STORMWATER POLLUTION AND PREVENTION PLAN

MSGP 0-23-001 PERMIT # NYR00F623

INDIVIDUAL SPDES PERMIT # NY0034959

RUBY MOUNTAIN GARNET MINE
BARTON MINES COMPANY, LLC
13TH LAKE RD
TOWN OF JOHNSBURG, NEW YORK

Prepared on behalf of:

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Revised by:

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July 2024

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Barton Mines Company, LLC Authorized Representative	Date
Printed Name	Title

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1.0 INTRODUCTION

A Stormwater Pollution Prevention Plan (SWPPP) is an important piece of regulatory documentation that enables facility operators to maintain industrial production while protecting nearby surface water resources. A SWPPP must be developed and implemented by the operators of all industrial facilities in The United States under the jurisdiction of the Environmental Protection Agency (EPA) covered by the National Pollutant Discharge Elimination System (NPDES) permit. The EPA has delegated the responsibility of issuance and enforcement to The New York State Department of Environmental Conservation (NYSDEC) which issues State Pollutant Discharge Elimination System (SPDES) permits that meet or exceed NPDES standards. The terms and conditions of NYSDEC SPDES permits require facilities to develop a SWPPP that describes practices implemented at a facility to reduce, minimize, control, or eliminate the pollutants in stormwater discharges associated with industrial activities. Facilities are obligated to implement the provisions of the SWPPP as a condition of the SPDES permit.

The purpose of the SWPPP contained herein is to lay out an approach for erosion and sediment control and stormwater management that will be effective throughout the life of mine for the operation of the Ruby Mountain Quarry owned by Barton Mines Company, LLC. This SWPPP has been developed to identify source materials and operational practices, which may reasonably be expected to affect the quality of stormwater discharges associated with industrial activity at the facility. The SWPPP describes measures and controls that are to be used to minimize pollutants in stormwater discharged. The SWPPP will need to be updated when the lateral or vertical extents of the operation are modified from those currently permitted.

This SWPPP has been developed as part of the major mine permit modification submitted to the department. Upon approval of that permit modification, this document replaces the existing Industrial Stormwater Pollution Prevention Plan (SWPPP) that was developed for the Site by Bowman in April 2023. This document has been developed in accordance with the NYSDEC Multi-Sector General Permit GP-0-23-001. The facility is currently permitted under NYSDEC Multi-Sector General Permit GP-0-23-001(**Appendix D)** for stormwater with an Individual SPDES MSGP ID NYR00F623 (**Appendix E**) for industrial process water.

This SWPPP provides proposed watershed conditions and BMPs for the Site to discharge stormwater from disturbed areas within future expansions in accordance with the MSGP. The existing watershed conditions, proposed watershed conditions, and proposed best management practices are explained in greater detail in the ensuing text and accompanying documents.

This SWPPP was developed as part of the mine permit modification submitted to the department. Upon approval of that permit modification, an updated copy of this SWPPP is to be maintained at the site at all times.

2.0 POLLUTION PREVENTION TEAM

The stormwater pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. Each member of the team is familiar with the management and operations of the facility, and collectively, should work together to keep the SWPPP current as any deficiencies are identified or changes in operation are made. Refer to the table below, which identifies the individual members of the stormwater pollution prevention team and their responsibilities in this context.

STORMWATER POLLUTION PREVENTION TEAM			
NAME	**TITLE**	**COMPANY**	**RESPONSIBILITIES**
Mario Cangemi	Manager of EH&S	Barton Mines Company, LLC	1,2,3,5,6,7
Jacob Barnhart	Senior Project Engineer	Barton Mines Company, LLC	4,8
Thomas Urtz	Senior Project Engineer	Barton Mines Company, LLC	4,8
---------	Laboratory	Adirondack Environmental Services	9
Michael Van Flue	Project Engineer	H2H Associates, LLC	10

Pollution Prevention Team Responsibilities:

1. Authorized Representative
2. SWPPP Coordinator
3. Plan Implementation and Administration
4. Inspection and Maintenance
5. Annual Compliance Evaluation
6. Record Keeping and Report Submission
7. Employee Training
8. Sampling
9. Lab analysis
10. Plan Preparation

3.0 SITE DESCRIPTION

The proposed activity for the industrial facility to be covered under the SPDES Multi Sector General Permit is production of "Miscellaneous Nonmetallic Minerals, Except Fuels" identified as SIC 1499. The site is located west of NYS Route 28 in the hamlet of North River off 13th Lake Road. Portions of the overall site are located within Warren and Hamilton County, but the current mine is located in Warren County. Barton currently controls approximately 837.0 acres at this site. Within this 837.0-acre area, Barton has an existing permit to affect 194.5 acres within its Life of Mine with a current Permit Term Affected Area of 194.5 acres (DEC MLR Permit 5-5230-0000/0002). Please refer to the General Location Map (**Figure 1, Appendix A)**.

The operation consists of mining gneissic consolidated rock by traditional blasting and excavation methods. Material is loaded from the active mine face by front-end loader and/or excavator into an off-highway haul truck for transport to the primary crusher. Crushed material is then conveyed to the Mill for additional processing. Tailings from the Mill are hydraulically placed in the tailings pile and the water used to convey tailings is recovered through a series of drains and ponds for reuse in the beneficiation process. This closed loop water system is covered under an individual SPDES permit (SPDES ID NY0034959).

The surficial soil types at the site are (HmE, HeE, HeC, HeE, LmE) Hermon very bouldery fine sandy loam, Hermon-Lyman-Rock Outcrop complex, and Lyman-Rock outcrop complex. The Hermon is classified as Hydrologic Soil Group A whereas the Lyman constituent is Hydrologic Soil Group D. The tailings pile consists of native bedrock crushed to a grain size similar to a coarse sand. Below the surficial soil layer(s) is a meta-gabbro that is the target of mining activities. The northern and western boundaries of the site are adjacent to the Siamese Ponds Wilderness, but stormwater generally flows to the southeast which is opposite of this wilderness area. The site has fairly steep slopes and is split by Brown Pond Brook with the active quarry east of Brown Pond Brook and the tailings storage pile west of Brown Pond Brook. All stormwater from the site ultimately discharges to Brown Pond Brook which is a tributary to Thirteenth Brook.

Receiving waters from the facility are Brown Pond Brook (regulated as Stream 941-1290 and including unnamed tributaries and intermittent streams feeding into it) and Thirteenth Brook (regulated as Stream 941-1289). Brown Pond Brook is a Class C(TS) regulated stream and Thirteenth Brook is regulated as Class C(T). At the foot of Brown Pond Brook where it feeds Thirteenth Brook, across Thirteenth Lake Rd from the facility. There are additional mapped wetlands which appear on the National Wetland Inventory, mainly along Thirteenth Brook (**See Figure 2, Appendix A**)

Impervious area classifications on the site are limited to the access road, associated parking areas, ponds and the quarry pit. Current impervious area on the site totals 60.3 acres, 31% of the 194.5 Ac life of mine.

The SWPPP presented herein represents the final development phase of the mine as proposed in the mine permit modification, which is the most extreme case in regards to stormwater, this will be referred to in this document as the post-development conditions (**Figure 3, Appendix A**). Discussion of BMPs and E&SC at intermediate phases of development is also included within the SWPPP **(Figures 4-6, Appendix A)**

3.1 ACTIVITIES AT THE FACILITY

The land disturbance activities at the facility will consist of the following:

1. Installation of stormwater controls;

2. Mining of hard rock for garnet extraction;
3. Distribution of crushed rock onto tailings pile; and,
4. Site maintenance, including but not limited to stripping and grading.

A detailed map of activities occurring at the facility is located in **Appendix A (Fig 2)** and a detailed Post-Development SWPPP plan is located in **Appendix A (Fig 3)**.

Final reclamation of the site will occur upon completion of mining activities.

