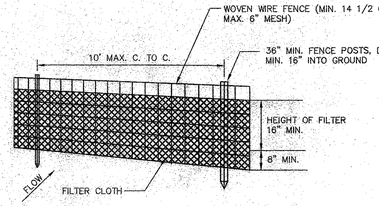
NOTE: PRIOR TO PLACING SEEDING MIXTURE, AS OUTLINED BELOW, THE CONTRACTOR SHALL VERIFY A MINIMUM OF 6" OF TOPSOIL EXISTS.

MODERATE TO STEEP SLOPES AND LOW MAINTENANCE AREAS

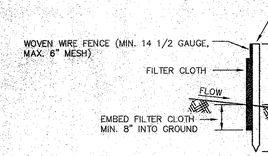
SPECIES	APPLICATION RATE
EMPIRE BIRDSFOOT TREFOIL	8 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
RYEGRASS	5 LBS/ACRE

GENERAL RECREATION AREAS AND LAWNS

SPECIES	APPLICATION RATE
SUNNY SITES (WELL, MODERATELY WELL AND SOMEWHAT POORLY DRAINED SOILS)	
65% KENTUCKY BLUEGRASS BLEND	85-114 LBS/ACRE
20% PERENNIAL RYEGRASS	26-35 LBS/ACRE
15% FINE FESCUE	19-26 LBS/ACRE
SUNNY DROUGHTY SITES (SOMEWHAT EXCESSIVELY TO EXCESSIVELY DRAINED SOILS)	
65% FINE FESCUE	114-143 LBS/ACRE
15% PERENNIAL RYEGRASS	26-33 LBS/ACRE
20% KENTUCKY BLUEGRASS BLEND	35-44 LBS/ACRE
SHADY DRY SITES (WELL TO SOMEWHAT POORLY DRAINED SOILS)	
80% SHADE TOLERANT KENTUCKY BLUEGRASS BLEND	105-138 LBS/ACRE
20% PERENNIAL RYEGRASS	25-37 LBS/ACRE
SHADY WET SITES (SOMEWHAT POOR TO POORLY DRAINED SOILS)	
70% ROUGH BLUEGRASS	60-91 LBS/ACRE
80% SHADE TOLERANT KENTUCKY BLUEGRASS BLEND	25-39 LBS/ACRE



PERSPECTIVE



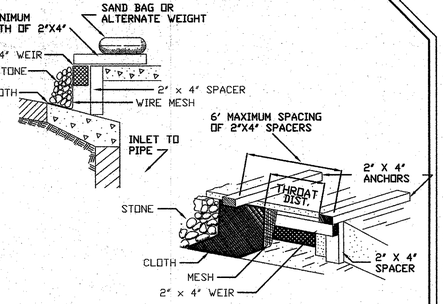
SECTION

NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE

FILTER FABRIC CHECK DAM DETAIL

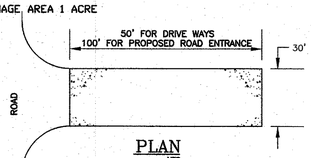
N.T.S. CAD/EC1



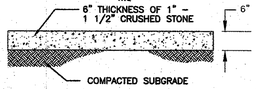
CURB DROP INLET PROTECTION

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. WOODEN FRAME SHALL BE CONSTRUCTED OF 2" x 4" CONSTRUCTION GRADE LUMBER.
3. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30 INCH MINIMUM WIDTH WITH A LENGTH 4 FEET LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2" x 4" WEIR.
4. THE WEIR SHALL BE SECURELY NAILED TO 2" x 4" SPACERS 9 INCHES LONG SPACED NO MORE THAN 6 FEET APART.
5. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2" x 4" ANCHORS 2 FEET LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHTS.

MAXIMUM DRAINAGE AREA 1 ACRE



PLAN
NTS



SECTION
NTS

NOTES:

1. ENTRANCE SHALL BE MAINTAINED AS CONDITIONS DEMAND TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC R.O.W.
2. A CRUSHED STONE, VEHICLE WHEEL-CLEANING BLANKET WILL BE INSTALLED WHERE A CONSTRUCTION ACCESS ROAD INTERSECTS ANY PAVED ROADWAY. THE BLANKET SHALL BE COMPOSED OF 6" DEPTH OF 1"-1 1/2" CRUSHED STONE, SHALL BE AT LEAST 30' x 50' AND SHALL BE PLACED ON COMPACTED SUB-GRADE.

STABILIZED CONSTRUCTION ENTRANCE

NTS

DATE	DESCRIPTION	INITIALS
	REVISIONS	
02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/6/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS

MAP CHECK DATE: 00/00/00 INITIALED BY: --

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
282 GREENWICH AVENUE, SUITE 1
GOSHEN, NEW YORK 10924
(845) 294-0606
2 HAMILTON AVENUE
MONTICELLO, NEW YORK 12701
(845) 796-4648
MICHAEL E. PIETRZAK P.L.S.
LICENSE NO. 050855
JOSEPH J. PFAU P.E.
LICENSE NO. 065945
VINCENT A. PIETRZAK P.E. P.L.S.
P.E. LICENSE NO. 078938
P.L.S. LICENSE NO. 050075
N.A.P.L.S. LICENSE NO. 33286
SIGNATURE DATE

LANDS OF ZAZON

TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

EROSION CONTROL SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
5 OF 6	# OF #	6 OF 11
SCALE	CAD REFERENCE	PROJECT NUMBER
1"=50'	23153COV	23153.01

CONSTRUCTION AND EROSION CONTROL SEQUENCE

MEASURES WILL BE TAKEN TO PREVENT SOIL EROSION DURING PROJECT CONSTRUCTION. ALL FRESHLY DISTURBED AREAS THAT WILL REMAIN DISTURBED FOR MORE THAN A PERIOD OF FOURTEEN (14) DAYS WILL BE STABILIZED BY TEMPORARY SEEDING.

ALL DISTURBED AREAS WILL BE MINIMIZED IN SIZE AND SPECIAL CARE WILL BE TAKEN AS TO THEIR LOCATION WITH PROXIMITY TO OTHER FACILITIES. SPECIFICALLY, THE FOLLOWING MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION:

A. ORANGE COLORED PLASTIC SAFETY CONSTRUCTION FENCING SHALL BE PLACED ALONG THE LIMITS OF DISTURBANCE, AS SHOWN ON THE GRADING PLAN (SHEET 3 OF 10) OF THIS SHEET SET, THROUGH OUT THE PROJECT PARCEL PRIOR TO THE COMMENCEMENT OF THE FOLLOWING EROSION CONTROL ITEMS.

B. A SEDIMENTATION BARRIER CONSISTING OF A FILTER FABRIC CHECK DAM WILL BE PLACED THROUGHOUT THE SITE. PLACEMENT IS SHOWN ON THE EROSION CONTROL PLAN (*ALSO SEE STREAM, DRAINAGE SWALES, AND EMBANKMENTS NOTE.)

C. CREATE DIVERSION SWALES TO DIVERT OFF-SITE WATER PRIOR TO ENTERING THE SITE. INSTALL A CRUSHED STONE VEHICLE WHEEL CLEANING BLANKET WHERE THE CONSTRUCTION ACCESS ROAD INTERSECTS FOSTERTOWN ROAD, ROUGH GRADE PROPOSED ENTRANCE ROAD, AND INSTALL CATCH BASINS W/ TEMP. INLET PROTECTION.

D. AFTER VEGETATION IS CLEARED FROM AREAS TO BE GRADED, FILLED, OR EXCAVATED, TOPSOIL WILL BE STRIPPED FROM ALL AREAS TO BE DISTURBED. THE TOPSOIL WILL BE STOCKPILED AND STABILIZED WITH A TEMPORARY RYE GRASS COVER. AREAS ARE PLANNED ONLY TO BE CLEARED PRIOR TO CONSTRUCTION ACTIVITY.

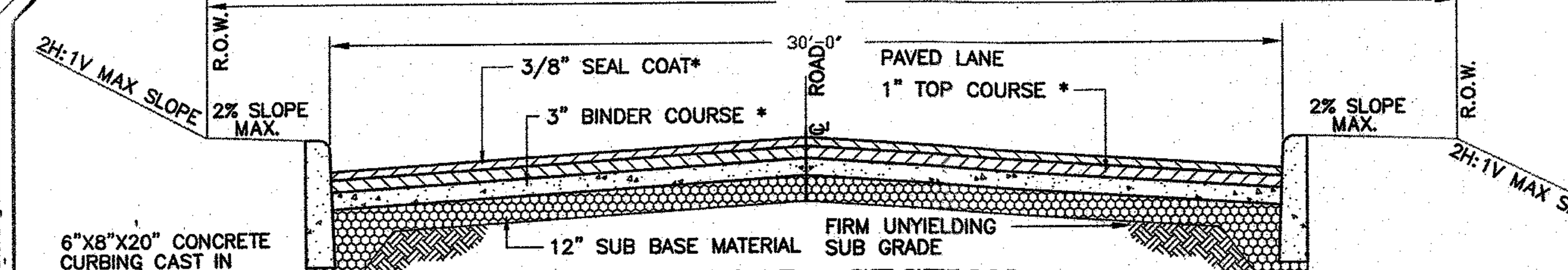
E. ROUGH EXCAVATION OF THE PROPOSED STORM WATER DETENTION POND AND OUTLET SHALL BE PERFORMED. UPON COMPLETION OF ROUGH EXCAVATION OF DETENTION POND, OUTER SLOPES SHALL IMMEDIATELY BE STABILIZED WITH PERMANENT SEEDING MIXTURES, MULCH AND JUTE NETTING, AS SPECIFIED IN THE SEEDING SCHEDULE. AFTER GRADING, BERMS AND SWALES WILL BE CREATED TO DIVERT RUNOFF FROM NEWLY GRADED AREAS TO DETENTION POND, PREVENTING EROSION UNTIL GROUND COVER HAS DEVELOPED. INSTALL TEMPORARY INLET PROTECTION MEASURES AS DRAINAGE INFRASTRUCTURE IS COMPLETED.

F. ANY AREA WHICH WILL BE UNIMPROVED FOR 20 DAYS OR MORE WILL BE SEEDED WITH A TEMPORARY RYE GRASS MIXTURE. WATER BARS WILL BE CONSTRUCTED AT SUITABLE INTERVALS (VARIES DEPENDING ON SLOPE) ALONG ROUGH OR GRADED ROADWAY TO CONVEY STORMWATER TO RETENTION POND

G. AFTER AREAS ADJACENT TO ROADS HAVE BEEN GRADED AND PERMANENT VEGETATIVE COVER HAS BEEN INSTALLED AND ESTABLISHED, THE SEDIMENT FILTERS ON STORM DRAINAGE INLET WILL BE REMOVED.

H. AFTER CONSTRUCTION IS COMPLETED, TEMPORARY DIVERSION SWALES WILL BE REMOVED. STOCKPILED TOPSOIL WILL BE SPREAD TO FINISH GRADES AND PERMANENT LAWNS AND LANDSCAPING WILL BE ESTABLISHED. REMOVE SILT FENCING, IN REVERSE ORDER INSTALLED.

I. ALL NEWLY SEEDED VEGETATIVE COVER ON ALL DISTURBED AREAS OF THE SITE WILL BE MAINTAINED. WASHOUTS OR IMPROPERLY GROWING AREAS WILL BE CORRECTED AS THEY OCCUR.

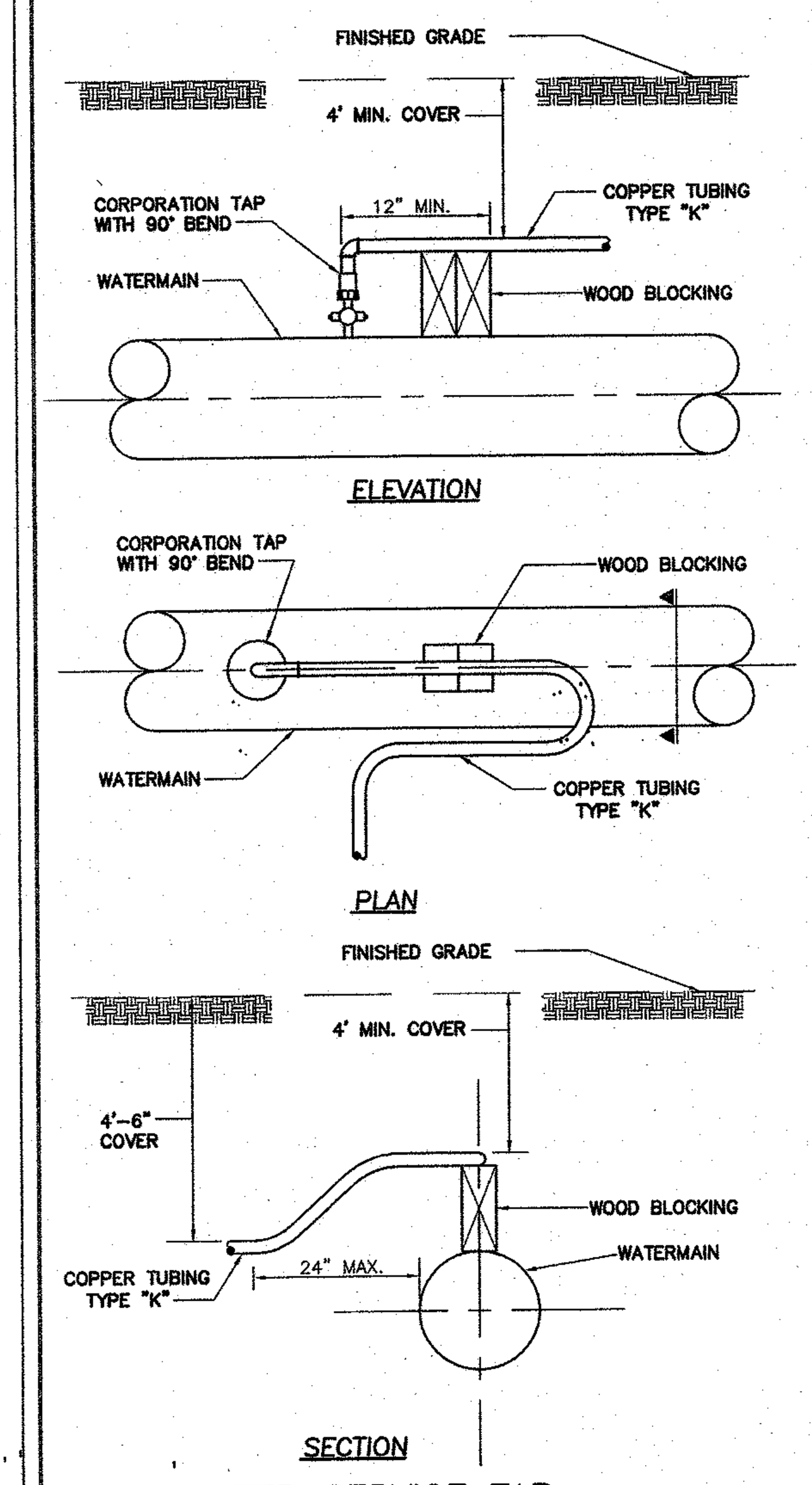


TYPICAL ROAD SECTION

N.T.S.

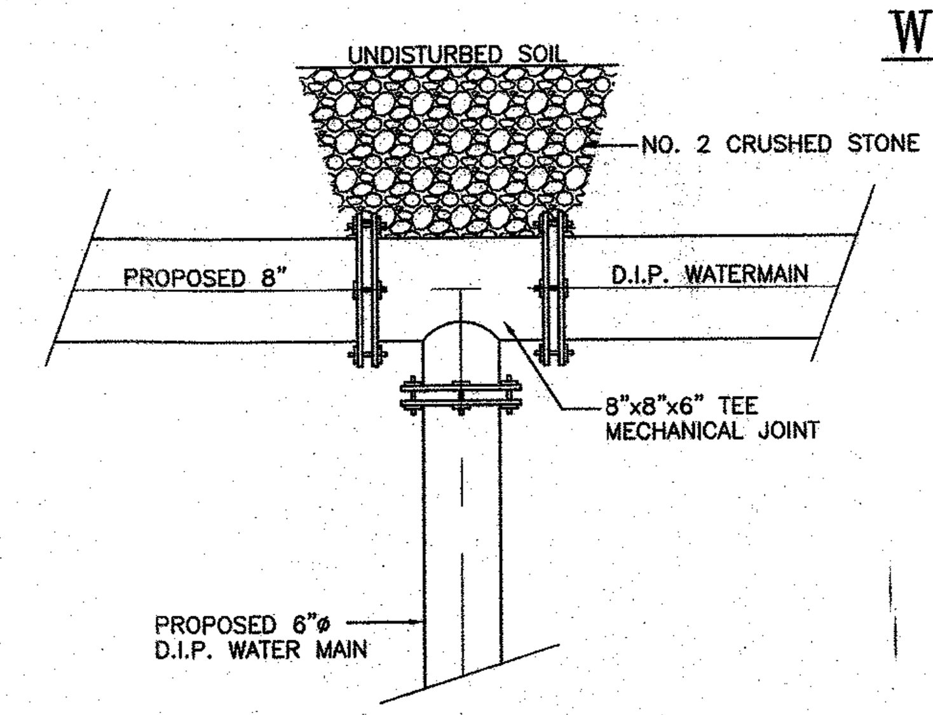
1. ROADWAY HAS 4" CROWN W/ 2% CROSS SLOPE.
* NOTE: ALL THICKNESSES ARE MINIMUM

NOT FOR HEALTH DEPARTMENT REVIEW



WATER SERVICE TAP

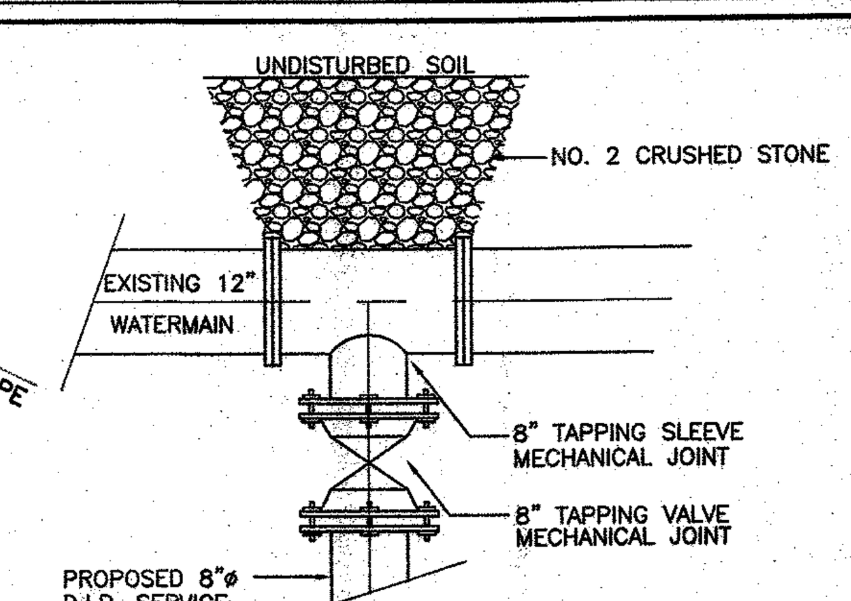
N.T.S.



HYDRANT LINE CONNECTION DETAIL

N.T.S.

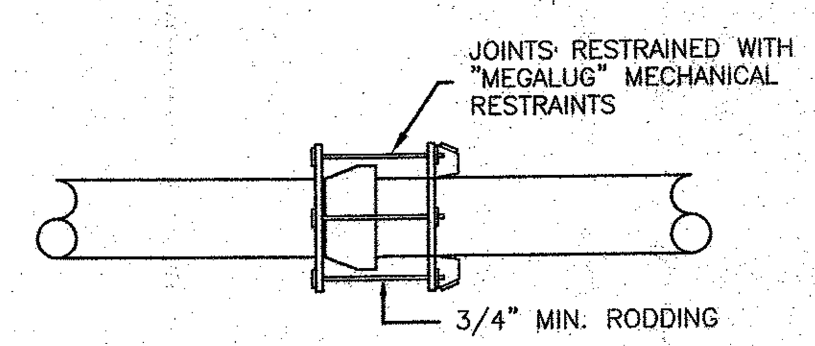
NOT FOR HEALTH DEPARTMENT REVIEW



WATERMAIN CONNECTION DETAIL

NOT FOR HEALTH DEPARTMENT REVIEW

NOTE: THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL SIZE OF EXISTING WATERMAIN.

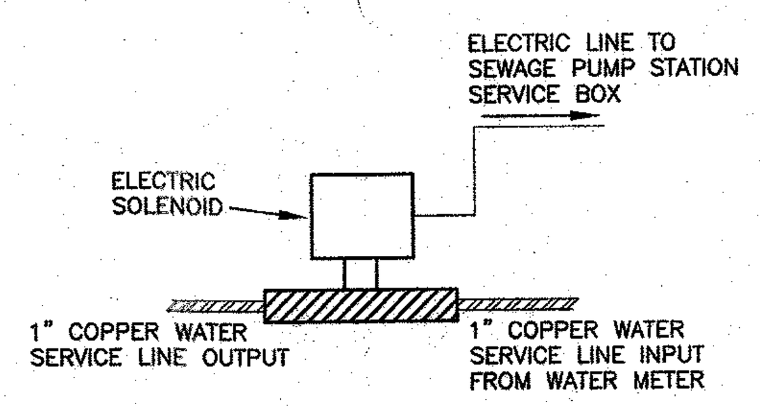


ALL FITTINGS TO BE MECHANICAL JOINT TYPE AS MANUFACTURED BY STAR PIPE PRODUCTS. FITTINGS TO BE RESTRAINED WITH SERIES 1112 MEGALUG JOINT RESTRAINTS AS MANUFACTURED BY EBAA IRON IN ACCORDANCE WITH AWWA C-600 STANDARDS.

PIPE RESTRAINT DETAIL

NTS

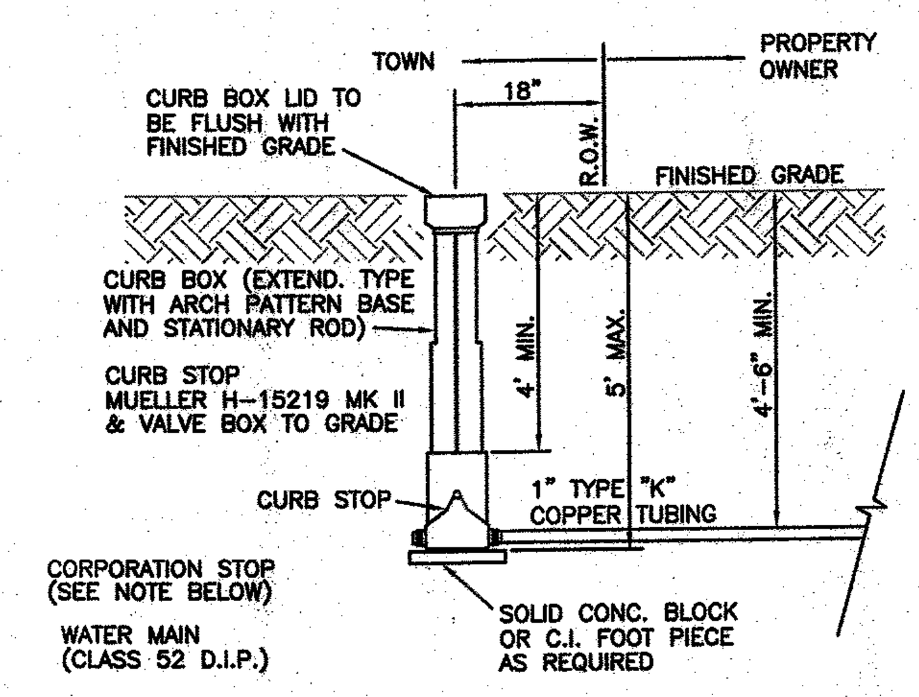
NOT FOR HEALTH DEPARTMENT REVIEW



WATER SERVICE SHUTOFF SOLENOID

(FOR LOT #8 ONLY)

NOTES:
1. THE PROPOSED WATER SHUTOFF SOLENOID SHALL BE AN ASCO MODEL# 8210B57, OR APPROVED EQUAL.
2. AN ELECTRICAL INTERLOCK SHALL BE PROVIDED FOR WATER SHUTOFF SOLENOID, IT SHALL BE HARD WIRED TO THE SEWAGE PUMP STATION HIGH WATER ALARM SUCH THAT WHEN THE HIGH WATER ALARM IN THE PUMP STATION IS ACTIVATED, WATER SERVICE TO THE BUILDING WILL BE INTERUPTED.



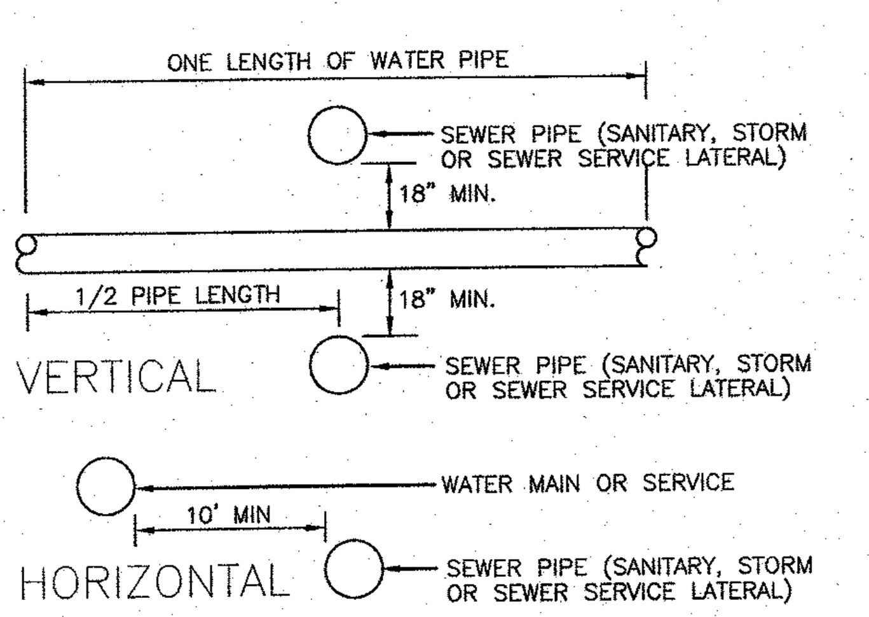
NOTE: PROPOSED LOCATIONS OF CURB BOXES TO BE FIELD LOCATED (STAKED) & APPROVED BY WATER SUPERINTENDENT PRIOR TO INSTALLATION.

FOR DUCTILE IRON PIPE DRILL & TAP MAIN AND INSTALL MUELLER CORPORATION STOP H-15008

WATER SERVICE CURB BOX DETAIL

NTS

NOT FOR HEALTH DEPARTMENT REVIEW

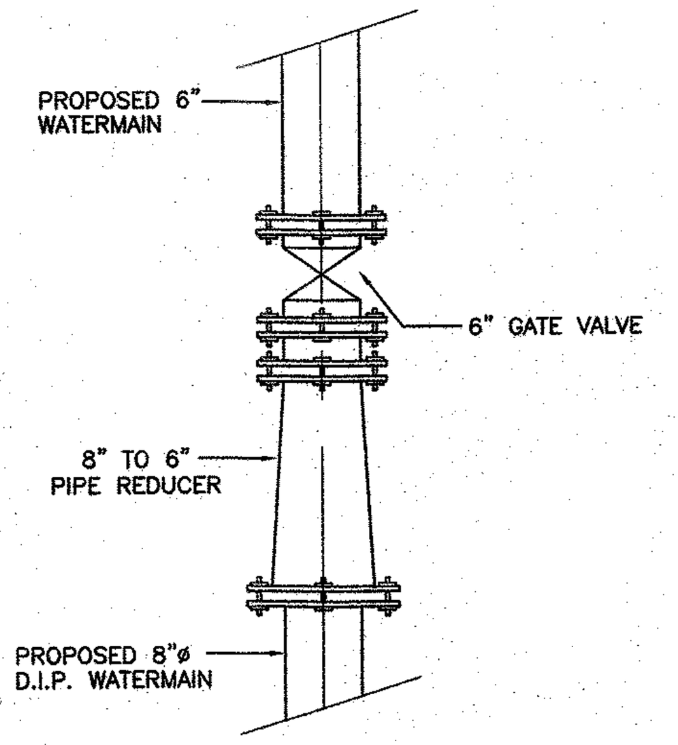


1. FOR VERTICAL CROSSINGS, POSITION MIDPOINTS OF SEWER AND WATER PIPE LENGTHS AT THE POINT OF THE CROSSING.
2. SEPARATION REQUIREMENTS APPLY TO WATER SERVICE LINES AS WELL AS WATER MAINS.
3. WHERE IT IS IMPOSSIBLE TO MAINTAIN THE REQUIRED 10 FOOT HORIZONTAL SEPARATION, THE SEWER SHALL BE CONSTRUCTED OF MECHANICAL JOINT DUCTILE IRON PIPE AND PRESSURE TESTED TO 150 PSI PRIOR TO BACKFILLING.

SEWER & WATER SEPARATIONS

NOT TO SCALE

NOT FOR HEALTH DEPARTMENT REVIEW



WATERMAIN REDUCER W/ VALVE

N.T.S.

NOT FOR HEALTH DEPARTMENT REVIEW

ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS NOTES:

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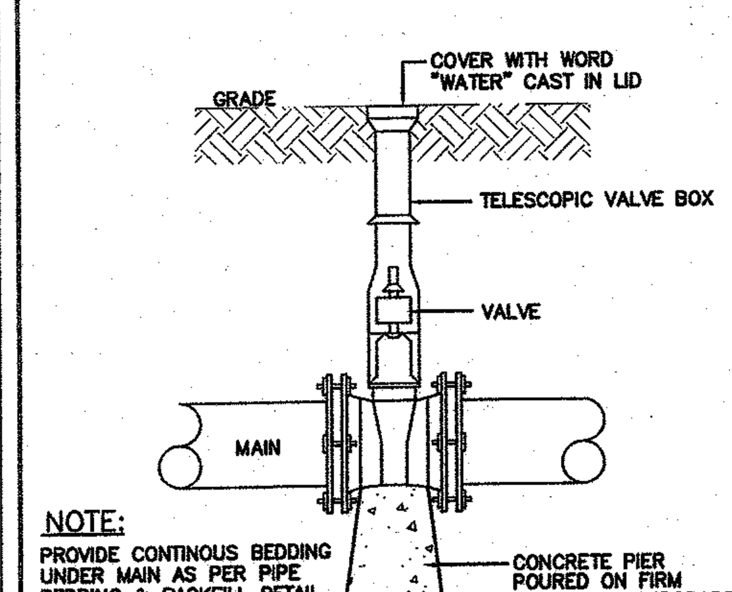
3. NO SIGNS SHALL BE PLACED OR PROJECT INTO THE COUNTY R.O.W.



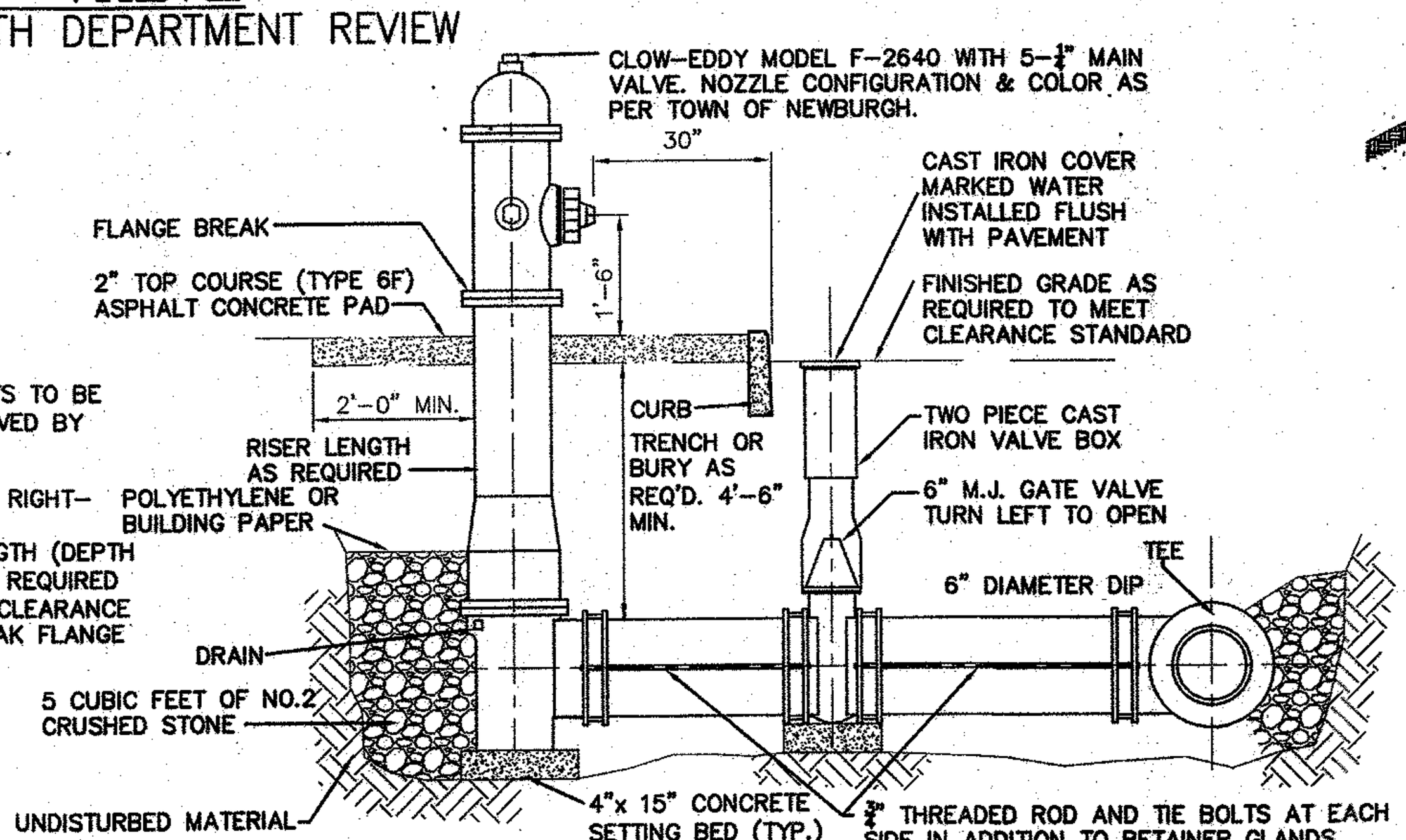
NOTE:
PROVIDE CONTINOUS BEDDING UNDER MAIN AS PER PIPE BEDDING & BACKFILL DETAIL

IN-LINE WATER VALVE DETAIL

N.T.S. CAD/CIV10

NOT FOR HEALTH DEPARTMENT REVIEW

NOTES:
1. PROPOSED LOCATIONS OF HYDRANTS TO BE FIELD LOCATED (STAKED) & APPROVED BY WATER SUPERINTENDENT PRIOR TO INSTALLATION.
2. HYDRANT TO BE INSTALLED WITHIN RIGHT-OF-WAY.
3. HYDRANT WITH PROPER RISER LENGTH (DEPTH OF BURY) SHALL BE INSTALLED AS REQUIRED TO MEET THE 2" MIN. TO 4" MAX. CLEARANCE BETWEEN THE CENTER OF THE BREAK FLANGE AND THE ASPHALT CONCRETE PAD.