3.2 EXISTING STORMWATER DRAINAGE PATTERNS

Changes are not being proposed to a majority of the BMPs cited in the existing SWPPP since they are functioning properly. The site can be split into three general drainage areas:

1) The eastern portion consisting of the quarry area;
2) The western portion consisting of the tailings pile; and,
3) The access road from Thirteenth Lake Road.

3.2.1 Quarry Area

The quarry area abuts Ruby Mountain to the east and a minor topographic depression containing Brown Pond Brook to the west. Stormwater runoff generally flows east from the ridge to the west until it reaches Brown Pond Brook. Water is ultimately discharged through a series of three (3) outfalls covered under the existing MSGP (002A, 003A, and 005A). A series of berms was created to limit stormwater run-on from off-site. For management and treatment; stabilized roads, lined waterways, boulder check dams, and stormwater sediment basin(s) are in place as per the existing SWPPP.

DA-6: Drainage Area 6 (DA-6) is a 10.1 acre area to the north and west of the quarry which is 78% impervious. This area contains a portion of Ruby Mountain Road, the quarry office and crusher building as well as accompanying stone roads and parking areas. Stormwater in this area drains to the south and west where it collects first in Little Crusher Pond and travels via culvert under the road to Big Crusher Pond. Big Crusher Pond outlets to Outfall 005A which discharges to Brown Pond Brook. No changes are planned to land use for this area in the current permit term.

DA-7: Drainage Area 7 (DA-7) is a 12.8 acre area to the west of the quarry which is 1% impervious. 12+ acres of this area is wooded and outside of the permit term affected area, remaining area is stabilized grading associated with quarry roads. The area drains east to west to a mapped wetland which drains to Brown Pond Brook at Outfall 002A. No land use changes are planned for this area in the current permit term**.**

DA-8: Drainage Area 8 (DA-8) is a 34.1 Acre area that contains the quarry. 29.1 acres of the area are the active quarry itself. The majority of the remaining area is unaffected wooded area to the east of the quarry and stabilized areas around the perimeter of the quarry, additionally there are 0.7 impervious acres coming from Ruby Mountain Road and Last Chance Pond. DA-8 drains Via roadside ditches to Last Chance Pond which discharges through Outfall 003A to Brown Pond Brook. The original SWPPP specified a second pond for this area “Godzilla Pond” however a 2015 study by the LA Group found this pond was not needed as more stormwater than anticipated exited the site via infiltration through the quarry floor (see attached letter **Appendix G**). During the current permit term mining will continue in the quarry, though the lateral extents and drainage patterns of the quarry will remain.

DA-14A: Drainage Area 14A (DA-14A) 14A is a 4.1 acre area to the north of the quarry which is 9% impervious. Over half the area is wooded, the remainder is active haul roads and previously disturbed area

that has been stabilized with vegetation. DA-14A drains east to west exiting the site to the west before ultimately draining to a mapped emergent wetland, through the mapped wetland mentioned above in the description of DA-7 and finally to Brown Pond Brook at Outfall 002A. No land use changes are planned for this area in the current permit term.

DA-14: Drainage Area 14 (DA-14) is the upland area to DA-14A, a 4.9 acre area to the northeast of the quarry, it is 0% impervious. The area consists entirely of unaffected wooded area, 3.1 acres of which falls outside of the permit term affected area, DA-14 drains east to west, before being diverted north around the quarry and exiting the site to the west where it ultimately drains to a mapped emergent wetland, through the mapped wetland mentioned above in the description of DA-7 and finally to Brown Pond Brook at Outfall 002A. No land use changes are planned for this area in the current permit term.

DA-15: Drainage Area 15 (DA-15) is a 1.8 Acre area south and east of the quarry which is 0% impervious. The area is comprised of wooded and grass cover types. There is no un-stabilized disturbed area in DA-15. The area drains north to south, exiting the site overland through wooded areas ultimately to roadside ditches of 13th Lake Rd. No changes are planned for this area in the current permit term.

3.2.2 Residual Minerals Pile Area

The tailings pile is a dynamic mass that will gradually grow throughout the life of the operation. The area abuts a series of ridges to the west/southwest and a minor topographic depression containing Brown Pond Brook to the east. An Individual SPDES permit is in effect for areas with co-mingled process water and the existing MSGP covers the southern extent where support infrastructure, mainly a stabilized road, exists. Stormwater runoff that contacts the access road is routed to a sediment basin for treatment prior to discharge at Outfall 006A. Water infiltrating the tailings, and thus having significance residence time in the tailings, is directed to basins covered under the Individual SPDES permit.

DA-1: Drainage Area 1 (DA-1) is an 18.4 Acre area on the northside of the tailings pile that is 5% impervious. The area is compromised of the northern section of the tailings pile, a cleared grass area, and a pond area to the far north. A berm has been installed on the northwest side of the area along the life of mine boundary to prevent stormwater run-on to the site. A series of finger drains under the pile directs water infiltrating the pile area back through a channel in DA-2 to the process water ponds south of the mill. Stormwater in the area drains south to north into North Pond via overland flow or roadside ditch. North Pond discharges by channel and culvert under Ruby Mountain Road to Guppy Pond and Frog Pond, stormwater through this system ultimately outlets to Outfall 001A where it discharges into the Brown Pond Brook. The tailings pile will continue to expand in this area during the current permit term.

DA-2: Drainage Area 2 (DA-2) is a 30.6 Acre area central to tailings pile that is 7% impervious. The area is comprised mainly of the tailings pile, it also contains a small, wooded area that runs on to the site, the process water pond area and the southern portion of the mill area. Water infiltrating the pile is collected by a series of finger drains and directed to the process water ponds via a channel which originates opposite the mill. Stormwater in this area drains west to east and drains to the process water ponds both overland and through a series of ditches and channels. Water from the process water pond system is recycled for use in benefaction in the mill. During extreme precipitation events the process water pond also outlets through SPDES Outfall 002 which discharges to an unnamed tributary of Brown Pond Brook. The tailings pile may expand in this area during the current permit term No stormwater changes are planned for this area in the current permit term.

DA-3: Drainage Area 3 (DA-3) is a 6.8 Acre area south of the tailings pile that is 12% impervious. It is comprised of the southern access road and undisturbed wooded area south of the access road. Stormwater

runs from west to east, overland through wooded areas to a channel along the perimeter of the access road before collecting in South Pond. South Pond has a skimmer which feeds into the process water ponds, as well as a riser pipe that outlets to Outfall 006A where is discharges to an unnamed tributary of Brown Pond Brook. No changes are planned for this area in the current permit term.

DA-4: Drainage Area 4 (DA-4) is a 31.0 Acre area atop the tailings pile that is 40% impervious. The area is comprised of the upper portion of the tailings pile, Upper Pond, and nearby wooded areas that drain onto the site. Water infiltrating the pile is collected by a series of finger drains and directed to the process water ponds via a channel which originates opposite the mill. A slurry of fine tailings and water is discharged into the Upper Pond where it is held while the solids settle out. Stormwater in this area drains inward from the perimeter of the area into Upper Pond. Upper Pond is equipped with a floatable pump that discharges to the process water ponds. Water from the process water pond system is recycled for use in benefaction in the mill. During extreme precipitation events the process water pond also outlets through SPDES Outfall 002 which discharges to an unnamed tributary of Brown Pond Brook. Fines placement at Upper Pond will continue during the current permit term. No stormwater changes are planned for this area in the current permit term.

DA-4A: Drainage Area 4A (DA-4A) is a 9.9 Acre area of the tailings pile that is 0% impervious. The area is comprised of the portion of the tailings pile which drains to Middle Pond. Water infiltrating the pile is collected by a series of finger drains and directed to the process water ponds via a channel which originates opposite the mill. Stormwater in this area drains inward from the perimeter of the area into Middle Pond. Middle Pond was originally created to collect and settle fine tailings while a previous lift of the RM pile was being created, now it is used to collect water from coarse tailings placement and stormwater. Water collected in Middle Pond exits through infiltration. During extreme precipitation events the process water pond also outlets through SPDES Outfall 002 which discharges to an unnamed tributary of Brown Pond Brook. No stormwater changes are planned for this area in the current permit term.