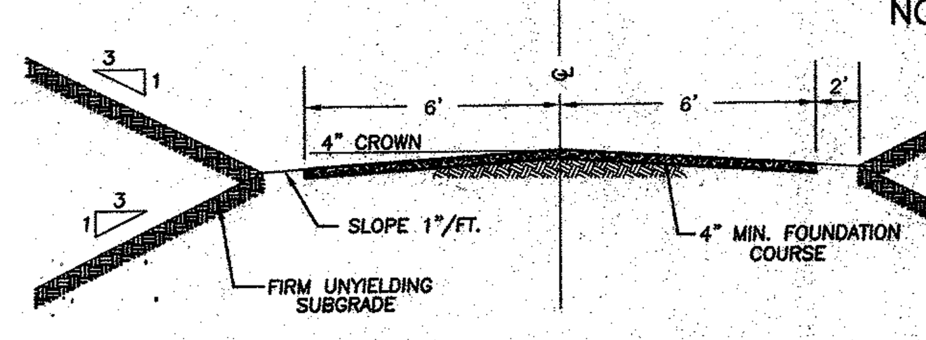


NOTES CONT.:
4. IF HIGH GROUND WATER IS ENCOUNTERED, THE HYDRANT DRAIN HOLE SHOULD BE PLUGGED AND THE HYDRANT MARKED OR LABELED TO INDICATE THAT THE BARREL MUST BE PUMPED OUT AFTER USE TO PREVENT DAMAGE FROM FREEZING

HYDRANT DETAIL

N.T.S.

NOT FOR HEALTH DEPARTMENT REVIEW



DRIVEWAY CROSS SECTION

NTS CAD/CIV42

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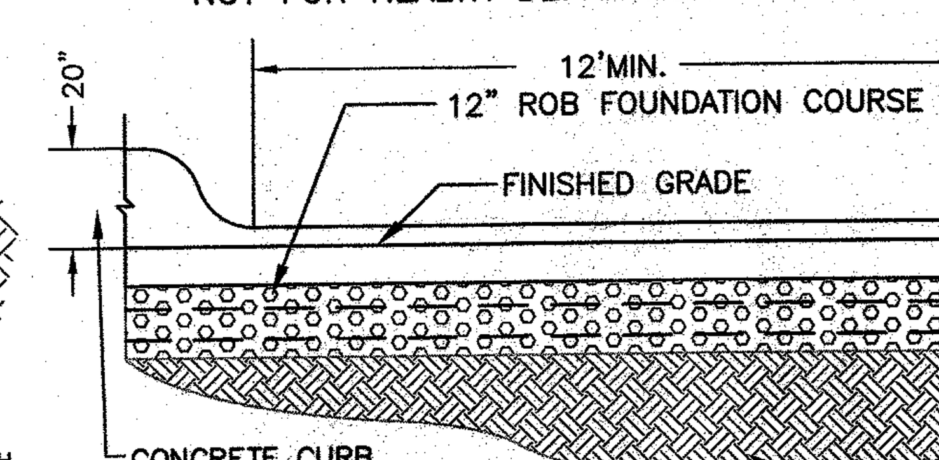
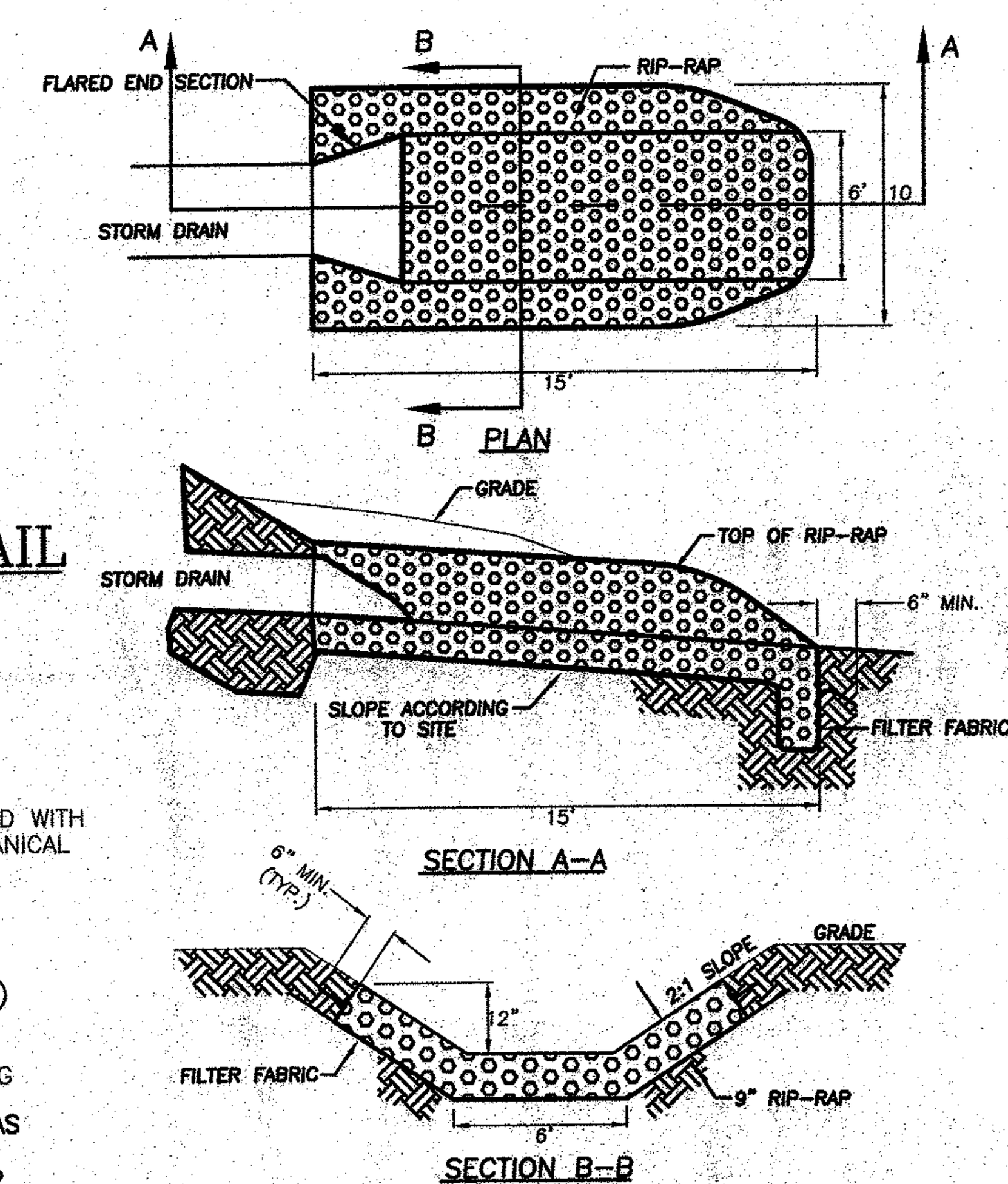


CURB CUT DETAIL

CAD/CIV73 N.T.S.

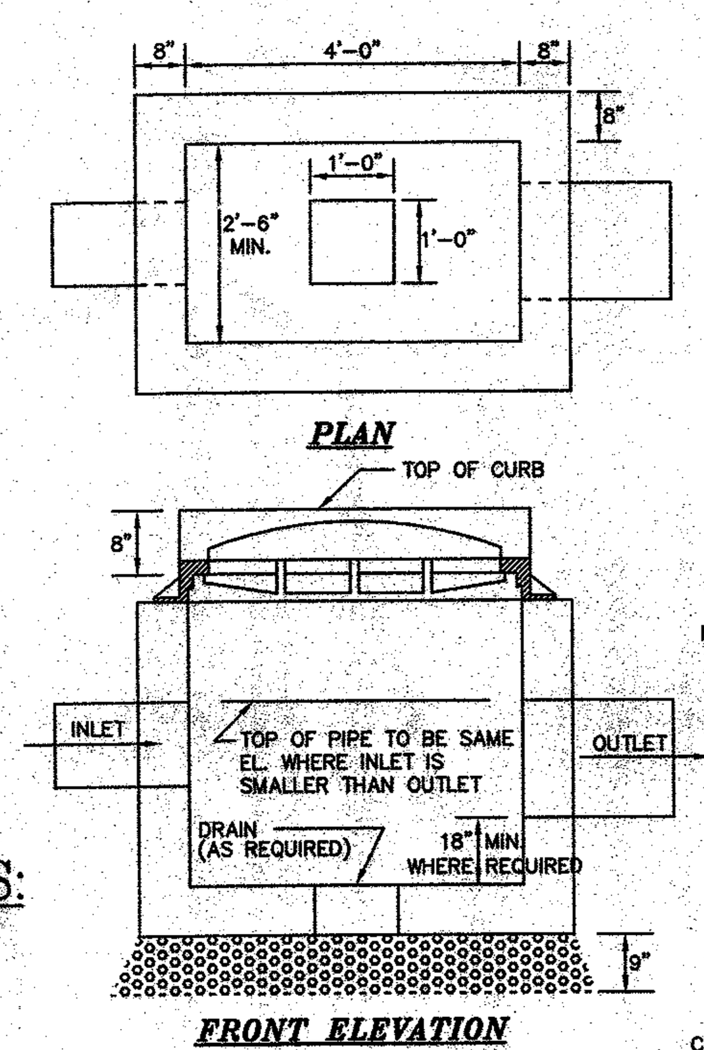
NOT FOR HEALTH DEPARTMENT REVIEW



RIP-RAP OUTLET DETAIL

N.T.S. CAD/EC6

NOT FOR HEALTH DEPARTMENT REVIEW

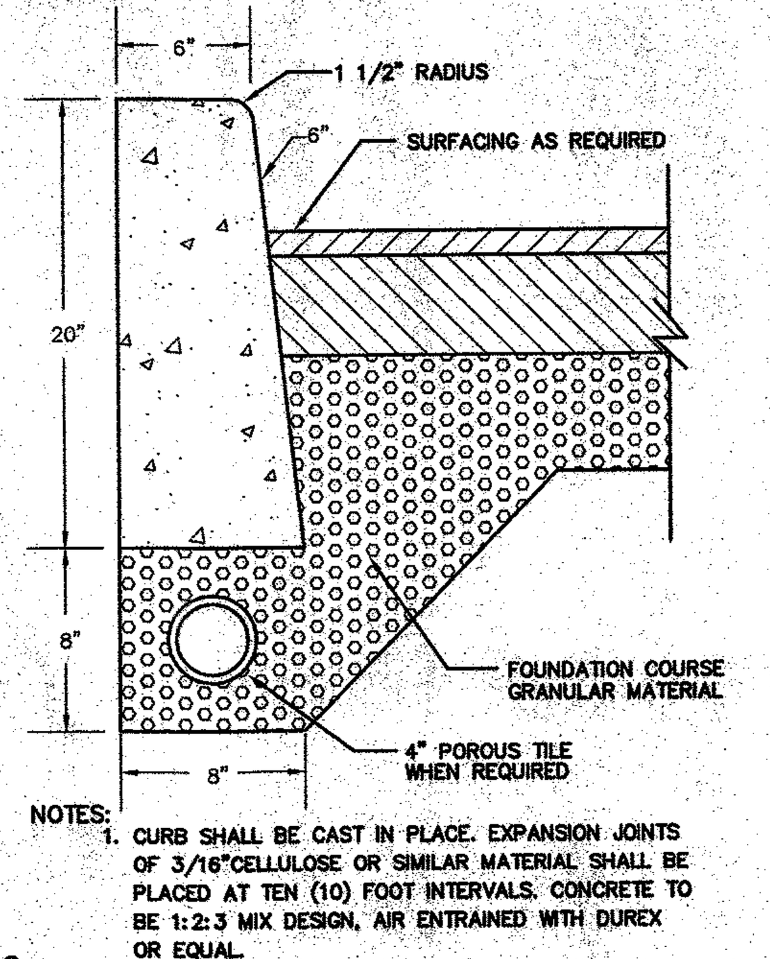


NOTES:
1. HEAVY DUTY CURB TYPE CATCH BASIN FRAME AND GRATE TO BE CAMPBELL FOUNDRY NO. 2541 & 2548 AS REQUIRED
2. PRECAST CONCRETE TO BE 4000 PSI AT 28 DAYS W/ 6"X6"X6" W.W. MESH REINFORCEMENT
3. ALL CATCH BASINS ARE TO BE "FLOW THROUGH" TYPE, WITH NO SUMP EXCEPT THE TERMINAL CATCH BASIN PRIOR TO DISCHARGE TO THE STORM WATER QUALITY BASIN.
4. THE TERMINAL CATCH BASIN PRIOR TO DISCHARGE TO THE STORM WATER QUALITY BASIN SHOULD HAVE A SUMP & AN OIL & GREASE HOOD.

PRECAST CONCRETE CURB INLET DETAIL

N.T.S. CAD/CIV4

NOT FOR HEALTH DEPARTMENT REVIEW

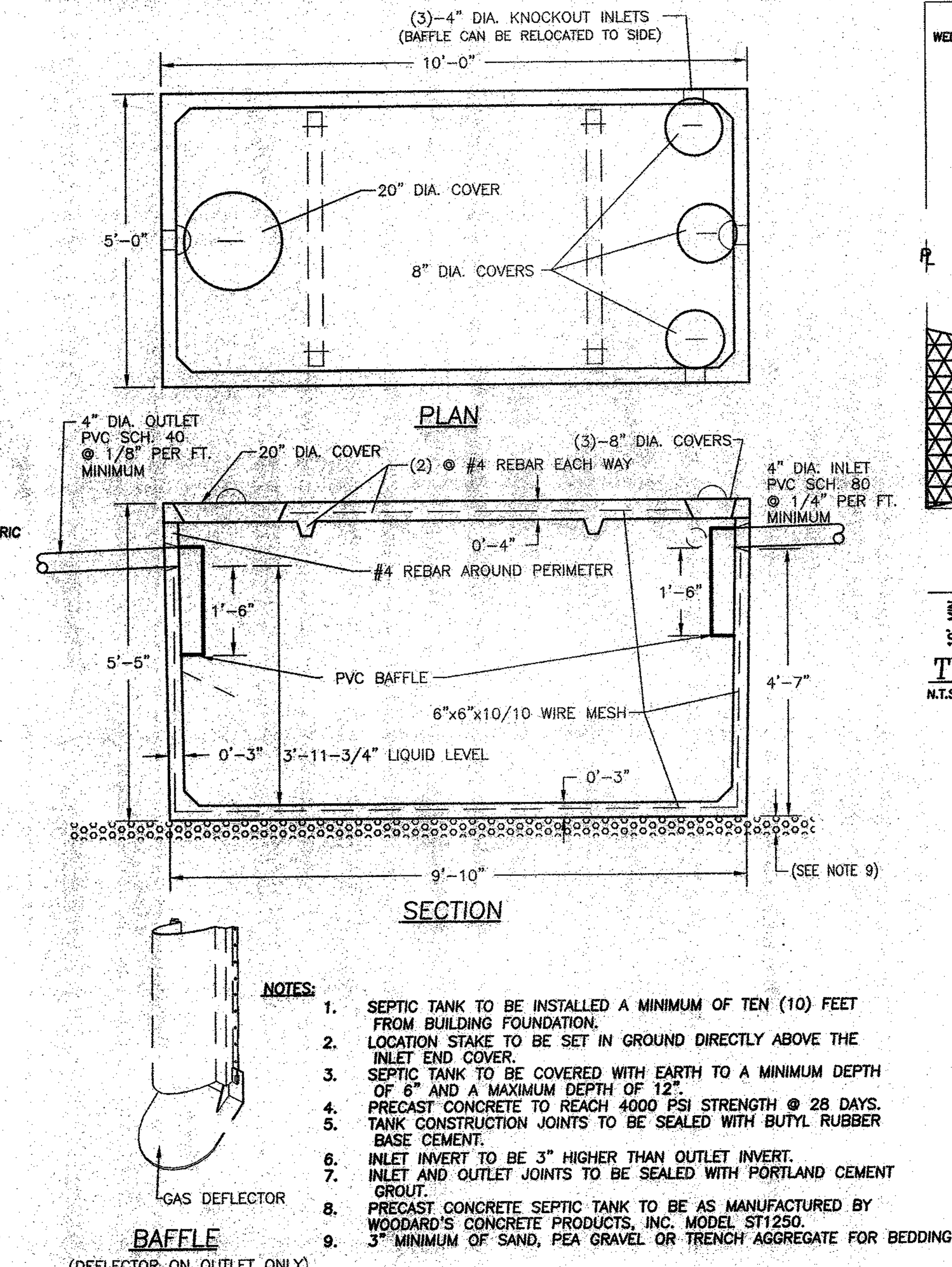


NOTES:
1. CURB SHALL BE CAST IN PLACE. EXPANSION JOINTS OF 3/16"CELLULOSE OR SIMILAR MATERIAL SHALL BE PLACED AT TEN (10) FOOT INTERVALS. CONCRETE TO BE 1:2:3 MIX DESIGN, AIR ENTRAINED WITH DUREX OR EQUAL.
2. CONCRETE TO TEST 4000 PSI AT 28 DAYS

CONCRETE CURB DETAIL

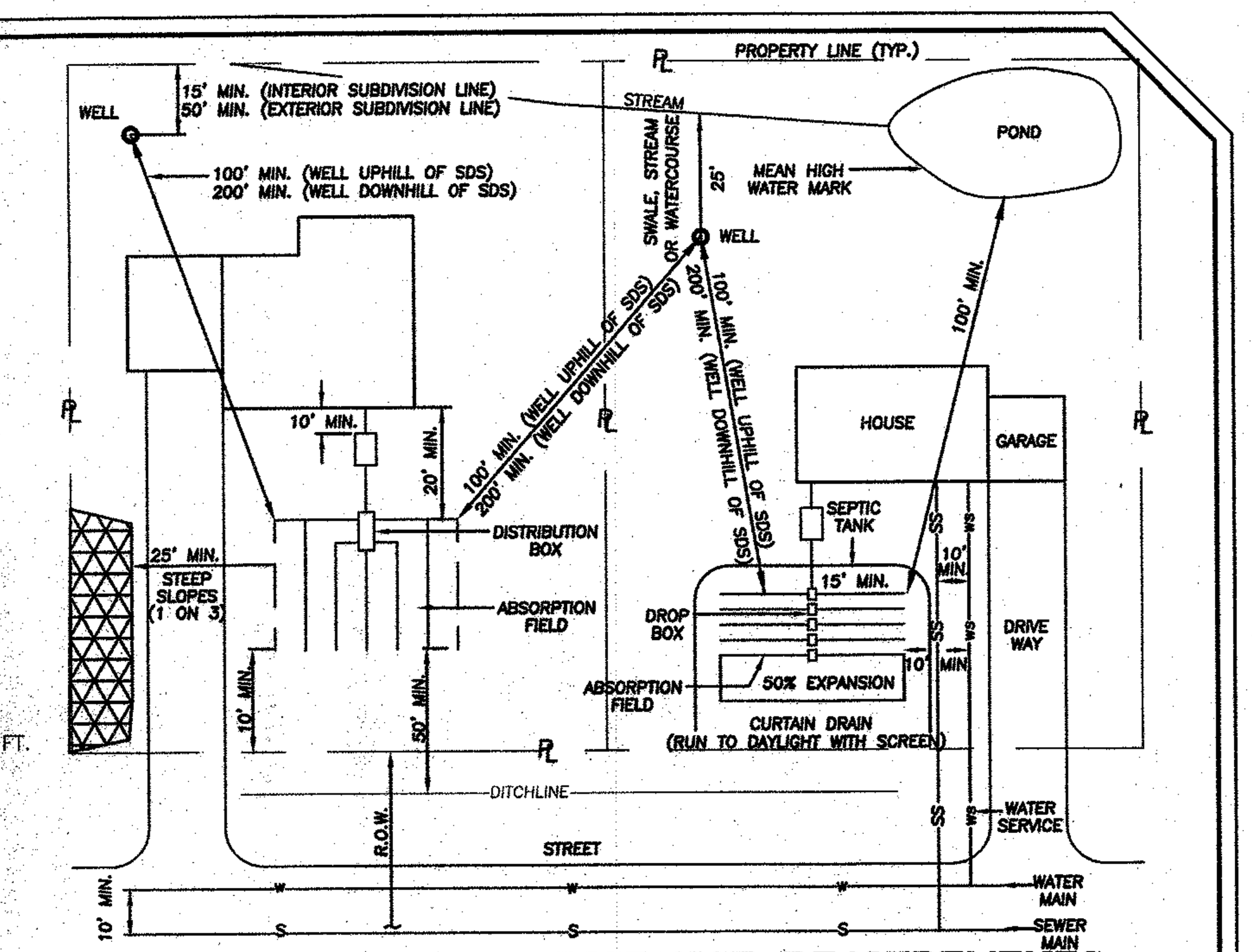
N.T.S. CAD/CIV3

NOT FOR HEALTH DEPARTMENT REVIEW



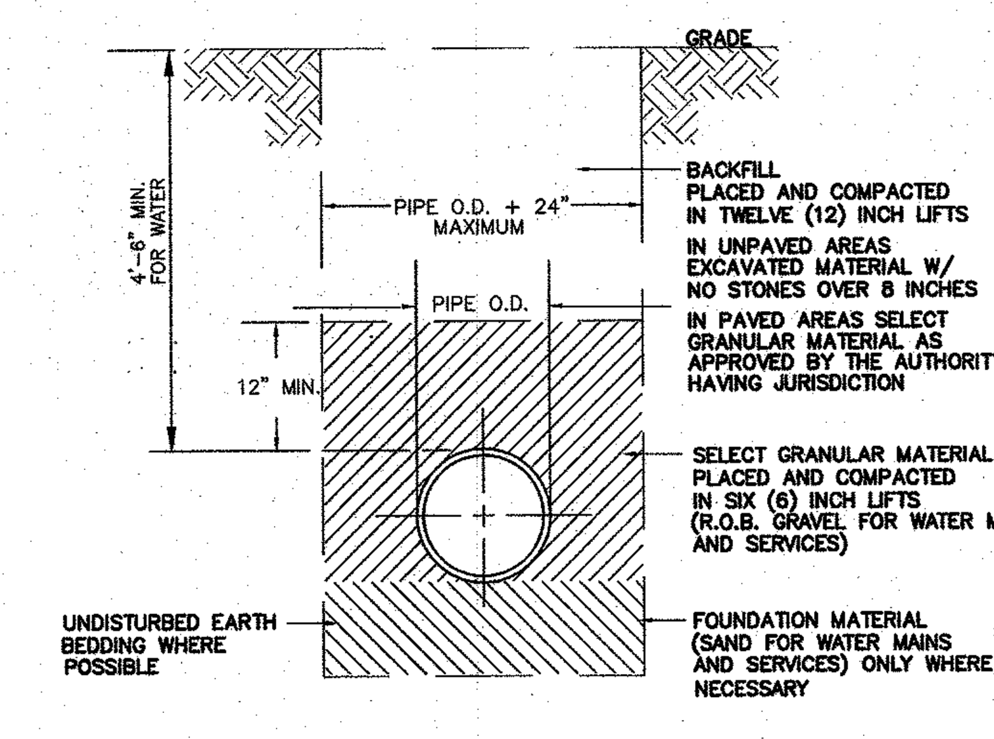
NOTES:
1. SEPTIC TANK TO BE INSTALLED A MINIMUM OF TEN (10) FEET FROM BUILDING FOUNDATION.
2. LOCATION STAKE TO BE SET IN GROUND DIRECTLY ABOVE THE INLET END COVER.
3. SEPTIC TANK TO BE COVERED WITH EARTH TO A MINIMUM DEPTH OF 6" AND A MAXIMUM DEPTH OF 12".
4. PRECAST CONCRETE TO REACH 4000 PSI STRENGTH @ 28 DAYS.
5. TANK CONSTRUCTION JOINTS TO BE SEALED WITH BUTYL RUBBER BASE CEMENT.
6. INLET INVERT TO BE 3" HIGHER THAN OUTLET INVERT.
7. INLET AND OUTLET JOINTS TO BE SEALED WITH PORTLAND CEMENT GROUT.
8. PRECAST CONCRETE SEPTIC TANK TO BE AS MANUFACTURED BY WOODARD'S CONCRETE PRODUCTS, INC. MODEL ST1250.
9. 3" MINIMUM OF SAND, PEA GRAVEL OR TRENCH AGGREGATE FOR BEDDING.

1250 GALLON SEPTIC TANK DETAIL



TYPICAL SEPARATION DISTANCE REQUIREMENTS

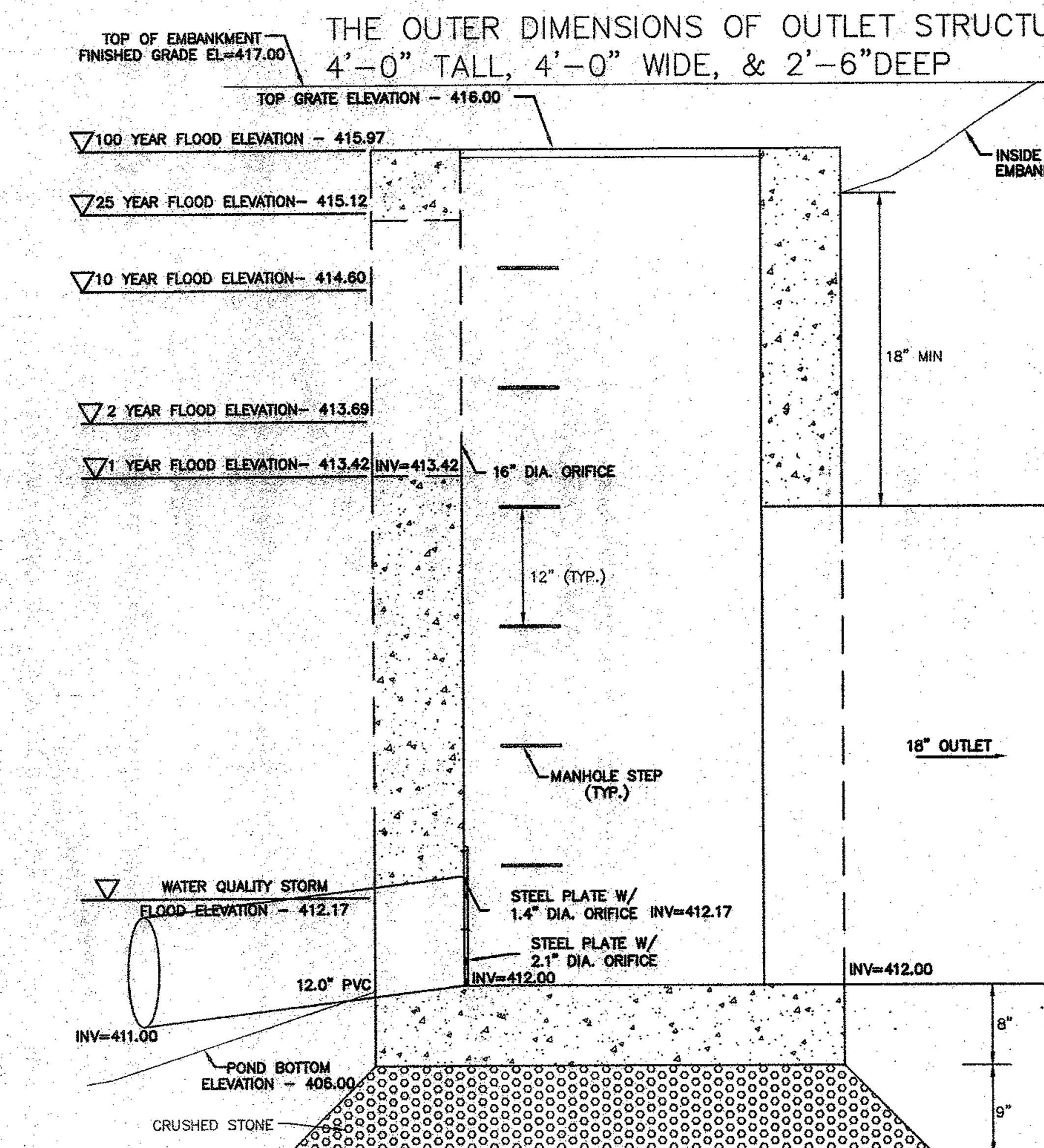
N.T.S. CAD\SDS39



PIPE BEDDING & BACKFILL DETAIL

NOT FOR HEALTH DEPARTMENT REVIEW

THE OUTER DIMENSIONS OF OUTLET STRUCTURE:
4'-0" TALL, 4'-0" WIDE, & 2'-6"DEEP



OUTLET STRUCTURE DETAIL

N.T.S. CAD/CIV29

FRONT ELEVATION

NOT FOR HEALTH DEPARTMENT REVIEW

FOR HEALTH DEPARTMENT APPROVAL

THIS SHEET IS INCOMPLETE AND INVALID WITHOUT EACH AND EVERY OTHER SHEET LISTED IN THE TITLE BOX UNDER THE HEADING O.C.H.D. SHEET NO. – OF – .

DATE	DESCRIPTION	INITIALS
02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/8/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS

REVISIONS

MAP CHECK DATE: 00/00/00 | INITIALED BY: –.–

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC

262 GREENWICH AVENUE, SUITE A, GOSHEN, NEW YORK 10924 (845) 294-0606
2 HAMILTON AVENUE, MONTICELLO, NEW YORK 12701 (845) 796-4646

MICHAEL F. CREEGAN P.L.S. LICENSE NO. 050392
JOSEPH J. PFAU P.E. LICENSE NO. 062845
VINCENT A. PIETRZAK P.E. P.L.S. P.E. LICENSE NO. 070936 P.L.S. LICENSE NO. 050075 N.P.L.S. LICENSE NO. 53398

SIGNATURE 2/11/21 DATE

LANDS OF ZAZON

TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

DETAIL SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
6 OF 6	# OF #	7 OF 11
SCALE	**CAD REFERENCE**	**PROJECT NUMBER**
1"=50'	23153COV	23153.01

SOIL TEST RESULTS & SEPTIC SYSTEM DESIGN

LOT #	DEEP TEST PIT #1 RESULTS	DEEP TEST PIT #2 RESULTS	JSI DEEP TEST PIT # 3 RESULTS	STABILIZED PERC RATE	SEPTIC SYSTEM DESIGN SYSTEM DESIGN BASED ON 555 GPD
1	0-12" TOPSOIL – ROOT MASS 12"-54" SANDY SILT W/ COBBLE & GRAVEL NO SEEPAGE BOULDERS @ 54"	0-11" TOPSOIL & ROOT MASS 11"-64" SANDY SILT W/ GRAVEL, COB & TRACE BOULDER 64"-74" SILT W/GRAVEL, COB & BOULDER NO SEEPAGE NO BEDROCK	0-8" TOPSOIL 8"-80" SILT LOAM W/ COBBLES AND STONES NO SEEPAGE NO BEDROCK	PT1: 5 MIN. DEPTH: 24" PT2: 4 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 21 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
2	0-12" TOPSOIL 12"-32" LIGHT BROWN SILT LOAM W/ SOME SAND 32"-90" SANDY SILT W/ COBBLES, BOULDERS & GRAVEL NO SEEPAGE NO BEDROCK	0-12" TOPSOIL 12"-84" LIGHT BROWN SILT LOAM W/ COB., GRAVEL & BOULDERS NO SEEPAGE NO BEDROCK		PT1: 12 MIN. DEPTH: 24" PT2: 35 MIN. DEPTH: 24" JSI 16 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 52 # ELJEN UNITS PROVIDED: 55 5 LATS. @ 44', 220 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
3	0-11" TOPSOIL-ROOT MASS 11"-88" SANDY SILT LOAM W/ COBBLES AND TRACE BOULDERS NO SEEPAGE NO BEDROCK	0-12" TOPSOIL-ROOT MASS 12"-70" GRAVELY SILT LOAM W/ COBS, BOULDER NO SEEPAGE NO BEDROCK		PT1: 3 MIN. DEPTH: 24" PT2: 10 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 28 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
4	0-12" TOPSOIL-ROOT MASS 12"-36" GRAVELY SILT LOAM W/ COBBLES 36"-49" FRACTURED SHALE W/ COB, BOULDER & LEDGE ROCK NO SEEPAGE BEDROCK @ 49"	0-12" TOPSOIL-ROOT MASS 12"-49" SILT LOAM W/ GRAVEL & COBS. NO SEEPAGE BEDROCK @ 49"	0-11" TOPSOIL 11"-42" SILTY LOAM 42"-89" SILT W/ SAND, COBBLES, AND STONES NO SEEPAGE NO BEDROCK	PT1: 10 MIN. DEPTH: 24" PT2: 8 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 28 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
5	0-12" TOPSOIL 12"-64" BOULDERS W/ SILTY GRAVELY LOAM NO SEEPAGE REFUSAL @ 64"	0-12" TOPSOIL 12"-48" SILT LOAM W/ COBBLES & GRAVEL 48"-76" SILT LOAM W/ GRAVEL & COBBLES SEEPAGE @ 76" BEDROCK @ 49"		PT1: 4 MIN. DEPTH: 24" PT2: 7 MIN. DEPTH: 24" JSI 6 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 26 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
6	0-8" TOPSOIL 8"-26" LIGHT BROWN MOTTLED SILT LOAM W/ GRAVEL/SAND 26"-60" COBBLE, GRAVEL W/ SILT LOAM 60"-70" SANDY GRAVEL / SEEPAGE @ 70" MOTTLING @ 26" NO BEDROCK	0-9" TOPSOIL 9"-53" SILT LOAM W/ GRAVEL & COBS, BOULDERS MOTTLING @ 24" NO BEDROCK	0-9" TOPSOIL 9"-76" SILT LOAM W/ STONES, COBBLES, AND BOULDERS NO SEEPAGE NO BEDROCK	PT1: 3 MIN. DEPTH: 24" PT2: 14 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 31 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
7	0-9" TOPSOIL 9"-63" SILT LOAM W/ GRAVEL & COBS, BOULDERS NO SEEPAGE NO BEDROCK	0-10" TOPSOIL 10"-36" SILT LOAM W/ GRAVEL & COBS, 36"-68" SANDY SILTY W/ BOULDERS, GRAVEL & COBS, NO SEEPAGE NO BEDROCK		PT1: 2 MIN. DEPTH: 24" PT2: 8 MIN. DEPTH: 24" JSI 2 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 28 # ELJEN UNITS PROVIDED: 36 4 LATS. @ 36', 144 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
8	0-10" TOPSOIL 10"-73" SILT LOAM W/ GRAVEL & COBS, TRACE BOULDERS LIGHT MOT @ 50" NO BEDROCK	0-8" TOPSOIL 8"-30" SILT LOAM W/ GRAVEL 30"-77" GRAVELLY SILT LOAM SOME BOULDER NO SEEPAGE NO BEDROCK		PT1: 28 MIN. DEPTH: 24" PT2: 18 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 41 # ELJEN UNITS PROVIDED: 52 4 LATS. @ 52', 208 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
9	0-8" TOPSOIL 8"-36" SILT LOAM W/ GRAVEL & COBS 36"-68" GRAVELY LOAM W/ COBS 68"-80" GRAVELY LOAM W/ BOULDERS NO SEEPAGE NO BEDROCK	0-12" TOPSOIL 12"-36" GRAVELY SILT LOAM W/ COBS 36"-60" SANDY SILT LOAM NO SEEPAGE NO BEDROCK		PT1: 3 MIN. DEPTH: 24" PT2: 4 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 21 # ELJEN UNITS PROVIDED: 32 4 LATS. @ 32', 128 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
10	0-8" TOPSOIL 8"-24" GRAVELY SILT LOAM 24"-72" GRAVELY LOAM W/ COBS AND SOME BOULDERS NO SEEPAGE NO BEDROCK	0-8" TOPSOIL 8"-24" SILT LOAM W/ GRAVEL 24"-70" FRACTURED SHALE SILTY SAND LOAM W/ BOULDERS NO SEEPAGE NO BEDROCK	0-5" TOPSOIL 5"-84" SILT W/ SAND W/ COBBLES AND STONE NO SEEPAGE NO BEDROCK	PT1: 3 MIN. DEPTH: 24" PT2: 5 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 21 # ELJEN UNITS PROVIDED: 32 4 LATS. @ 32', 128 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.
11	0-8" TOPSOIL 8"-40" SANDY SILT LOAM W/COBBLE 40"-79" GRAVELY LOAM W/ FRACTURED SHALE NO SEEPAGE NO BEDROCK	0-7" TOPSOIL 7"-25" SILT LOAM W/ GRAVEL & COBS 25"-76" BROWN SILT LOAM W/ GRAVEL & COBS NO SEEPAGE NO BEDROCK		PT1: 28 MIN. DEPTH: 24" PT2: 2 MIN. DEPTH: 24" JSI 2 MIN. DEPTH: 24"	ELJEN "TYPE B" SEPTIC DESIGNED FOR: 4 BEDROOM MAXIMUM # ELJEN UNITS REQUIRED: 41 # ELJEN UNITS PROVIDED: 54 6 LATS. @ 36', 216 L.F. TOTAL SEPTIC TANK SIZE: 1250 GAL.