DA-10: Drainage Area 10 (DA-10) is a 0.7 Acre area north of Upper Pond in the tailings pile area which is 0% impervious. It consists of the backside slope from a working area north of the pond. There is no un-stabilized disturbed area in DA-10. Stormwater drains overland from south to north and exits the site via overland flow ultimately reaching a mapped wetland north of the site. No changes are planned to this area during the current permit term.

DA-11: Drainage Area 11 (DA-11) is a 10.2 Acre area south of the tailings pile that is 0% impervious. The area includes a previously disturbed section of land at the southwest extreme of the permit term affected area and is comprised of wooded and grass cover types. There is no un-stabilized disturbed area in DA-11. The area drains north to south, overland into an unnamed tributary of Thirteenth Lake Brook at the southeastern portion of the drainage area. No changes are planned for this area in the current permit term.

DA-12: Drainage Area 12 (DA-12) is a 13.5 Acre area south of the tailings pile that is 0% impervious. The area is wooded and includes a drainage channel on the south side of the process water ponds. Stormwater from undisturbed areas drain to the northeast by overland flow into the drainage channel, discharges to an unnamed tributary of Brown Pond Brook in the area of SPDES Outfall 002. No changes are planned for this area in the current permit term.

3.2.3 Quarry Access Road

The quarry access road, Ruby Mountain Road, begins at Thirteenth Lake Road (Elev. 1610’±) and the alignment is generally oriented to the northwest until the base of the tailings pile (Elevation 1970’±). Strategically placed berms to the east of the road limit the amount of stormwater contacting the road. Stormwater runoff flows down the road into a series of roadside channels for conveyance to sediment

basins for treatment prior to discharge. Disturbed areas surrounding the road are limited to the road itself and stormwater management infrastructure such as collection channels and sediment basins.

DA-5: Drainage Area 5 (DA-5) is a 12.1 acre area at the top of Ruby Mountain Rd. that is 40% impervious. This area contains the upper portion of Ruby Mountain Road, The northern portion of the Mill and associated area, and the majority of the overland conveyor and associated access roads. The remainder of the area is undisturbed wooded area. Stormwater in this area drains north along the roadways and south to north overland in the wooded areas. It is directed through two stormwater ponds, Guppy Pond and Frog Pond, the latter of which outlets through outfall 001A which discharges into the Brown Pond Brook.

DA-9: Drainage Area 9 (DA-9) is a 6.1 acre area which is 19% impervious. The area consists of Ruby Mountain Road, the site entrance, two wooded areas to the northeast of Ruby Mountain Road, and associated stormwater controls. The entrance to the site is paved for the first 225' to prevent sediment tracking onto the road. In the paved portion of Ruby Mountain there is a channel to collect runoff on the southern side of the road. After the paved section the road is graded so that all stormwater drains into the channel on the northern side. Stormwater in the area drains east to west and is transported by the channels either to Welcome Pond or the small plunge pool at the base of the road. Welcome Pond outlets through a riser pipe to a lined channel on at the perimeter of the parking area adjacent to the entrance. This channel also discharges to the plunge pool via a 24" HDPE culvert under the paved section of Ruby Mountain Road. The plunge pool discharges under 13th Lake Road via a culvert installed by the town several years ago. The end of this culvert is the sampling location for Outfall 004A, water discharging from this culvert ultimately drains to the wetland area surrounding Thirteenth Brook

DA-13: Drainage Area 13 (DA-13) is a 25.3 acre area in the center of the site that is 4% impervious. This area consists mainly of undisturbed wooded area. The area also contains a portion of Ruby Mountain Road, a section of the power easement, section of Brown Pond Brook, and the backside of disturbed areas along the overland conveyor. Stormwater in this area drains overland through wooded areas from the northern, eastern and western extents of the area directly to Brown Pond Brook in the center of the area thorough which it exits the site to the south.

DA-16: Drainage Area 16 (DA-16) is a 26.3 acre area east of Ruby Mountain Road which is 0% impervious. The area includes a portion of the power easement and wooded areas outside of the current permit term affected area. There is no un-stabilized disturbed area in DA-16 and no plans for new disturbances in the current permit term. Stormwater drains overland from north to south directed by berms away from disturbed areas and exits the site via overland flow ultimately reaching a roadside ditch along 13th Lake Road.

DA-17: Drainage Area 17 (DA-17) is a 3.6 acres area to the northeast of Ruby Mountain Road, it is 0% impervious. The area consists majorly of unaffected wooded area, it also contains a portion of the site's power easement and a former mining road. There is no un-stabilized disturbed area in DA-17 and there are no plans for new disturbance in the current permit term. DA-17 drains west to east, before being diverted north around the entrance parking area and drainage systems associated with DA-9. Stormwater exits the site via overland flow north of the quarry entrance into a roadside ditch along 13th Lake Road.

3.3 PROPOSED STORMWATER DRAINAGE PATTERNS

A SWPPP map with topography was produced (**Figure 3**) that displays post development site conditions and prescribed stormwater management features. The areas primarily affected by permit modification are the eastern portion of the site near the quarry and the western portion of the site near the RM pile. Drainage areas along the road have minor changes based on changing boundary conditions, either from quarry/pile expansion or the proposed life of mine.

The drainage characteristics, extent of site disturbances, and hydrologic model parameters are detailed for each area. Pollutants of concern are broadly the same for the entire site and are discussed as a whole in Section 4.0. The appropriate BMPs were selected and designed in accordance with the NYSDEC Standards and Specifications for Erosion and Sediment Control. For hydrologic modeling, HydroCAD and the TR-20 method were utilized with a 10-year, Type II 24-hour storm with precipitation of 4.08 inches. This value is based on the Northeast Regional Climate Center IDF projections (Emission scenario RCP 4.5 for the 2070-2099 projected time period). HydroCAD model outputs are presented in greater detail later in this report (**Appendix B**). Figures detailing how stormwater patterns on site change over the life of operations and implementation of permanent stormwater controls and temporary erosion and sediment controls required as conditions on site change are included in **Appendix A (Figures 4-6)**

3.3.1 Resiliency to Future Climate Risk

The 2014 Community Risk and Resiliency Act (CRRA), as amended by the 2019 Climate Leadership and Community Protection Act (CLCPA), requires that applicants for permits issued for major projects in all regulatory programs covered by the Uniform Procedures Act demonstrate consideration of future physical climate risk. Of particular importance when considering a long them stormwater management strategy are increased frequency and intensity of extreme precipitation events and sea level rise. Due to the long-term nature of the operations covered in the mine permit modification these factors are addressed within the SWPPP.

Flooding is not a future concern at the site. The entire site is located within flood zone C on the FEMA produced FIRM maps **(Appendix H)**, indicating an area of minimal flooding (greater than 500-yr floodplain). This is further indicated by site elevations, the Zone A (100 Year floodplain) near the site entrance is ~1610’ AMSL, the proposed expanded quarry area is adjacent to Ruby Mountain Road at 1830’ AMSL and the RM pile begins at 1970’ AMSL. Brown Pond Brook, which runs through the center of the site is located in a deep natural valley, generally 20’ lower than the adjacent section of Ruby Mountain Road.