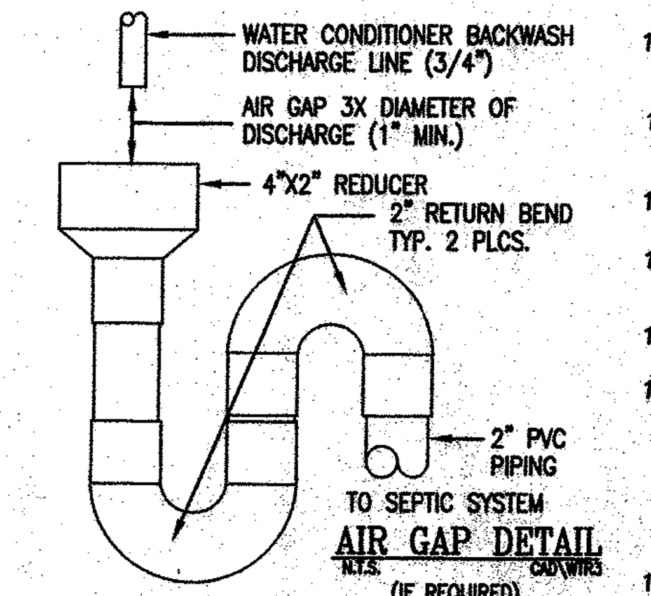
NOTES:

1. PERCOLATION TESTS WERE PERFORMED ON 6/14,15,17&20/05 BY PIETRZAK AND PFAU, PLLC.
2. DEEP PIT TESTS WERE PERFORMED ON 6/22/05. BY PIETRZAK AND PFAU, PLLC.
3. ALL PERCOLATION TESTS WERE PERFORMED AT A DEPTH OF 24".
3. JSI PERCOLATION AND DEEP PIT TESTS WERE PERFORMED ON 5/14/08 BY PIETRZAK AND PFAU, PLLC AND WITNESSD BY THE ORANGE COUNTY DEPARTMENT OF HEALTH.

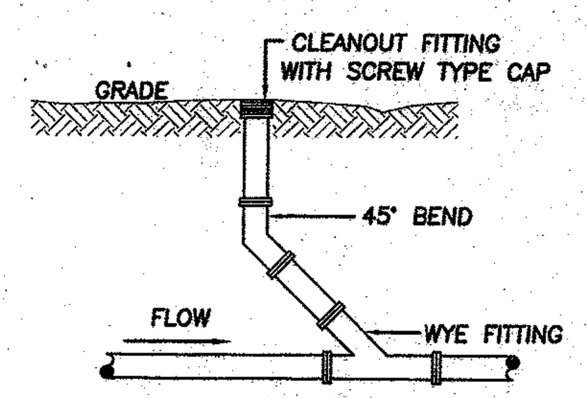
ENGINEER'S CERTIFICATION

CAD\ENGCERT

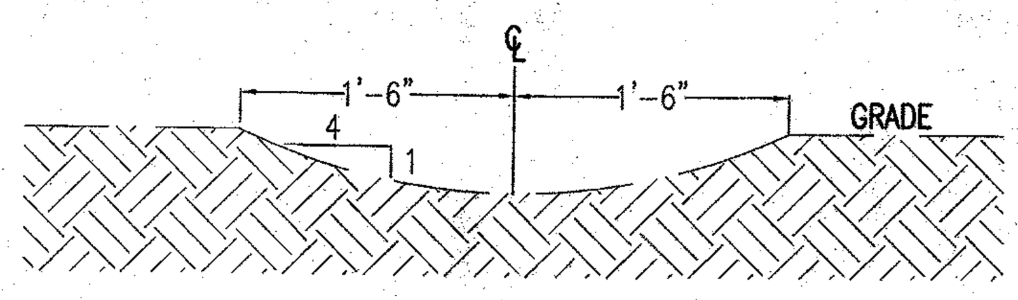
THE PROPOSED SEWAGE DISPOSAL SYSTEM(S) AND WATER SUPPLY SYSTEM(S) SHOWN ARE DESIGNED IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS ESTABLISHED BY THE NEW YORK STATE DEPARTMENT OF HEALTH AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION FOR RESIDENTIAL LOTS. THE DESIGN(S) ARE BASED UPON ACTUAL SOIL AND SITE CONDITIONS FOUND UPON THE LOT(S) AT THE DESIGN LOCATION AT THE TIME OF DESIGN.



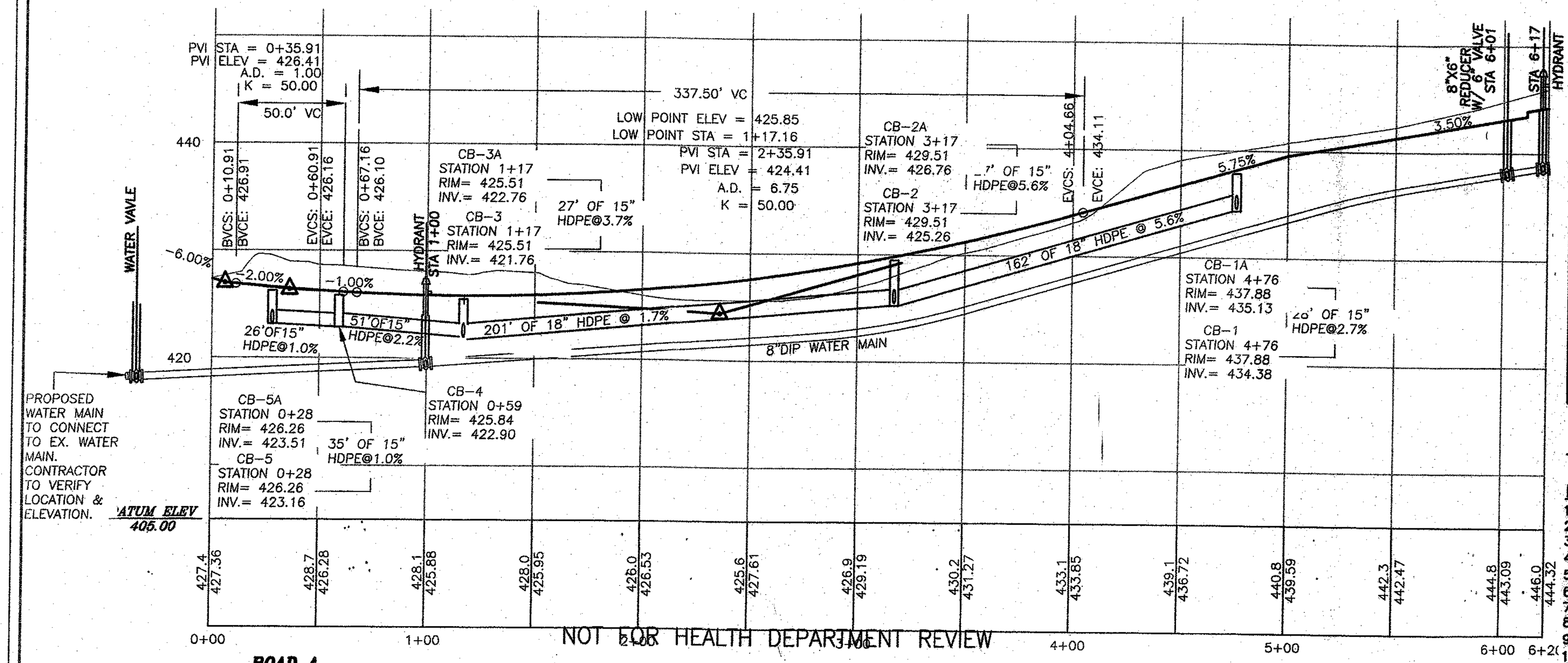
AIR GAP DETAIL
N.T.S. (IF REQUIRED)



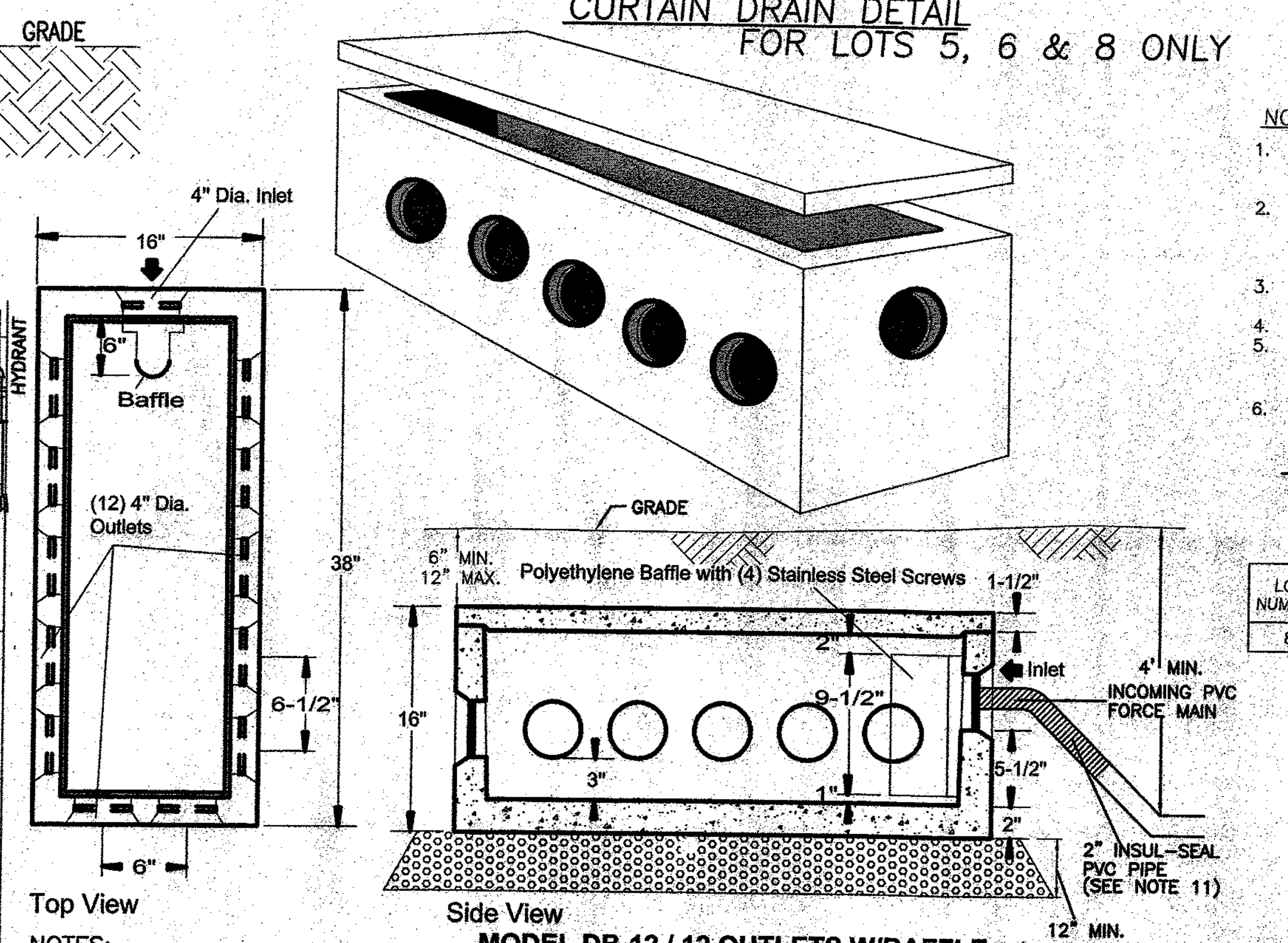
CLEANOUT DETAIL
N.T.S.



SWALE CROSS SECTION
N.T.S.



ROAD A
HORIZONTAL SCALE 1"=50'
VERTICAL SCALE 1"=10'



MODEL DB-12 / 12 OUTLETS W/BAFFLE (SEE NOTE 5)

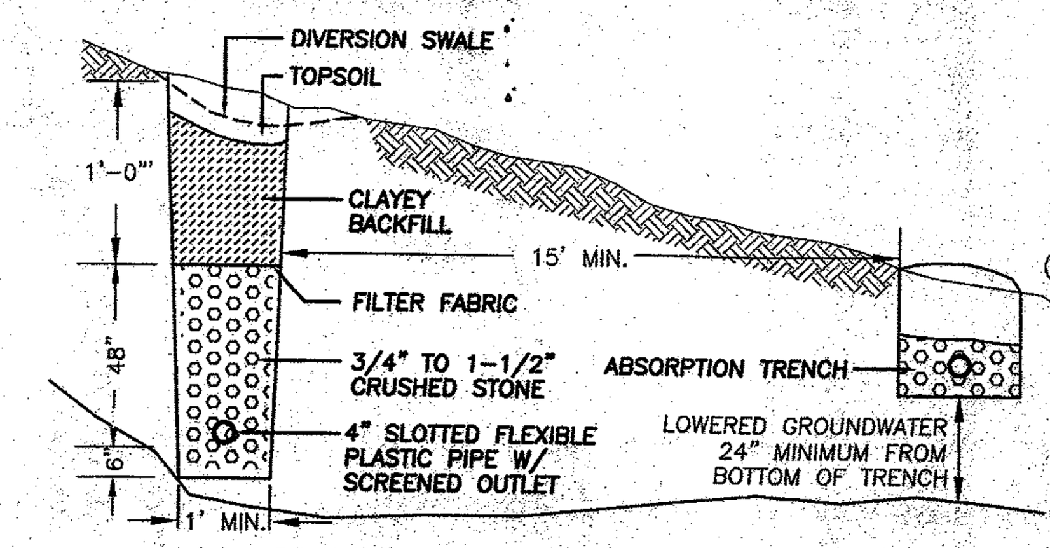
NOTES:

1. DISTRIBUTION BOX TO BE AS MANUFACTURED BY WOODARD'S CONCRETE PRODUCTS, INC. MODEL NO. DB-12 OR APPROVED EQUAL.
2. CONCRETE TO TEST 4000 PSI AT 28 DAYS.
3. ALL OUTLETS NOT USED SHALL REMAIN PLUGGED.
4. BOX TO BE INSTALLED WITH A MIN. 6" AND MAX. 12" EARTH COVER.
5. BOX TO BE INSTALLED ON 12" MIN OF SAND, PEA GRAVEL, OR TRENCH AGGREGATE
6. THE FIRST 10' OF ALL PIPE LEAVING DISTRIBUTION BOX SHALL BE LAID AT EQUAL SLOPES
7. PIPE JOINTS TO BE SEALED WITH ASPHALTIC MATERIAL OR EQUAL
8. INVERT ELEVATIONS OF ALL OUTLET PIPES TO BE EQUAL
9. THE USE OF FLOW EQUALIZERS/LEVELERS IS REQUIRED.
10. INSUL-SEAL 2" x 20' INSULATED PVC SCH 40 PIPE, OR APPROVED EQUAL, WILL BE USED TO PREVENT FREEZING OF THE FORCE MAIN TO A MINIMUM DEPTH OF 4' BELOW GRADE.
11. OUTLET PIPES SHALL BE INSTALLED IN A MANOR THAT WILL ALLOW ACCESS TO THE EXPANSION AREA WITHOUT DISTURBING EXISTING PIPING.