It has been observed that in recent years the frequency and intensity of extreme precipitation events have increased. This is a trend that projected to continue even as we work to reduce greenhouse gases and control the effects of climate change. The permit modification that this document was prepared as a part of covers onsite operations through approximately 2090. To account for the increase in frequency and intensity of extreme precipitation events this document considerers rainfall values from the NRCC projections as suggested in the document ‘Observed and Projected Climate Change in New York State: An Overview’ produced by the NYSDEC. To utilize the NRCC’s projections of future extreme precipitation the RCP 4.5 emission scenario, a middle case of the four (RCP 2.6, 4.5, 6 and 8.5) projected greenhouse gas concentrations adopted by the intergovernmental panel on climate change (IPCC) was chosen, and the 2070-2099 time period was selected. These inputs yield 24-hr rainfall totals of 3.12, 4.08 and 6.72 inches for the 2, 10 and 100-yr storm respectively at the North Creek, NY weather station. These values are increased from current values of 2.43, 3.38, and 5.44 inches for the 2, 10 and 100-yr storm respectively.

In 2023 a series of two major rainfall events 1.12” and 1.57” occurred within a week in early July. In December and storm event totaling 3.17” was recorded, just below a 10-year storm in magnitude. During the July storms neighbors complained of turbidity in brown pond brook, though a DEC inspection found no failures in Barton’s stormwater controls. In the December extreme precipitation event, worsened by the corresponding snowmelt led to Brown Pond Brook overtopping Ruby Mountain Road.

In response to these events and to maintain performance under intensifying conditions described above Frog Pond and Little Crusher Pond will be improved to provide increased storage capacity and detention

time for stormwater treatment. The overtopping of Ruby Mountain Road during the December event was caused by insufficient capacity in the existing culverts underneath the road. Planning is underway to replace the existing culvert with an appropriately sized 3-sided box culvert. This will be performed under a separate nationwide permit and is not addressed further in this document.

3.3.2 Quarry Area

The proposed mining sequence in the permit modification begins with the lateral extents of the quarry remaining in place while the quarry is deepened from +/- 1890' AMSL to 1790' AMSL. This lowers the pit of the quarry below the surrounding topography and changes the drainage patterns of the area and water now drains internally to the quarry floor. Upon reaching the final depth in the current quarry footprint mining will then expand laterally. The quarry first expands east to establish final face configuration along the proposed life of mine extents. In the second phase the quarry expands laterally to its ultimate northern extents with a second pit being developed in the third phase. Mining continues in this pit until the fourth phase when the quarry expands south and a third pit is developed south of the original (**Figure 3, Appendix A**. The primary pollutant of concern for an active quarry is suspended solids (TSS). With all stormwater in the quarry draining inward the possibility for sediment transport in stormwater is greatly reduced.

DA-6: Drainage Area 6 (DA-6) is reduced to 7.5 acres based on quarry expansion in the eastern portion of the area and is 88% impervious. This area contains a portion of Ruby Mountain Road, the quarry office and crusher building as well as accompanying stone roads and parking areas. Stormwater drains east to west traveling both overland and being conveyed by ditch to a series of ponds. The first, Little Crusher Pond will be expanded and have a new outlet installed to increase stormwater storage volume and detention time in normal conditions through the 2-year storm event and ensure controlled spillway discharge during more extreme precipitation events, including future events of a greater magnitude as projected by the NRCC. Following the expansion Little and Big Crusher Pond will be renamed Upper and Lower Crusher Pond to avoid future confusion. Upper Crusher Pond will discharge via culvert under Ruby Mountain Road to Lower Crusher Pond. Lower Crusher Pond outlets to Outfall 005A which discharges to Brown Pond Brook.

DA-7: Drainage Area 7 (DA-7) is reduced to 7.3 acres based on quarry expansion in the eastern portion of the area. to the west of the quarry which is less than 3% impervious. 5.9 acres of this area is wooded and outside of the proposed life of mine, remaining area is the back of the quarry office, surrounding lot and the stabilized back slope of quarry road. The area drains east to west to a mapped wetland which drains to Brown Pond Brook at Outfall 002A.

DA-8: Drainage Area 8 (DA-8) is approximately 61.9 acres and is entirely disturbed due to the active quarry. After the quarry deepening stormwater which previously traveled overland from the entrance to the quarry and was conveyed by ditch and culvert to last chance pond, now drains internally to the quarry floor. Excess stormwater which does not exit the site through infiltration or evaporation will collect in the quarry sump where it is pumped to last chance pond at a controlled rate or used in operations in place of water from other groundwater sources. A diversionary berm is created along the eastern crest of the quarry to prevent stormwater run-on from outside of the life of mine.

DA-8A: Drainage Area 8A (DA-8A) is a 0.7 acre area along Ruby Mountain Road that was formerly part of the larger DA-8. It is entirely disturbed, being comprised of the road and stormwater controls including roadside ditches and Last Chance Pond. Stormwater from the quarry formerly traveled through this area but is now contained withing the quarry itself.

DA-14A: Drainage Area 14A (DA-14A) 14A is absorbed into the expanded quarry area.

DA-14: Drainage Area 14 (DA-14) is reduced to 3.8 acres due to quarry expansion. The area is located to the northeast of the quarry, it is 0% impervious. The area consists entirely of unaffected wooded area which falls outside of the proposed life of mine. DA-14 drains east to west, before being diverted north around the quarry and exiting the site to the west where it ultimately drains to a mapped emergent wetland, through the mapped wetland mentioned above in the description of DA-7 and finally to Brown Pond Brook at Outfall 002A.

DA-15: Drainage Area 15 (DA-15) is a reduced to 1.5 Acres by quarry expansion. The area is located to the south and east of the quarry, it is 0% impervious. The area is comprised of wooded and grass cover types and will be unaffected by future mining activities. The area drains east to west before being diverted south around the quarry and exiting the site overland through wooded areas ultimately to roadside ditches of 13th Lake Rd.

3.3.3 Residual Minerals Pile Area

The finished tailings are composed of naturally occurring bedrock that is crushed to a sand or gravel sized fraction. The tailings are then rinsed to remove fines and redistributed on site. Stormwater runoff that contacts the haul roads and the finished tailings will be collected in lined waterways and routed to a sediment basin for treatment. Water infiltrating the tailings, and thus having significance residence time in the tailings, will be directed to basins within a closed-loop system covered under the Individual SPDES permit. Grass is expected to grow naturally in some areas and reclamation efforts will increase vegetative cover throughout the phases of RM pile construction, but it was assumed grass coverage will be less than 50% to be conservative in all HydroCAD calculations. For areas consisting of compacted haul road a curve number of 85 was used and for areas consisting of thoroughly rinsed tailings of sand to gravel size fraction a curve number of 55 was used.

DA-1: Drainage Area 1 (DA-1) is comprised to the northeast portion of the residual minerals pile. It is approximately 44.4 acres and is entirely disturbed due to the construction of new haul roads and placement of tailings. DA-1 will drain from the center of the pile outward to the north and east, collecting in channels on the interior of the haul roads and being directed to the DA-1 basin. The Basin discharges to proposed MSGP Outfall 009A before ultimately leaving the site through Brown Pond Brook.

DA-2: Drainage Area 2 (DA-2) is comprised to the southeast portion of the residual minerals pile. It is approximately 43.5 acres and is entirely disturbed due to the construction of new haul roads and placement of tailings. DA-2 will drain from the center of the pile outward to the south and east, collecting in channels on the interior of the haul roads and being directed to the DA-2 basin. The Basin discharges through MSGP Outfall 006A to an unnamed tributary of Brown Pond Brook.

DA-3: Drainage Area 3 (DA-3) is comprised to the southwest portion of the residual minerals pile. It is approximately 21.4 acres and is entirely disturbed due to the construction of new haul roads and placement of tailings. DA-3 will drain from the center of the pile outward to the south and west, collecting in channels on the interior of the haul roads and being directed to the DA-3 basin. The Basin discharges through proposed MSGP Outfall 007A, overland south and east and exists the site through unnamed tributary of Thirteenth Lake Brook.