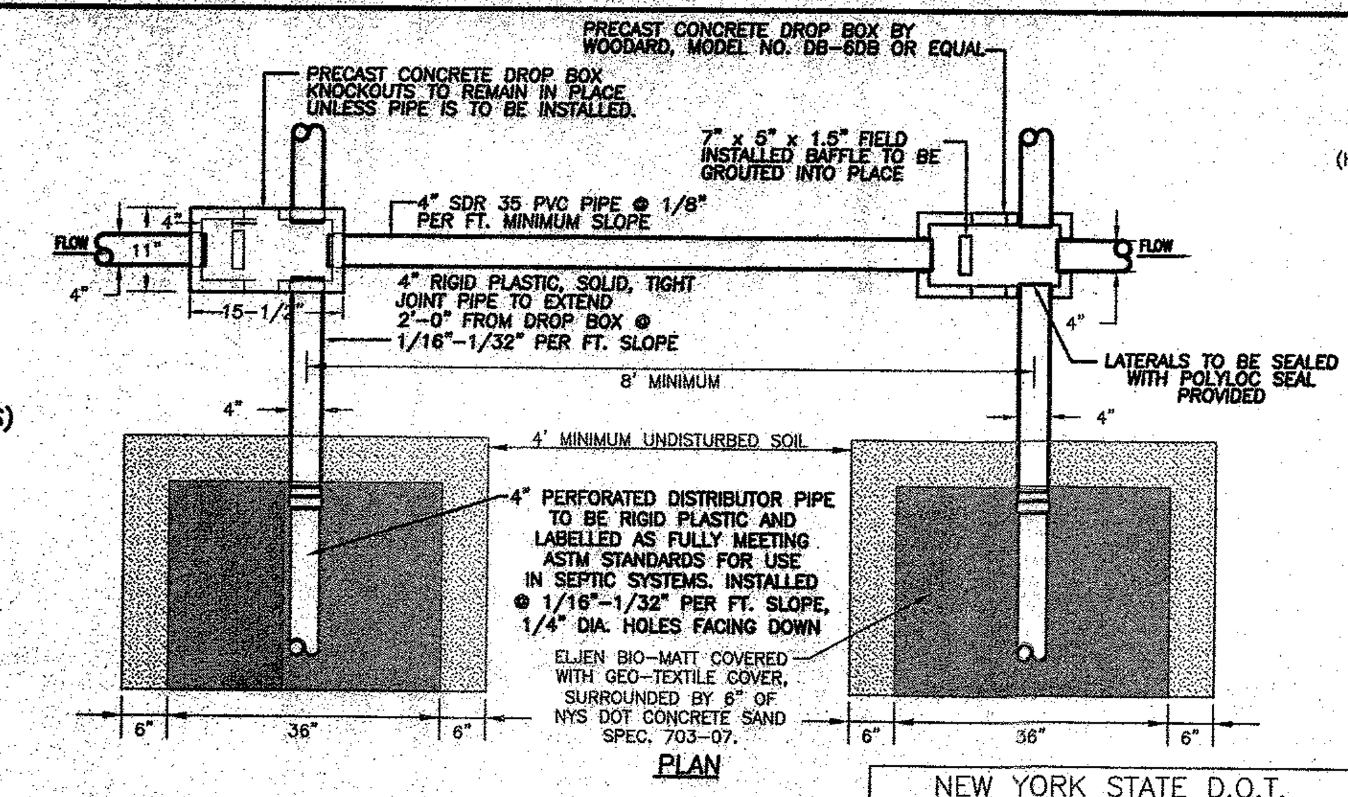
DISTRIBUTION BOX DETAIL FOR LOT 8 ONLY
N.T.S. CAD\SDS3-2

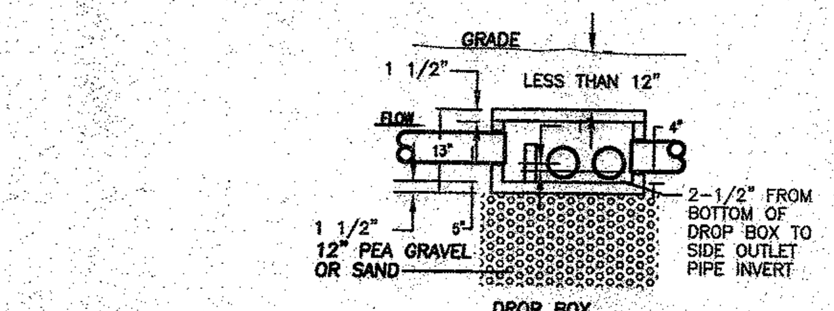
GENERAL NOTES – SEWAGE SYSTEMS

1. SEPTIC SYSTEMS TO CONFORM TO THE MINIMUM REQUIREMENTS OF THE N.Y.S. HEALTH DEPARTMENT STANDARDS/CODES FOR INDIVIDUAL DISPOSAL SYSTEMS, APPENDIX 75-A, AND THE AUTHORITY HAVING JURISDICTION.
2. THE SANITARY FACILITIES ON THESE PLANS SHALL BE INSPECTED FOR COMPLIANCE, WITH THE APPROVED PLANS, AT THE TIME OF CONSTRUCTION, BY A LICENSED PROFESSIONAL ENGINEER. WRITTEN CERTIFICATION TO THAT EFFECT SHALL BE SUBMITTED TO THE COUNTY HEALTH DEPARTMENT AND THE LOCAL BUILDING CODE ENFORCEMENT OFFICER PRIOR TO OCCUPANCY, AND SHALL INDICATE THAT ANY JOINTS HAVE BEEN SEALED AND TESTED FOR WATER TIGHTNESS AND THAT THE TANK IS INSTALLED IN ACCORDANCE WITH APPENDIX 75-A AND THE MANUFACTURERS INSTRUCTIONS.
3. THE DESIGN AND LOCATION OF SANITARY FACILITIES (WATER AND SEWER SYSTEMS) SHALL NOT BE CHANGED.
4. ALL PERCOLATION TESTS TAKEN AT 24" – 30" UNLESS OTHERWISE NOTED.
5. SEPTIC SYSTEM DESIGNS ARE BASED ON THE SLOWEST PERCOLATION RATE FOUND WITHIN THE AREA OF THE SYSTEM.
6. LAUNDRY WASTE IS TO BE DISCHARGED INTO THE SEPTIC SYSTEM.
7. HOUSE SEWER AND SEWER RUNS SHALL NOT EXCEED 75' BETWEEN POINTS OF POSSIBLE CLEANOUT. AT LEAST ONE CLEANOUT IS TO BE PROVIDED. BENDS ARE TO BE AVOIDED BUT WHERE REQUIRED AN ADDITIONAL CLEAN-OUT SHALL BE INSTALLED.
8. THE MAXIMUM LENGTH OF ABSORPTION LINES USED IN CONJUNCTION WITH GRAVITY DISTRIBUTION SHALL BE 60 FEET.
9. THE MAXIMUM LENGTH OF ABSORPTION LINES USED IN CONJUNCTION WITH PRESSURE DISTRIBUTION OR DOSING SHALL BE 100 FEET.
10. FOOTING DRAINS ARE NOT TO DISCHARGE INTO THE SEPTIC SYSTEM. FOOTING DRAINS ARE TO DISCHARGE INTO THE STORMWATER SYSTEM WHERE POSSIBLE.
11. UNLESS OTHERWISE INDICATED ON THESE PLANS, INDIVIDUAL SEPTIC TANKS ARE NOT DESIGNED TO ACCOMMODATE GARBAGE GRINDERS.
12. TRENCHES SHALL NOT BE CONSTRUCTED IN WET SOILS.
13. SIDES AND BOTTOM OF TRENCHES SHALL BE RAKED IMMEDIATELY PRIOR TO PLACING SAND.
14. THE END OF ALL DISTRIBUTOR PIPES SHALL BE PLUGGED.
15. HEAVY EQUIPMENT SHALL BE KEPT OFF THE AREA OF THE TILE FIELD EXCEPT FOR THE ACTUAL CONSTRUCTION OF THE FIELD. THERE SHALL BE NO UNNECESSARY MOVEMENT OF CONSTRUCTION EQUIPMENT IN THE AREA OF THE PROPOSED FIELD BEFORE, DURING AND AFTER CONSTRUCTION. EXTREME CARE MUST BE TAKEN DURING THE ACTUAL CONSTRUCTION SO AS TO AVOID ANY UNDUE COMPACTION THAT COULD RESULT IN A CHANGE OF THE ABSORPTION CAPACITY OF THE SOIL ON WHICH THE DESIGN WAS BASED.
16. THERE IS NO REGRADING ALLOWED IN THE AREA OF THE ABSORPTION FIELD
17. NO SWIMMING POOLS, DRIVEWAYS, OR STRUCTURES WHICH MAY COMPACT THE SOIL SHALL BE LOCATED OVER ANY PORTION OF THE ABSORPTION FIELD
18. THIS SYSTEM WAS NOT DESIGNED TO ACCOMMODATE GARBAGE GRINDERS, OR "JACUZZI" TYPE SPA TUBS OVER 100 GALLONS. AS SUCH, THESE ITEMS SHALL NOT BE INSTALLED UNLESS THE SDS IS REDESIGNED TO ACCOUNT FOR THEM AND REAPPROVED BY THE ORANGE COUNTY DEPARTMENT OF HEALTH.
19. THERE MUST BE AN UNINTERRUPTED POSITIVE SLOPE FROM THE SEPTIC TANK (OR ANY PUMPING OR DOSING CHAMBER) TO THE HOUSE, ALLOWING SEPTIC GASES TO DISCHARGE THROUGH THE STACK VENT.
20. BUILDING SEWERS ARE TO BE CAST IRON OR SCHEDULE 80 PVC FOR THE ENTIRE LENGTH, MINIMUM SLOPE 2%
21. THE PURCHASER OF EACH LOT SHALL BE PROVIDED WITH A COPY OF THE APPROVED PLANS AND AN ACCURATE AS-BUILT DRAWING OF ANY EXISTING SANITARY FACILITIES. THE PURCHASER SHALL ALSO BE ADVISED OF ANY ROUTING OR SPECIAL MAINTENANCE PROCEDURES THAT MAY BE NECESSARY.(REFER TO PAGES 58-61 OF THE NYSDOH DESIGN HANDBOOK FOR RECOMMENDED ROUTINE OPERATION AND MAINTENANCE ITEMS).



CURTAIN DRAIN DETAIL FOR LOTS 5, 6 & 8 ONLY





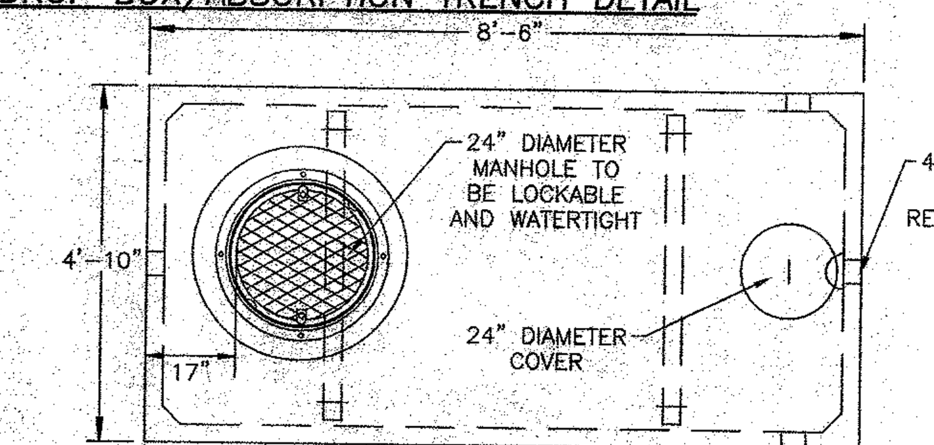
PARTIAL SECTION

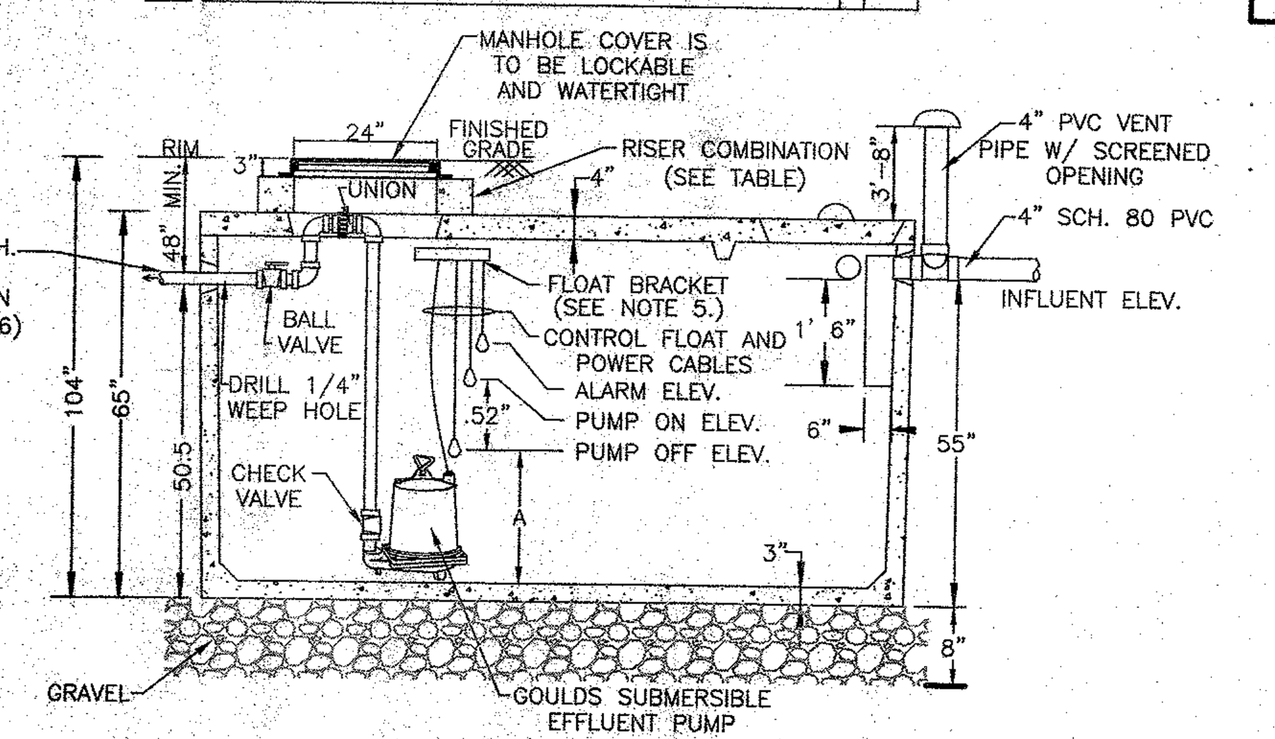
NEW YORK STATE D.O.T. CONCRETE SAND SPEC. 703-07		
	% PASSING BY WEIGHT	
SIEVE SIZE	MINIMUM	MAXIMUM
3/8"	100	–
NO. 4	90	100
NO. 8	75	100
NO. 16	50	85
NO. 30	25	60
NO. 50	10	30
NO. 100	1	10
NO. 200, WET	0	3

NOTES:

1. ABSORPTION FIELDS SHALL NOT BE BUILT UNDER DRIVEWAYS, PARTS OF BUILDINGS OR UNDER ABOVE-GROUND POOLS OR OTHER AREAS SUBJECT TO HEAVY LOADINGS.
2. THE AGGREGATE SHALL BE COVERED WITH THE GEOTEXTILE FABRIC PROVIDED WITH EACH UNIT.
3. TRENCHES SHALL NOT BE CONSTRUCTED IN WET SOIL.
4. SIDES AND BOTTOM OF TRENCHES SHALL BE RAKED IMMEDIATELY PRIOR TO PLACING SAND.
5. THE END OF ALL DISTRIBUTOR PIPES SHALL BE PLUGGED.
6. HEAVY EQUIPMENT SHALL BE KEPT OFF THE AREA OF THE FIELD EXCEPT FOR ACTUAL CONSTRUCTION OF THE FIELD. THERE SHALL BE NO UNNECESSARY MOVEMENT OF CONSTRUCTION EQUIPMENT IN THE AREA OF THE PROPOSED FIELD, BEFORE AND AFTER CONSTRUCTION.
7. DISTRIBUTION LATERALS SHALL BE SLOPED AT 1/16"-1/32" PER FOOT
8. ABSORBTION TRENCH BOTTOM TO BE SET LEVEL
9. DISTRIBUTION LATERALS ARE TO BE SET WITH PERFORATIONS FACING DOWN

ELJEN IN-DRAIN SYSTEM
DROP BOX/ABSORPTION TRENCH DETAIL





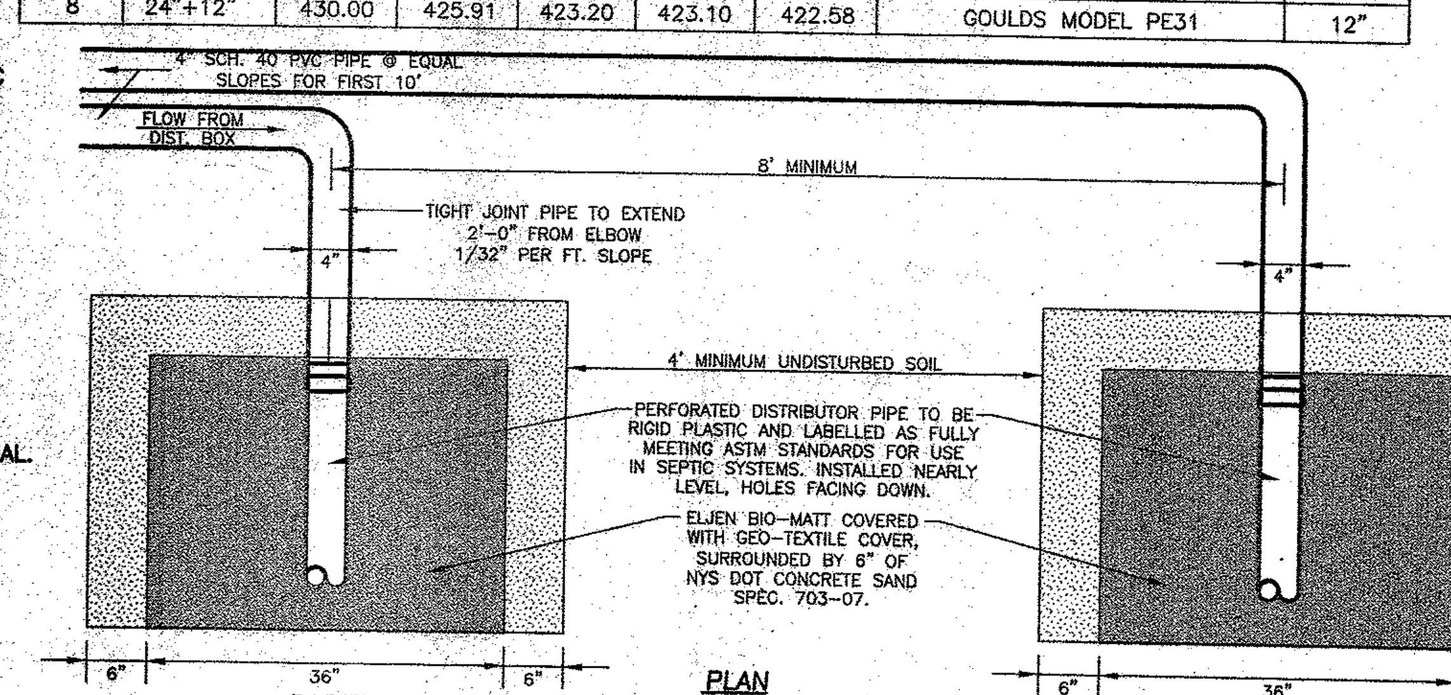
NOTES:

1. PUMP STATION CHAMBER TO BE PRECAST CONCRETE, AS MANUFACTURED BY WOODARD'S CONCRETE PRODUCTS, INC., MODEL NUMBER GT-1000 OR APPROVED EQUAL. CONCRETE AND REINFORCEMENT AS PER ASTM C478-85a.
2. ELECTRICAL EQUIPMENT IN WET WELLS OR IN ENCLOSED SPACES WHERE EXPLOSIVE GASES MAY ACCUMULATE SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE FOR CLASS, DIVISION 1, GROUP C OR D LOCATIONS. THERE SHALL BE NO ELECTRICAL SPLICES, JUNCTION BOXES, OR CONNECTIONS OF ANY NEC RATING IN A SEWER WET WELL.
3. HIGH WATER ALARM SYSTEM SENSOR SHALL BE INTERLOCKED WITH A SOLENOID ON THE WATER SERVICE LINE SO THAT ADDITIONAL WATER CANNOT BE USED UNTIL HIGH WATER ALARM STATUS HAS BEEN REMOVED.
4. AUDIBLE HIGH WATER ALARM IS TO BE LOCATED WITHIN THE PROPOSED DWELLING.
5. FLOAT BRACKET IS TO CONNECT TO A 6x6x6 WATERTIGHT JUNCTION BOX THROUGH A WATERTIGHT SEAL IN PUMP CHAMBER TANK. A 1-1/4" CONDUIT IS TO RUN FROM THE JUNCTION BOX TO THE CONTROL IN THE BUILDING. SAID 6x6x6 WATERTIGHT JUNCTION BOX IS TO BE LOCATED OUTSIDE OF THE PUMP CHAMBER.
6. THE 1 1/2" SCH. 40 PVC FORCE MAIN MUST MAINTAIN A CONTINUOUS POSITIVE SLOPE TO THE DISTRIBUTION BOX.