DA-4: Drainage Area 4 (DA-4) is comprised to the Northwest portion of the residual minerals pile. It is approximately 19.2 acres and is entirely disturbed due to the construction of new haul roads and placement of tailings. DA-4 will drain from the center of the pile outward to the north and west,

collecting in channels on the interior of the haul roads and being directed to the DA-3 basin. The Basin discharges through proposed MSGP Outfall 008A, overland north to a mapped wetland.

DA-10: Drainage Area 10 (DA-10) is absorbed into DA-4.

DA-11: Drainage Area 11 (DA-11) is reduced to 5.5 Acres due to the RM pile expansion. The area is located to the southwest of the residual minerals and is 0% impervious. The area includes a 0.9 Acre previously disturbed section of land within the proposed life of mine, the remainder of the area is undisturbed woodland outside of the proposed life of mine. The area is comprised of wooded and grass cover types and will be unaffected by future mining activities. There is no un-stabilized disturbed area in DA-11. The area drains north to south, overland into an unnamed tributary of Thirteenth Lake Brook near the proposed MSGP Outfall 007A.

DA-12: Drainage Area 12 (DA-12) is reduced to 4.2 Acres due to the RM pile expansion. The area is located to the southeast of the residual minerals pile and is 0% impervious. The area is comprised of wooded and grass cover types, it I comprised mostly of unaffected land but also contains stabilized grading areas on the outside of the RM pile haul road. Stormwater drains to the northeast by overland flow into an unnamed tributary of Brown Pond Brook in the area of SPDES Outfall 002.

3.3.4 Quarry Access Road

The quarry access road, Ruby Mountain Road, will remain in use for the life of mining operation. There are no changes proposed to the road in the proposed permit modification, however there are some changes to the associated drainage areas. The changes to the proposed drainage areas are generally boundary changes cause by one or more of the quarry expansion, RM pile expansion, or life of mine boundary expansion. Each drainage area is described in detail below.

DA-5: Drainage Area 5 (DA-5) is reduced to 11.2 acres due to expansion of the RM pile expansion. The area is located at the top of Ruby Mountain Rd. and is 47% impervious. This area contains the northern portion of the Mill and associated area and the majority of the overland conveyor and associated access roads. The remainder of the area is undisturbed wooded area. Stormwater in this area drains north along the roadways and south to north overland in the wooded areas. It is directed through two stormwater ponds, Guppy Pond and Frog Pond, the latter of which outlets through outfall 001A which discharges into the Brown Pond Brook. Frog Pond will be improved with a new berm and emergency spillway as well as a new riser pipe outlet. These improvements will increase stormwater storage volume and detention time in normal conditions through the 2-year storm event and ensure controlled spillway discharge during more extreme precipitation events, including future events of a greater magnitude as projected by the NRCC.

DA-9: Drainage Area 9 (DA-9) is unchanged for the life of mining operations. It is a 6.1 acre area which is 19% impervious. The area consists of Ruby Mountain Road, the site entrance, two wooded areas to the northeast of Ruby Mountain Road, and associated stormwater controls. The area drains east to west, through welcome pond and other conveyances before leaving the site via culvert under 13th Lake Rd to MSGP Outfall 004A. Water discharging from this culvert ultimately drains to the wetland area surrounding Thirteenth Brook

DA-13: Drainage Area 13 (DA-13) increases to 25.8 acres due to modifications to the life of mine boundary. The area is located in the center of the site and is 4% impervious. This area consists mainly of undisturbed wooded area. The area also contains a portion of Ruby Mountain Road, a section of the power easement, section of Brown Pond Brook, and the backside of disturbed areas along the overland conveyor. Stormwater in this area drains overland through wooded areas from the northern, eastern and western extents of the area directly to Brown Pond Brook in the center of the area thorough which it exits the site to the south.

DA-16: Drainage Area 16 (DA-16) is reduced to 12.9 acres due to quarry expansion. The area is located to the east of Ruby Mountain Road and is 0% impervious. The area includes a portion of the power easement and wooded areas outside of the current permit term affected area. There is no un-stabilized disturbed area in DA-16. Stormwater drains overland from north to south directed by berms away from disturbed areas and exits the site via overland flow ultimately reaching a roadside ditch along 13th Lake Road.

DA-17: Drainage Area 17 (DA-17) increases in size to 4.6 acres area due to expansion/simplification of the proposed life of mine boundary. The area is located to the northeast of Ruby Mountain Road, it is 0% impervious. The area consists majorly of unaffected wooded area, it also contains a portion of the site's power easement and a former mining road. There is no un-stabilized disturbed area in DA-17 and there are no plans for new disturbance during the life of mining operations. DA-17 drains west to east, before being diverted north around the entrance parking area and drainage systems associated with DA-9. Stormwater exits the site via overland flow north of the quarry entrance into a roadside ditch along 13th Lake Road.

DA-18: Drainage Area 18 (DA-18) is a new area created due to expansion/simplification of the proposed life of mine boundary. DA-18 is 0% impervious and contains 0.4 acres of a woodland/grass combination, it drains east to west via overland flow south of Ruby Mountain Road leaving the site through a roadside ditch along 13th Lake Rd. There are no plans for new disturbance in this area during the life of mining operations.

4.0 SUMMARY OF POTENTIAL POLLUTANT SOURCES

The activities within the limits of the mine shall be limited to operations associated with the extraction of hard rock for garnet extraction, site maintenance and stockpiling of excess overburden and topsoil material to be reused during the reclamation process. There are a total of three permanent structures on-site and they are the primary crusher, processing mill, and a maintenance garage. The primary crusher and maintenance garage are in the quarry area on the eastern portion of the site and the processing mill is located in the tailings storage area on the western portion of the site. Spill control materials are readily available at or in close proximity at time of all fuel transfers.

It is anticipated that the major pollutant source associated with this industrial activity will be crushed rock generated by quarrying activities and sediment generated through site preparation processes such as clearing and stripping. A minor pollutant source is the fueling of vehicles on-site. The erosion and sediment control, and stormwater management activities presented in this document will address the issue.

5.0 SPILLS AND RELEASES

All spills and releases on-site are documented and reported as required. Any spills are treated immediately.

A spill event is defined as a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities, as defined by 40 CFR 110: and/or the discharge has impacted the land or waters of the State of New York, or is not cleaned up in two hours, or is not under the control of the facility, or involves more than 5 gallons of oil.

Maintenance and repair of mobile equipment is performed off-site by trained personnel from the manufacturing company. Disabled equipment is removed from the site promptly and necessary precautions are taken to collect or contain fluids that may have leaked or discharged from disabled equipment.

In the event that a spill occurs, the mine supervisor is responsible for assessing the size of the spill, the need for a spill response contractor and for reporting the spill to the appropriate authorities as necessary. Any reportable spills will be reported to the NYSDEC Hotline within two hours of the knowledge of the spill

by the mine supervisor. The mine supervisor has the authority to call a pollution response contractor to respond to the mine for spill stabilization and/or clean-up activities, if necessary.

Names and phone numbers of agencies and pollution response contractors who may be called in an emergency are listed below:

Agency/Contractor	Contact Information
Local Fire Department	(518) 251-4373
Local Police Department	(518) 897-2000
State Police	(518) 494-3332
Ambulance	(518) 251-2244
National Vacuum Corporation 80 Park Road Queensbury, NY 12804	(518) 743-0563
NYSDEC Hotline	1-800-457-7362

6.0 SAMPLING DATA

Twice annual benchmark monitoring will be conducted at this facility to ensure the quality of off-site stormwater discharges. The benchmark monitoring consists of taking a grab sample from the designated outfall and having it analyzed in accordance with 6 NYCRR Part 750-2.5(a)(2)(iv). Results are submitted to the NYSDEC; For specific sampling and monitoring requirements see **Section 9** of this document.

7.0 STORMWATER CONTROLS

Below is a detailed description of the non-structural and structural BMPs that will be used at the site and as depicted in the attached Stormwater Plan figures located in **Appendix A**.

7.1 NON-STRUCTURAL BMP'S

7.1.1 Good Housekeeping

General good housekeeping practices that maintain safe, orderly and clean work environments are implemented at this mine as a matter of course. Active areas are kept clear of obstructions and debris. All equipment, tools and products as well as disabled equipment are stored in an orderly manner. Haul roads are maintained in good condition to minimize erosion. When necessary, dust control is accomplished using water trucks. Fuel oil and fuel transfers are to be handled in accordance with all governmental regulations and good housekeeping practices.

7.1.2 Preventative Maintenance

A preventative maintenance program including inspections of drainage features, erosion and sediment control structures, material storage areas, and material handling procedures has been ongoing at the site.

Unconsolidated surficial overburden stockpiled during the pre-stripping phase will be used during reclamation. Progressive reclamation of the stockpile area benches, in the form of seeding and tree planting, will be performed during stockpile development. As one lift is completed and a new lift started, the bench (edge of lift) will be reclaimed by placing overburden material and planting vegetation, including trees, shrubs and grasses.

Drainage channels will be maintained so that they remain free of debris and sediment and allow the free movement of water. Haul roads will be sprayed with water, as necessary, to prevent the generation of dust. The sediment basins will be visually inspected for sheens, sediments, and any signs of erosion.

7.1.3 Routine Facility Inspections

In addition to or as part of the required comprehensive site evaluation, qualified facility personnel must inspect all areas of the facility where activities are exposed to stormwater. Both weekly erosion and sediment control inspections **(Section 8.0)** and Quarterly BMP inspections (**section 9.0 B**) are required for the site. The inspections shall examine all structural BMPs to insure they are functioning as designed, and at a minimum; all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, and debris basins. The inspections will be conducted with the purpose of determining whether erosion prevention and sediment control measures are effective in preventing impacts to off-site areas.

Any deficiencies in the implementation of the SWPPP must be corrected as soon as practicable, but not later than within 14 days of the inspection for items that can be readily resolved. The results of the inspections must be documented in the SWPPP, along with any corrective actions that were taken in response to any deficiencies or opportunities for improvement that were identified.

7.1.4 Employee Training

Employee training must be provided for all employees who work in areas where activities are exposed to stormwater, and for employees who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, sampling personnel, and maintenance staff). The training should inform employees of the components and goals of the SWPPP. Training refreshers must be conducted at an interval of not less than once per year to ensure adequate understanding of the SWPPP.

All necessary Barton personnel are fully trained in the implementation, function and use of the erosion and sediment control equipment, spill prevention and control equipment, work safety, and emergency response procedures. Necessary personnel are also trained in the practices of good housekeeping and material management. Employees who may be required to handle potentially harmful materials will be trained in the procedures for material hanging, spill prevention and clean-up, material compatibility, and applicable right-to-know requirements.

7.2 PROPOSED STRUCTURAL BMP'S

7.2.1 Earthen Berms

Limiting stormwater run-on from adjacent unaffected area reduces total flow, velocities and limits sediment transport, as well as reducing the amount of water to be treated by other structural BMPs later in the stormwater system. Earthen Berms are constructed in accordance with NYSDEC standards (**Appendix C**). A summary of berm design is presented in the table below.

Earthen Berms					
Location	**Drainage area**	**Dike Type**	**Channel Grade**	**Treatment Type**	**Treatment Description**
DA-14 (NE of quarry)	3.8	A	9.6%	4	4-8" Rip Rap
DA-15 (East of Quarry)	1.5	A	9.4%	4	4-8" Rip Rap

7.2.2 Lined Waterways

Drainage Areas 1, 2, 3 and 4 will each require two lined waterways to feed the lowest topographic point which is where the sediment basins are being constructed. The drainage areas were determined based on the optimal sediment basin locations and the lined waterways were then designed to convey the runoff according to NYSDEC standards. The HydroCAD model for each drainage area involved two areas, each feeding a reach, with both reaches feeding the respective sediment basin (**Appendix C**).

The waterways will be trapezoidal with dimensions specified on the SWPPP Plan (**Figure 3**). The lining will be rip-rap with a median (d_{50}) size of 4-6 inches and maximum size based on calculated peak velocities. Each lined waterway has adequate freeboard (minimum 0.25 feet) when exposed to the NRCC projected RCP 4.5 100-year, 24-hour storm for the 2070-2099 time period.

Finished surfaces will be hydroseeded and covered with straw mulch immediately upon completion.

7.2.3 Sediment Basins

New sediment basins were designed to provide treatment for stormwater runoff from the expanding Residual Minerals pile. Two existing ponds, Frog and Little Crusher, will be improved to provide longer detention times and controlled passage for larger storms. To provide enduring performance over the 60+ year life of operations detailed in the proposed permit modification the values used for the 10-year design storm and 100-year extreme storm are based on the Northeast Reigonal Climate Center's climate change adjusted IDF curve projections (RCP 4.5 projection for the 2070-2099 time period). All basins were designed according to the NYSDEC Blue Book Specifications (2016), Detailed design information is provided below.

7.2.3.1 DA-1 Sediment Basin

Runoff from Drainage Area 1 (DA-1) will be routed to a sediment basin for treatment. The basin was sized according to the greater of peak runoff or drainage area and, in this case, it was the drainage area that dictated the required basin surface area. The principal spillway will be a corrugated metal pipe (CMP) riser and barrel that will discharge to MSGP Outfall 009A. The riser crest will be a horizontal orifice at the top of the dewatering zone. The riser and principal spillway can accommodate the 100-year, 24-hour storm so an emergency spillway is not required. To drain the basin when water is below the riser crest, the riser will be fabricated with a perforated drainpipe that is wrapped with filter cloth and No. 2 stone.

DA-1 Sediment Basin	
Watershed Area (Acres)	44.4
Peak Inflow (Q) 10-Yr Event (cfs)	30.1
Required Surface Area (Acres)	0.67
Required Storage Volume (Acre-Ft)	4.7
Sediment Cleanout Height (ft)	1.5
Riser Pipe Spillway Height (ft)	7.0
Emergency Spillway Height (ft)	8.0
Rim Height (ft)	9.0
Available Storage Volume (Acre-Ft)	6.2
Max Storage, 10-Yr Event (Acre-Ft)	2.25

Finished basin berm surfaces will be hydroseeded and covered with straw mulch immediately upon completion.

7.2.3.2 DA-2 Sediment Basin

Runoff from Drainage Area 2 (DA-2) will be routed to a sediment basin for treatment. The basin was sized according to the greater of peak runoff or drainage area and, in this case, it was the drainage area that dictated the required basin surface area. The principal spillway will be a corrugated metal pipe (CMP) riser and barrel that will discharge to MSGP Outfall 006A. The riser crest will be a horizontal orifice at the top of the dewatering zone. The riser and principal spillway can accommodate the 100-year, 24-hour storm so an emergency spillway is not required. To drain the basin when water is below the riser crest, the riser will be fabricated with a perforated drainpipe that is wrapped with filter cloth and No. 2 stone.

Sediment Basin DA-2	
Watershed Area (Acres)	43.5
Peak Inflow (Q) 10-Yr Event (cfs)	29.2
Required Surface Area (Acres)	0.65
Required Storage Volume (Acre-Ft)	4.4
Sediment Cleanout Height (ft)	1.5
Riser Pipe Spillway Height (ft)	7.0
Emergency Spillway Height (ft)	8.0
Rim Height (ft)	9.0
Available Storage Volume (Acre-Ft)	5.04
Max Storage, 10-Yr Event (Acre-Ft)	2.20

Finished basin berm surfaces will be hydroseeded and covered with straw mulch immediately upon completion.