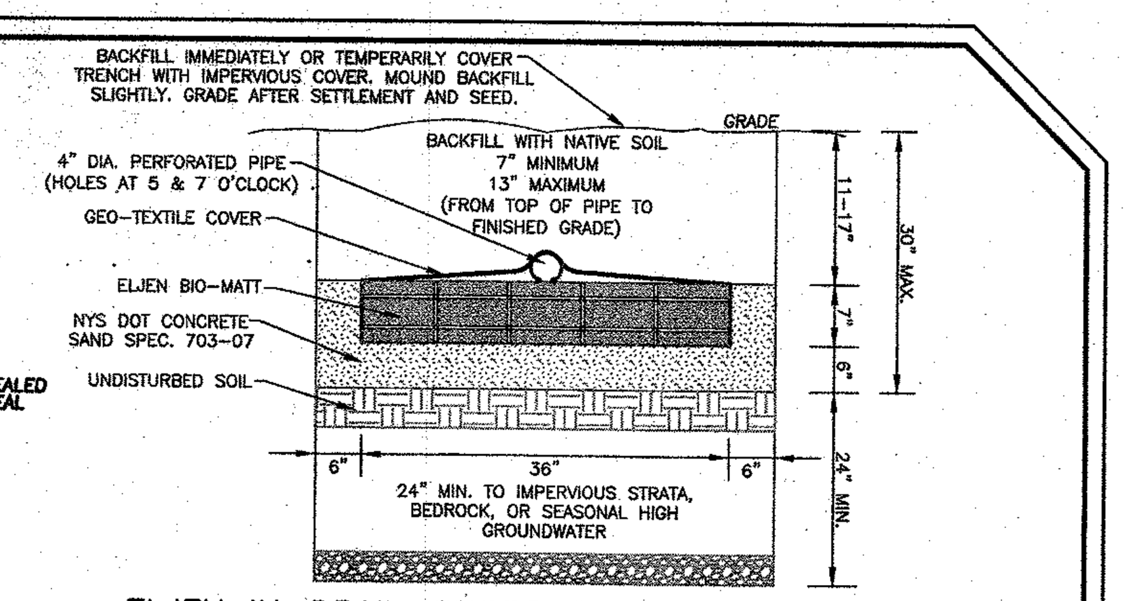
SINGLE FAMILY HOUSE PUMP CHAMBER DETAIL
(LOT 8 ONLY)
N.T.S. CAD\PUMPNEW

LOT 8 PUMP STATION ELEVATION TABLE

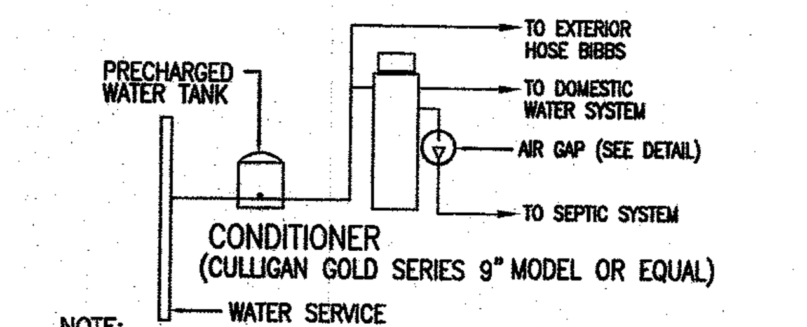
LOT NUMBER	RISER COMBINATION	RIM ELEVATION	INFLUENT INVERT EL	ALARM ELEVATION	PUMP ON ELEVATION	PUMP OFF ELEVATION	PUMP MODEL	A DIMENSION
8	24"+12"	430.00	425.91	423.20	423.10	422.58	GOULDS MODEL PE31	12"



DISTRIBUTION BOX ELJEN IN-DRAIN SYSTEM DETAIL
N.T.S.
FOR LOT 8 ONLY



N.T.S. ELJEN IN-DRAIN CROSS SECTION DETAIL



NOTE:
THE INSTALLATION IS OPTIONAL AT THE DISCRESION OF THE HOMEOWNER, AND IS ONLY TO BE CONSIDERED IF WATER HARDNESS PROVES TO BE IN EXCESS OF 150 mg/L, OR IRON LEVELS ARE IN EXCESS OF 0.3 MG/L (MAXIMUM CONTAMINANT LEVEL). REMOVING HARDNESS AND/OR IRON BY ION EXCHANGE INCREASES THE SODIUM CONTENT OF WATER AT A RATE OF 46 mg/L OF SODIUM FOR EACH 100 mg/L (6 GRAINS/gal.) OF HARDNESS REMOVED. IF INSTALLED, IT MUST BE ACCORDING TO THIS APPROVED DESIGN.

1. BACKWASH
35 GALLONS PER BACKWASH AS PER CULLIGAN SPECIFICATION
CALCULATE SDS AS 1 WASH PER DAY
ALL LOTS: 35 GAL/BACKWASH/DAY

WATER CONDITIONER SCHEMATIC AND DESIGN TABLES
N.T.S. CAD\WTR-2A

FOR HEALTH DEPARTMENT APPROVAL

THIS SHEET IS INCOMPLETE AND INVALID WITHOUT EACH AND EVERY OTHER SHEET LISTED IN THE TITLE BOX UNDER THE HEADING O.C.H.D. SHEET NO. – OF – .

DATE	DESCRIPTION	INITIALS
02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
11/26/08	AS PER 11/25/08 WORKSHOP MEETING	KW
11/14/08	AS PER TOWN ENGINEER COMMENTS	TBE
6/23/08	AS PER OCHD COMMENTS DATED 5/8/08	TBE
2/28/08	AS PER OCHD COMMENTS DATED 2/8/08	TBE
12/26/07	AS PER OCHD COMMENTS DATED 10/26/07	GNF
9/4/07	GENERAL REVISIONS	MGF
9/12/05	AS PER 07/6/05 DRAINAGE COMMENTS	TBE
5/20/05	AS PER 09/29/04 CONSULTANT LETTERS	TBE
9/28/04	AS PER 08/04 CONSULTANT LETTERS	TBE
7/20/04	AS PER 03/04 CONSULTANT LETTERS	TBE
4/1/04	ORIGINAL PREPARATION DATE	JS

REVISIONS

MAP CHECK DATE: 00/00/00 INITIALED BY: -.-

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
262 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(845) 294-0606
2 HAMILTON AVENUE
MONTICELLO, NEW YORK 12701
(845) 796-4646
MICHAEL F. CREEGAN P.L.S. LICENSE NO. 050323
JOSEPH J. PFAU P.E. LICENSE NO. 069945
VINCENT A. PIETRZAK P.E., P.L.S.
P.E. LICENSE NO. 076936
P.L.S. LICENSE NO. 050075
N.J.P.L.S. LICENSE NO. 35396
SIGNATURE DATE

LANDS OF ZAZON

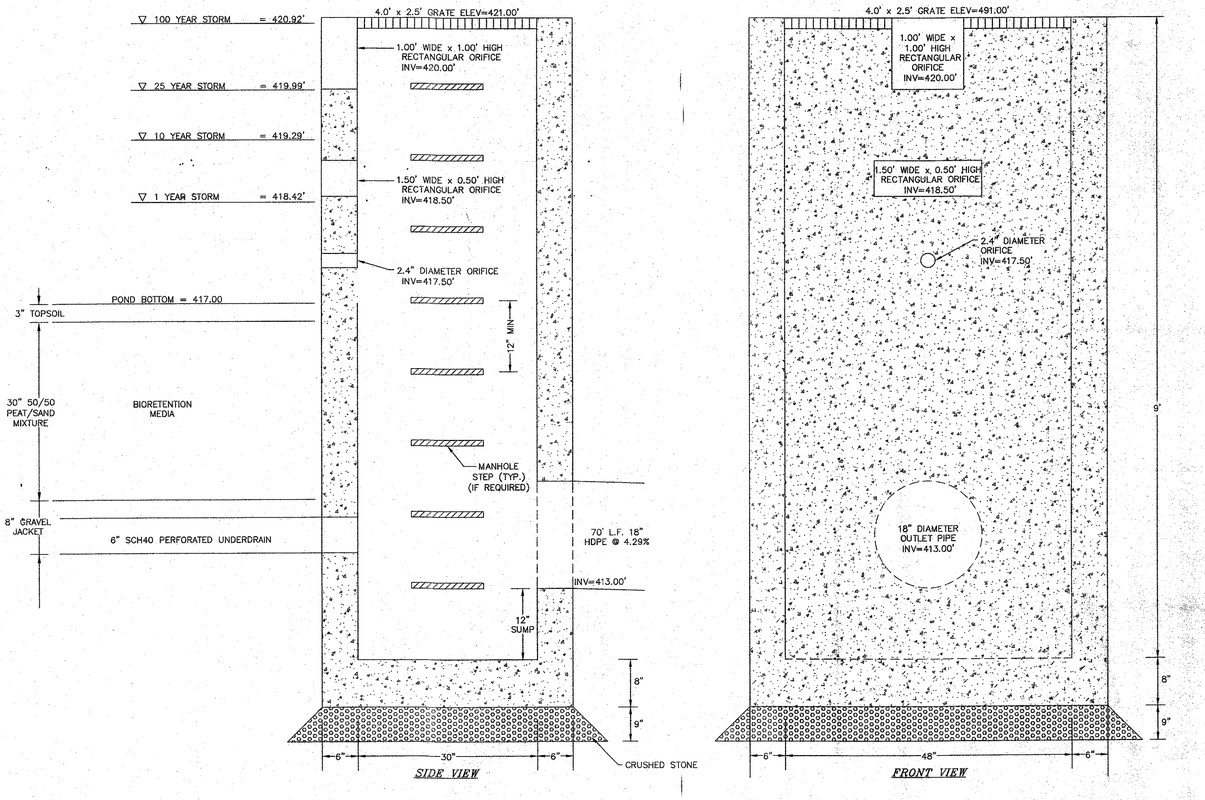
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

SUBDIVISION COVER SHEET

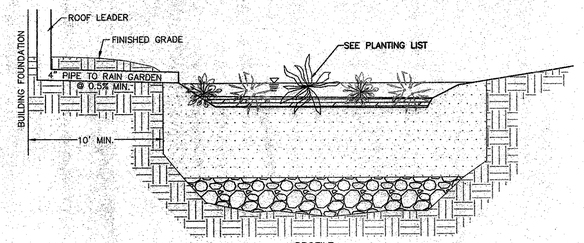
DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
6 OF 6	# OF #	8 OF 11
SCALE 1"=50'	CAD REFERENCE 23153COV	PROJECT NUMBER 23153.01



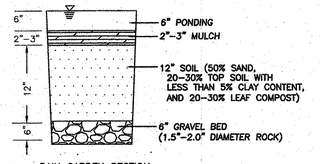
PROPOSED OUTLET CONTROL STRUCTURE OCS-1 DETAIL

N.T.S.



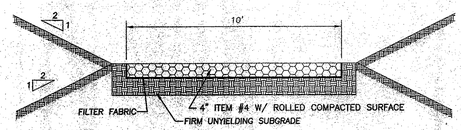
RAIN GARDEN DETAIL (TYP.)

NTS



RAIN GARDEN PLANTING LIST			
BOTANICAL NAME	COMMON NAME	SIZE	SEASON
WINTERBERRY	*ILEX VERTICILLATA*	24" HIGH	*AUTUMN*
ARROWWOOD	*VIBURNUM DENTATUM*	24" HIGH	*SPRING*
SWEET PEPPERBUSH	*CLETHRA ALNIFOLIA*	24" HIGH	*SUMMER*

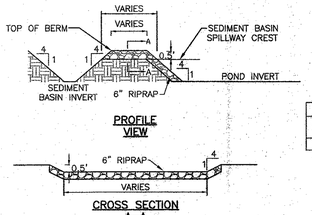
NOTES:
1. A MIX OF THE SHRUB SPECIES LISTED IS TO BE SELECTED FOR EACH INDIVIDUAL RAIN GARDEN.
2. SHRUBS ARE TO BE SPACED 5 FEET ON CENTER.
3. SHRUBS ARE TO BE A MINIMUM OF 24" IN HEIGHT.
4. SHRUBS SHOULD BE CONTAINER GROWN WITH A WELL ESTABLISHED ROOT SYSTEM.
5. SHRUBS ARE TO BE PRUNED IF THEY START TO BECOME LEGGY AND FLOPPY.
6. ROUTINE MAINTENANCE MAY INCLUDE OCCASIONAL REPLACEMENT OF PLANTS, MULCHING, WEEDING, AND THINNING TO MAINTAIN THE DESIRED APPEARANCE.
7. THE TOP FEW INCHES OF PLANTING SOIL IS TO BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS.
8. LONG TERM MAINTENANCE OF THE RAIN GARDEN SHALL BE THE PROPERTY OWNER.



NOTE:
1. STABILIZED ACCESS IS TO MAINTAIN A MAXIMUM SLOPE OF 15 PERCENT.
2. STABILIZED ACCESS DRIVE IS TO BE PAVED FOR A DISTANCE OF 30' FROM THE PROPOSED ROADWAY EDGE OF PAVEMENT.

STABILIZED POND ACCESS DRIVE DETAIL

NTS

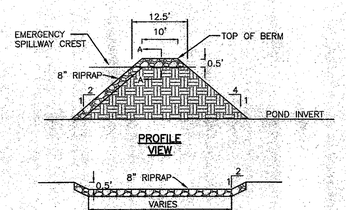


NOTE:
1. POND 3P SIDE SLOPES ARE TO BE 2 HORIZONTAL TO 1 VERTICAL BELOW PERMANENT WATER ELEVATION.

TYPICAL STORMWATER POND DETAIL

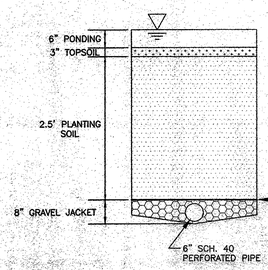
N.T.S.

STORMWATER POND ELEVATIONS			
POND	SEDIMENT BASIN INVERT EL.	POND INVERT EL.	BERM EL.
4P	416.00	417.00	422.00



STORMWATER POND EMERGENCY SPILLWAY DETAIL

N.T.S.



PLANTING SOILS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

PH RANGE	5.2 - 7.0
ORGANIC MATTER	1.5 - 4.0%
MAGNESIUM	35 LBS/AC
PHOSPHORUS	75 LBS/AC
POTASSIUM	85 LBS/AC
CLAY	10-25%
SILT	30-55%
SAND	35-60%

NOTES:
1. THE FILTER MEDIA SHOULD FALL WITHIN THE SM, OR ML CLASSIFICATIONS OF THE USCS.
2. THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER AND BRUSH OR SEEDS FROM NOXIOUS WEEDS.
3. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED (TAMPED LIGHTLY WITH A DOZER OR BACKHOE BUCKET).
4. A DENSE AND VIGOROUS VEGETATIVE COVER SHALL BE ESTABLISHED OVER THE CONTRIBUTING PERVIOUS DRAINAGE AREAS BEFORE RUNOFF CAN BE ACCEPTED INTO THE FACILITY.

BIORETENTION FILTER CROSS SECTION DETAIL

N.T.S.