7.2.3.3 Sediment Basin DA-3

Runoff from Drainage Area 3 (DA-3) will be routed to a sediment basin for treatment. The basin was sized according to the greater of peak runoff or drainage area and, in this case, it was the drainage area that dictated the required basin surface area. The principal spillway will be a corrugated metal pipe (CMP) riser and barrel that will discharge to MSGP Outfall 008A. The riser crest will be a horizontal orifice at the top of the dewatering zone. The riser and principal spillway can accommodate the 100-year, 24-hour storm so an emergency spillway is not required. To drain the basin when water is below the riser crest, the riser will be fabricated with a perforated drainpipe that is wrapped with filter cloth and No. 2 stone.

DA-3 Sediment Basin	
Watershed Area (Acres)	21.4
Peak Inflow (Q) 10-Yr Event (cfs)	17.6
Required Surface Area (Acres)	0.32
Required Storage Volume (Acre-Ft)	2.3
Sediment Cleanout Height (ft)	1.5
Riser Pipe Spillway Height (ft)	7.0
Emergency Spillway Height (ft)	8.0
Rim Height (ft)	9.0
Available Storage Volume (Acre-Ft)	2.9
Max Storage, 10-Yr Event (Acre-Ft)	0.99

Finished basin berm surfaces will be hydroseeded and covered with straw mulch immediately upon completion.

7.2.3.4 DA-4 Sediment Basin

Runoff from Drainage Area 4 (DA-4) will be routed to a sediment basin for treatment. The basin was sized according to the greater of peak runoff or drainage area and, in this case, it was the drainage area that dictated the required basin surface area. The principal spillway will be a corrugated metal pipe (CMP) riser and barrel that will discharge to MSGP Outfall 007A. The riser crest will be a horizontal orifice at the top of the dewatering zone. The riser and principal spillway can accommodate the 100-year, 24-hour storm so an emergency spillway is not required. To drain the basin when water is below the riser crest, the riser will be fabricated with a perforated drainpipe that is wrapped with filter cloth and No. 2 stone.

DA-4 Sediment Basin	
Watershed Area (Acres)	19.2
Peak Inflow (Q) 10-Yr Event (cfs)	16.0
Required Surface Area (Acres)	0.29
Required Storage Volume (Acre-Ft)	2.0
Sediment Cleanout Height (ft)	1.5
Riser Pipe Spillway Height (ft)	7.0
Emergency Spillway Height (ft)	8.0
Rim Height (ft)	9.0
Available Storage Volume (Acre-Ft)	3.33
Max Storage, 10-Yr Event (Acre-Ft)	1.17

7.2.3.1 DA-5 Sediment Basin – Frog Pond

Runoff from Drainage Area 5 (DA-5) is routed through frog pond for treatment. Frog Pond is an existing sediment basin that has been in use for 30+ years. To ensure that the basin functions properly for the duration mining activities at the site, the pond will be improved. The storage capacity of the pond will be improved by installing a berm along the front of the pond to raise the rim elevation to 1892’ AMSL. The existing outlets will be removed and replaced with a CMP riser pipe and barrel that discharge to the same point as the existing culverts (MSGP Outfall 001A) an emergency spillway will be created to safely pass the 100-year 24-hour storm event.

DA-5 Frog Pond	
Watershed Area (Acres)	11.2
Peak Inflow (Q) 10-Yr Event (cfs)	33.53
Required Surface Area (Acres)	0.34
Required Storage Volume (Acre-Ft)	1.02
Sediment Cleanout Height (ft)	1.25
Riser Pipe Spillway Height (ft)	7.5
Emergency Spillway Height (ft)	8.5
Rim Height (ft)	10
Available Storage Volume (Acre-Ft)	1.2
Max Storage, 10-Yr Event (Acre-Ft)	0.8

7.2.3.1 DA-6 Sediment Basin – Upper Crusher Pond

Runoff from Drainage Area 6 (DA-6) is Upper Crusher Pond for treatment. Little Crusher Pond is an existing sediment basin that was designed in series with Big Crusher Pond as part of the 2014 LA Group SWPPP. To ensure that the basin functions properly for the duration of mining activities at the site, the pond will be improved. The storage capacity of the pond will be improved by expanding the

pond to the north and east. The existing outlet structure will be removed and replaced with a CMP riser pipe and barrel that discharge to Lower (formerly Big) Crusher Pond. Due to site constraints the riser has been designed to safely pass the 100-year 24-hour storm in lieu of an emergency spillway.

DA-6 Upper Crusher Pond	
Watershed Area (Acres)	7.5
Peak Inflow (Q) 10-Yr Event (cfs)	38.41
Required Surface Area (Acres)	0.38
Required Storage Volume (Acre-Ft)	0.8
Sediment Cleanout Height (ft)	1.5
Riser Pipe Spillway Height (ft)	5.5
Emergency Spillway Height (ft)	---
Rim Height (ft)	9
Available Storage Volume (Acre-Ft)	1.6
Max Storage, 10-Yr Event (Acre-Ft)	1.0

Finished basin berm surfaces will be hydroseeded and covered with straw mulch immediately upon completion.

7.2.4 Rock Outlet Protection

Rock outlet protection will be installed on the outlet side of any installed conduit. Close conduit piping will serve as the principal spillway barrel for all installed ponds. The rock outlet protection will be constructed based on tailwater conditions less than half of the conduit diameter and calculated conduit discharge from the respective HydroCAD model based on the NRCC Projected 10-yr 24-hr storm (RCP 4.5, time period 2070-2099). Each conduit will be selectively designed based on whether it is an unconfined, confined, or semi-confined channel receiving the discharge (**Appendix C**).

7.2.5 Earth Dike

An earth dike will be installed on the non-operational side of haul roads to divert run-on from entering the property and any runoff from exiting the property. The earth dike will be constructed based on grade of the constructed road as per NYSDEC guidance (**Appendix C**).

7.3 ENHANCED BMPS FOR CLIMATE RELATED RISKS

Starting with GP-0-23-001 The Department has identified a series of enhanced BMPs to reduce the impact of increasing climate risks due to major storm events, flood events, sea level rise, storm surge and seiche. These measures will be discussed below.

For the majority of the site, flood risk is minimal. The site is elevated significantly above major waterbodies and adjacent streams/wetlands. Brown Pond Brook, which flows through the center of the site is located in a deep valley +/- 20’ below the adjacent road mitigating flood risk, there is one stream crossing on site, where road elevation is +/- 10’ above the streambed.

Piled materials stored on site; The RM pile, and raw materials stored near the mill are stored at an elevation that negates any projected flooding, additionally materials behind the mill are surrounded by a berm. Contained materials; chemicals, compressed gasses, and petroleum products are stored in the mill and

crusher building. All equipment and company vehicles other semi stationary structures are stored at elevations which will prevent the possibility of floating in flood scenarios when not in use.

Staff on site have received training on emergency procedures in case of extreme storm or flooding events. Raw material delivery will be delayed in the event a major storm event is expected to occur within 48 hours of delivery.

8.0 MAINTENANCE

As described under section 7.1.3 routine facility inspections during operations will occur on a weekly basis by a qualified inspector. The inspections shall examine all structural BMPs to insure they are functioning as designed, and at a minimum; all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, trenches and temporary sediment basins. The inspections will be conducted with the purpose of determining whether erosion prevention and sediment control measures are effective in preventing impacts to off-site areas.

1. All erosion and sediment control practices will be checked for stability and operation once a week when operating. Any needed repairs will be made immediately to maintain all practices as designed.

2. All seed areas will be fertilized, reseeded as necessary, and mulched according to specifications in the erosion and sediment control practices to maintain a vigorous, dense vegetative cover.

3. Inspections will be made for erosion, scouring or disruption of flow paths, and structural integrity of pond outlet control structures, spillways and obstruction of overflows. Any sediment build-up should be removed and disposed of utilizing acceptable practices.

4. Steep Slopes: Inspect for rills, slumping, vegetative cover and stabilization.

A weekly inspection template can be found in **Appendix L**, this form will need to be reviewed every time the site's SWPPP is updated and modified as necessary.