02/11/21	UPDATE POND DESIGN	CJP
12/5/08	AS PER 12/4/08 PLANNING BOARD MEETING	TBE
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4/1/04	ORIGINAL PREPARATION DATE	JS
DATE	DESCRIPTION	INITIALS

REVISIONS

MAP CHECK DATE: 00/00/00 | INITIALED BY: _-_

PIETRZAK & PFAU
ENGINEERING & SURVEYING, PLLC
282 GREENWICH AVENUE, SUITE A
GOSHEN, NEW YORK 10924
(845) 294-0606
2 HAMILTON AVENUE
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P.E. LICENSE NO. 075933
P.L.S. LICENSE NO. 050075
N.Y.P.L.S. LICENSE NO. 35398
SIGNATURE
DATE 2/11/21

LANDS OF ZAZON

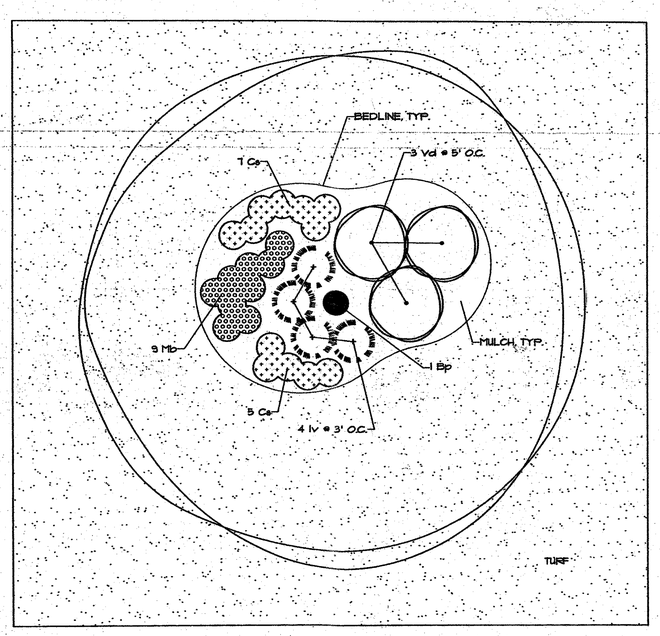
TOWN OF NEWBURGH
COUNTY OF ORANGE, NEW YORK

PROJECT TITLE

STORMWATER DETAIL SHEET

DRAWING TITLE SECTION 20 BLOCK 1 LOT 24

O.C.H.D. SHEET NO	D.E.C. SHEET NO	DRAWING NUMBER
___ OF 6	# OF #	9 OF 11
SCALE 1"=50'	CAD REFERENCE 2315300V	PROJECT NUMBER 23153.01



RAIN GARDEN PLANTINGS, TYP.

SCALE: 1" = 5'

PLANTING LEGEND:

- EXISITNG TREES TO REMAIN
- EXISTING TREELINE
- DECIDUOUS TREES
- DECIDUOUS SHRUBS
- EVERGREEN TREES
- PROPOSED TREELINE
- NORTHEAST NATIVE WILDFLOWER MIX

RETENTION / DETENTION PLANTINGS:

- LOWEST ZONE
- MIDDLE ZONE
- HIGHEST ZONE

GRAPHIC SCALE:

50 0 25 50 100

(IN FEET)
1 IN. = 50 FT.

12/05/08	PER 12/04/08 PLANNING BOARD MEETING
12/01/08	PER TOWN LANDSCAPE ARCHITECT'S COMMENTS
11/14/08	PER TOWN ENGINEER COMMENTS
03/28/07	Date of Origin
Date	Description
Revisions	

ESPOSITO & ASSOCIATES

262 Greenwich Avenue
Goshen NY, 10924

STEVEN T. ESPOSITO
Landscape Architect
NY License No. 001169
11/05/08
Date

LANDS OF ZAZON
TOWN OF NEWBURGH

Project Title: Tax Map: Sec. --, Blk. -, Lot ---

LANDSCAPE PLAN

Drawing Title:

Scale:	Drawing No.:	Project No.:
1" = 50'	9 of 10	20070101
CAD Reference: 23830P-BASE.dwg	O.C.H.D. Sheet No.: of	D.E.C. Sheet No.: of

LANDSCAPE NOTES:

1. REFER TO PLANTING DETAIL, PLANTING AND GROUNDCOVERS SCHEDULES FOR INSTALLATION OF NEW TREES AND SHRUBS.
2. THE CONTRACTOR SHALL TAG AND NUMBER ALL PLANT MATERIAL TO BE RELOCATED. THE CONTRACTOR SHALL FULLY ASSIST AND COORDINATE THIS WORK WITH THE LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO INITIATING FIELD DIGGING THE TREES.
3. LOCATIONS OF RELOCATED PLANT MATERIAL ARE APROXIMATED ON THE DRAWINGS. EXACT LOCATIONS OF RELOCATED PLANT MATERIAL WILL BE CLARIFIED BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE ON SITE.
4. THE CONTRACTOR SHALL BEAR ALL COSTS OF TESTING OF SOILS, AMENDMENTS, ETC. ASSOCIATED WITH THE WORK AND INCLUDED IN THE SPECIFICATIONS.
5. NEW PLANTING ROOT BALLS REMOVED FROM CANS SHALL BE SCARIFIED PRIOR TO BACKFILLING THE PLANT.
6. TYPICALLY, SHRUB AND GROUNDCOVER PLANTINGS ARE SHOWN AS MASS PLANTINGS BEDS. PLANTS SHALL BE PLACED ON A TRIANGULAR SPACING CONFIGURATION (STAGGERED SPACING). PLANT CENTER TO CENTER DIMENSIONS (O.C.) ARE LISTED ON THE PLANT LIST.
7. CONTRACTOR SHALL FIELD STAKE THE LOCATIONS OF ALL PLANT MATERIAL PRIOR TO INITIATING INSTALLATION FOR THE REVIEW AND APPROVAL OF THE OWNER'S REPRESENTATIVE AND/OR LANDSCAPE ARCHITECT.
8. CONTRACTOR SHALL FIELD ADJUST LOCATION OF PLANT MATERIAL AS NECESSARY TO AVOID DAMAGE TO ALL EXISTING UNDERGROUND UTILITIES AND/OR EXISTING ABOVE GROUND ELEMENTS. ALL CHANGES REQUIRED SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AND SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE AND THE LANDSCAPE ARCHITECT.
9. SHRUB MASS PLANTINGS ALONG ROADWAYS AND ENTRY LANDSCAPING AREAS TO RECEIVE ADDITIONAL LANDSCAPE AND FLORAL PLANTING CHOSEN BY THE DEVELOPER AND/OR TENANT TO FURTHER ENHANCE AND CUSTOMIZE THE OVERALL APPEARANCE OF THE PROPERTY.
10. ALL TREES PLANTED IN LAWN AREA SHALL RECEIVE A 3' DIAMETER MULCH RING AT A DEPTH OF 3" AS PER THE SPECIFICATIONS.
11. ALL EXISTING TREES PLANTED IN LAWN AREA SHALL RECEIVE A MINIMUM 5' DIAMETER MULCH RING OR TO THE LIMIT OF THE ADJACENT LAWN AREA AT A DEPTH OF 3" AS PER THE SPECIFICATIONS.
12. EXISTING VEGETATION AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE TOPSOILED AND SEEDED UPON COMPLETION OF WORK.
13. PLANT LIST QUANTITIES ARE PROVIDED FOR CONVENIENCE IN THE EVENT OF QUANTITY DISCREPANCIES, THE DRAWING SHALL TAKE PRECEDENCE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
14. CONTRACTOR SHALL REFER TO THE LANDSCAPE PLANTING DETAILS, PLANT LIST, GENERAL NOTES AND SPECIFICATIONS FOR FURTHER AND COMPLETE INSTRUCTIONS.
15. ALL PLANTS SHALL BE WARRANTED FOR A PERIOD OF TWO YEARS. REPLACE, IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, ALL PLANTS THAT ARE MISSING, MORE THAN 25% DEAD, WHICH DO NOT DEVELOP FROM PLANTING STOCK, THAT APPEAR UNHEALTHY OR UNSIGHTLY AND/OR HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES. ANY TREE THAT LOOSES THE MAIN LEADER SHALL BE REPLACED. PLANT MATERIAL SHALL BE INSPECTED BY THE LANDSCAPE ARCHITECTURAL CONSULTANT FOR THE TOWN OF NEWBURGH UPON COMPLETION OF WORK AND DURING EVERY GROWING SEASON FOR TWO YEARS. PLANTS THAT NEED REPLACEMENT SHALL BE NOTED ON AN INSPECTION REPORT AND MUST BE REPLACED WITHIN TWO MONTHS OF RECEIPT OF THE INSPECTION REPORT OR WITHIN TWO MONTHS FROM THE NEXT FOLLOWING GROWING SEASON.
16. ALL PLANTINGS SHOWN ON APPROVED SITE DEVELOPMENT PLAN OR SPECIAL PERMIT PLAN SHALL BE MAINTAINED IN A VIGOROUS GROWING CONDITION THROUGHOUT THE DURATION OF USE AND PLANTS NOT SO MAINTAINED SHALL BE REPLACED WITH NEW PLANTS AT THE BEGINNING OF THE NEXT IMMEDIATELY FOLLOWING THE GROWING SEASON.
17. ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS FOR NURSERY STOCK SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN IN THERE MOST RECENT EDITION.
18. ANY DETERMINATION OF "EQUAL" SUBSTITUTION SHALL BE MADE ONLY BY THE LANDSCAPE ARCHITECT.

PLANTING SCHEDULE:

TREES & SHRUBS	SPRING PLANTING	FALL PLANTING
EVERGREEN	APRIL 1 - JUNE 30	SEPT 1 - OCT. 15
DECIDUOUS	MARCH 1 - JUNE 30	OCT. 1 - DEC.1

PERMANENT SEEDING SCHEDULE:

1. TOPSOIL SHALL BE SPREAD TO A COMPACTED UNIFORM THICKNESS OF 6".
2. TOPSOIL SURFACE SHALL BE FINELY GRADED AND LOOSENED BY MECHANICAL RAKES TO ENSURE SEED ACCEPTANCE AND SEED TO SOIL CONTACT.
3. FERTILIZER SHALL BE APPLIED AT 6 LBS. OF 5-10-10 COMMERCIAL FERTILIZER/1000 SQ. FT.
4. SEEDING SHALL BE INSTALLED AT 5 LBS./1000 SQ. FT. OF:
   - 60% KENTUCKY BLUE GRASS
   - 20% CHEWINGS FESCUE
   - 20% PERENNIAL RYE

RETENTION/DETENTION POND PLANTINGS:

LOWEST ZONE:
PONTEDERIA CORDATA, PICKELWEED
SCIRPUS PUNGENS, COMMON THREE-SQUARE
TYPHA SPP., CATTAIL
VALLISMERA AMERICANA, WILD CELERY

MIDDLE ZONE:
CAREX LACUSTRIS, LAKEBANK SEDGE
SAGGITTARA LATIFOLIA, DUCK POTATO
SCIRPUS CYPERNUS, WOOL GRASS
SCIRPUS VALIDUS, SOFT-STEM BULRUSH

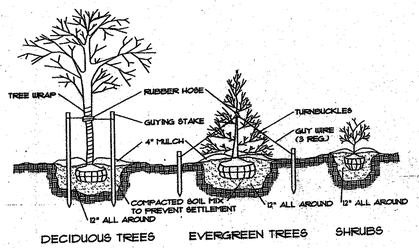
HIGHEST ZONE:
DESCHAPSIA CAESPITOSA. TUFTED HAIRGRASS
GLYCERIA STRIATA, FOWL MANNAGRASS
JUNCUS EFFUSUS, SOFT RUSH
PANICUM VIRGATUM, SWITCH GRASS

RETENTION/DETENTION PLANTING SCHEDULE:

1. EACH ZONE CONSISTS OF FOUR SPECIES TO BE PLANTED USING EITHER 1 1/8" PLUGS AND/OR SEED.
2. THE PLUGS FOR EACH ZONE SHALL BE RANDOMLY MIXED AND PLANTED WITH AN APPROXIMATE SPACING OF 2'-6" ON CENTER.
3. THE SEEDING FOR EACH ZONE SHALL CONSIST OF EQUAL PARTS PER SPECIES AND BROADCAST OVER IT'S RESPECTIVE AREA AT A RATE OF 1 POUND PER 2,000 SQFT.
2. AN OVERLAP OF SPECIES FROM ONE ZONE TO THE NEXT WILL NOT EXCEED 3'-6', ALLOWING FOR INTERGRATION BETWEEN THE INDIVIDUAL ZONES.
3. NORTHEAST WETLAND DIVERSITY MIX SHALL BE BROADCAST OVER BASIN AREAS AT A RATE OF 2 POUNDS PER ACRE INTERMIXED WITH PLUGS AND/OR SEEDING SPECIFIED ABOVE, AS MANUFACTURED BY:

SOUTHERN TIER CONSULTING, INC.
2701-A ROUTE 305, P.O. BOX 30
WEST CLARKSVILLE, NY 14786

WWW.SOUTHERNTIERCONSULTING.COM



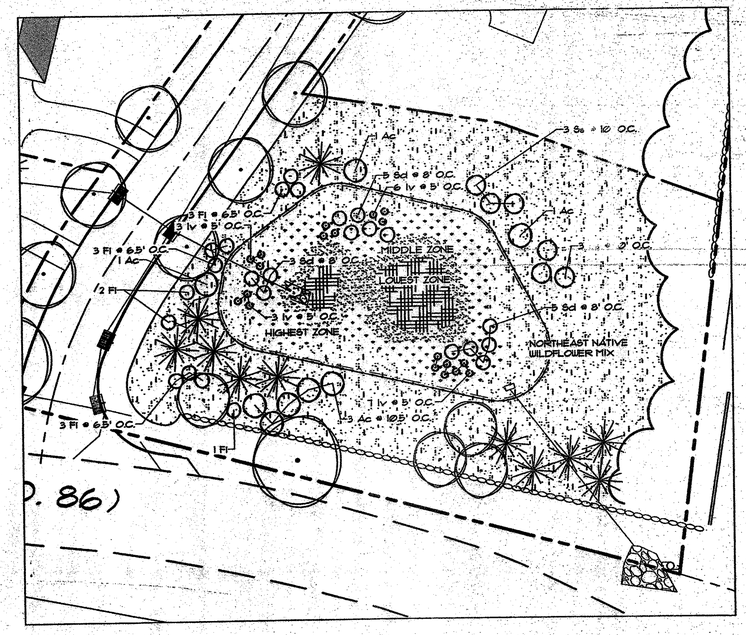
1 PLANTING & GUYING DETAIL
8/9 N.T.S.

PLANTS LIST:

TYPE	KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
DeciduousTrees	Ar	8	Acer rubrum "Red Sunset"	Red Sunset Maple	3"-3-1/2" c	B&B
	Bp	6	Betula nigra	River Birch	14'-16' hgt	B&B
	Cc	10	Cercis canadensis	Eastern Redbud	2-1/2"-3" c	B&B
	Qp	13	Quercus palustris "Sovereign"	Sovereign Pin Oak	3"-3-1/2" c	B&B
Evergreen Trees	Np	20	Picea Abies	Norway Spruce	7' - 8' hgt	B&B
Deciduous Shrubs	Ac	7	Amelanchier canadensis	Shadblow Serviceberry	30"-34"	B&B
	Fi	12	Forsythia x intermedia	Spring Glory Forsythia	34"-36"	B&B
	Iv	43	Ilex verticullata "Red Sprite"	Red Sprite Holly	24"-30"	Container
	Sd	13	Cornus amomium	Silky Dogwood	30"-34"	B&B
	Ss	6	Rhus typhina	Staghorn Sumac	30"-34"	B&B
	Vd	18	Vibernum dentatum	Arrowwood Vibernum	30"-34"	Container
Perennials	Mb	54	Monarda didyma	Oswego Tea	18" oc	1 gal.
Grasses	Cs	72	Carex stipata	Tussock Sedge	18" oc	1 gal.

GENERAL NOTES:

1. CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH THE LIMITS OF WORK AND EXISTING CONDITIONS AND VERIFY ALL INFORMATION. IF DISCREPANCIES EXIST, CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE IN WRITING WITHIN SEVEN (7) CALENDAR DAYS OF NOTICE TO PROCEED.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBTAIN AS-BUILT INFORMATION. DRAWINGS WERE PREPARED ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE IN WRITING WITHIN SEVEN (7) CALENDAR DAYS OF NOTICE TO PROCEED OF ANY DISCREPANCIES.
3. CONTRACTOR SHALL NOTIFY ALL NECESSARY UTILITY COMPANIES 48 HOURS MINIMUM PRIOR TO DIGGING FOR VERIFICATION OF ALL UNDERGROUND UTILITIES AND OTHER OBSTRUCTIONS AND COORDINATE WITH OWNER'S REPRESENTATIVE IN WRITING PRIOR TO INITIATING OPERATIONS.
4. FOR DIMENSIONS OF BUILDINGS, SEE ARCHITECTURAL DRAWINGS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A SAFE CONDITIONS AT ALL TIMES.



RETENTION BASIN PLANTINGS

SCALE: 1" = 30'

UFPO
BEFORE YOU DIG, DRILL OR BLAST!
CALL US TOLL FREE
1-800-962-7962
NY INDUSTRIAL CODE RULE 753 REQUIRES NO LESS THAN TWO WORKINGDAYS NOTICE, BUT NOT MORE THAN TEN DAYS NOTICE.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NYS EDUCATION LAW. THIS DRAWING IS ONE IN A SET OF DRAWINGS AND IS INCOMPLETE AND INVALID WHEN IT IS SEPARATED FROM THE SET.

12/05/08	PER 12/04/08 PLANNING BOARD MEETING
12/01/08	PER TOWN LANDSCAPE ARCHITECT'S COMMENTS
11/14/08	PER TOWN ENGINEERS COMMENTS
03/28/07	Date of Origin
Date	Description

Revisions

ESPOSITO & ASSOCIATES
262 Greenwich Avenue
Goshen NY, 10924

STEVEN J. ESPOSITO
Registered Landscape Architect
License No. 001169
12/05/08
Date

LANDS OF ZAZON
TOWN OF NEWBURGH

Project Title: Tax Map: Sec. --, Blk. -, Lot ---

LANDSCAPE DETAILS

Drawing Title:

Scale:	Drawing No.:	Project No.:
-" = --'	10 of 10	2070101
CAD Reference:	O.C.H.D. Sheet No.:	D.E.C. Sheet No.:
-----.dwg	of	of