Should any corrective actions need to be taken based on the weekly inspections the inspector shall notify the owner/operator within (1) business day. Corrective actions should be implemented within (1) business day of notification and completed within (7) calendar days unless otherwise notified by the department.

9.0 MONITORING

Inspection and monitoring activities consist of the following:

- Comprehensive annual site compliance inspection and evaluation (retained in an inspection report kept onsite with SWPPP for a minimum of 5 years)
- Routine quarterly inspections of BMPs (retained in an inspection report kept onsite with SWPPP)
- Annual dry weather flow inspection (retained in an inspection report kept onsite with SWPPP)
- Storm Event Sampling (storm event data forms, non-sampled events; results are reported to NYSDEC semi-annually in DMRs)
- Quarterly visual monitoring of stormwater discharges (retained in an inspection report kept onsite with SWPPP)

- Semi-annual benchmark sampling and analysis of stormwater discharges (results are reported to NYSDEC semi-annually in DMRs, along with any exceedance form)

A. COMPREHENSIVE ANNUAL COMPLIANCE INSPECTION & EVALUATION

A comprehensive site compliance evaluation must be conducted at least once each year. The inspection must be done by a qualified individual who may be either a facility employee or a consultant hired by the facility. The individual should be familiar with site operations, its BMPs, and the SWPPP, and possess the skills to assess conditions at the facility that could impact stormwater quality and assess the effectiveness of the BMPs in-place.

The compliance evaluation inspection must include all areas where industrial materials or activities are exposed to stormwater, and areas where spills and leaks have occurred within the past three years. Inspectors should look for, but not limit their inspection to:

a) Industrial materials, residue or trash on the ground that could contaminate or be washed away in stormwater;
b) Leaks or spills from industrial equipment, drums, barrels, tanks or similar containers;
c) Examination of all outfall locations, to determine the presence of unauthorized non-stormwater discharges or authorized non-stormwater discharges that are not certified;
d) Off-site tracking of industrial materials or sediment where vehicles enter or exit the site;
e) Tracking of material away from the area where it originates including from areas of no exposure to exposed areas;
f) Evidence of, or the potential for, pollutants entering the drainage system.
g) Inspection of areas found to be the source of pollutants observed during visual and analytical monitoring done during the year;
h) Stormwater BMPs identified in the SWPPP must be observed to ensure that they are operating correctly.

Where discharge locations or points are accessible, they must be inspected to see whether BMPs are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations must be inspected.

Follow-up Actions - Based on the results of the inspection, the SWPPP must be modified as necessary (e.g., show additional controls on the map and revise the description of controls to include additional or modified BMPs designed to correct any problems identified). Revisions to the SWPPP shall be completed within 14 calendar days following the inspection, unless permission for a later date is granted in writing by the NYSDEC. If existing BMPs need to be modified or if additional BMPs are necessary, implementation must be completed before the next anticipated storm event, if practicable, but not more than 12 weeks after completion of the comprehensive site evaluation, unless permission for a later date is granted in writing by the NYSDEC. For structural BMPs that will take longer than 12 weeks to implement, the written notification to the Department must include a schedule for completing the proposed project.

Report - A compliance inspection & evaluation report must be made and retained as part of the SWPPP, e.g. in **Appendix N,** for a period of at least five (5) years from the date of the report. A copy of a form that can be used for this purpose is included in **Appendix I.** At a minimum, the report must include:

1) The scope of the inspection,
2) The name(s) of the person(s) conducting the inspection,
3) The date(s) of the inspection,
4) Weather information at the time of the inspection,

5) Major observations relating to the implementation of the SWPPP, including:
    a. The location(s) of *discharges* of *pollutants* from the site;
    b. The location(s) of previously unidentified *discharges* of *pollutants* from the site;
    c. Any evidence of, or the potential for, pollutants entering the drainage system;
    d. The source of any discharges and actions taken to address newly identified authorized non-stormwater discharges or elimination of non-authorized discharges;
    e. Location(s) of BMPs that need to be maintained;
    f. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
    g. Location(s) where additional BMPs are needed that did not exist at the time of inspection;
    h. Any incidents of noncompliance. Where an inspection does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit;
    i. Observations regarding the physical condition of and around all outfalls, including any flow dissipation devices; and evidence of pollutants in discharges and/or the receiving water; and,
    j. The required corrective actions to be implemented in accordance with MSGP Part V.

Where compliance inspection schedules overlap with routine inspections, the comprehensive site compliance inspection may be used as one of the routine inspections.

B. ROUTINE QUARTERLY INSPECTIONS OF BMPS

All BMPs shall be inspected quarterly for evidence of potential discharges of contaminated stormwater and shall include chemical handling and storage areas, vehicle and equipment maintenance areas, fueling areas and other sources of pollution. A copy of a form for this purpose is included in **Appendix K.** Where compliance inspection schedules overlap with routine inspections, the comprehensive site compliance inspection may be used as one of the routine inspections. If corrective actions are required, describe the condition and date identified, describe the corrective actions and date implemented. Following the inspection, include the documentation with the SWPPP, e.g. in **Appendix N**.

C. ANNUAL DRY WEATHER FLOW INSPECTION

At least one dry weather flow inspection must be performed and documented once each year after a period of at least three (3) consecutive days of no precipitation. The dry weather flow inspection shall be conducted to determine the presence of non-stormwater discharges to the stormwater drainage system.

If a non-stormwater discharge is discovered, the source must be identified to determine whether it is an authorized discharge (e.g., a discharge covered by another SPDES Permit or an authorized non-stormwater discharge addressed under MSGP Part I.C.3). The Permittee shall modify the SWPPP to address any newly identified allowable non-stormwater discharges identified in MSGP Part I.C.3 that were not previously certified.

The NYSDEC must be notified within 14 days of any non-authorized discharge that cannot be easily eliminated. Appropriate actions may require coverage under an individual industrial SPDES permit or connection to a sanitary sewer system.

Results of the dry weather flow inspections must be documented in an inspection report and retained on-site with the SWPPP, e.g. in **Appendix N**. The report must include the outfall locations, the inspection date

and time, inspection personnel, description of discharges identified, the source of any discharges and actions taken to address any newly identified allowable non-stormwater discharges or elimination of non-authorized discharges. A sample report form for this purpose is included in **Appendix I**.

D. QUARTERLY VISUAL MONITORING

A quarterly visual inspection of stormwater runoff discharge must be performed and documented. The inspections must be made at least once during each of the following three-month periods: January through March, April through June, July through September, and October through December. The inspection must document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and any other obvious indicators of stormwater pollution. The visual examination must be made during daylight hours (e.g., normal working hours). Where practicable, the same individual should carry out the collection and examination of discharges for the entire Permit Term for consistency.

If the visual examination indicates the presence of stormwater pollution (e.g., color, odor, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators), the Permittee must evaluate the facility for potential sources of stormwater contamination. Any sources of contamination that are identified must be remedied. Such remedies may include implementation of non-structural or structural BMPs to prevent recurrence. The facility SWPPP must be updated to reflect these revisions within 14 days of the inspection for items that can be readily resolved. More complicated maintenance or repairs shall be performed in accordance with the timeframes for more complicated maintenance and repairs described under MSGP Part V, Corrective Actions. Following the implementation of such corrective actions, an additional visual inspection shall occur at the next qualifying storm event. If the next storm event does not occur until the next quarter that inspection may be used for both the post corrective action inspection and that quarter's inspection.

The visual inspection must be documented and maintained on-site with the SWPPP; a Quarterly Visual Monitoring Form is included in **Appendix K** for this purpose, which must be signed by the inspector. The report must include the outfall location, the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the stormwater discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution), probable sources of any observed stormwater contamination and actions taken to eliminate these sources.

E. SEMI-ANNUAL NUMERIC EFFLUENT AND BENCHMARK SAMPLING OF STORMWATER DISCHARGE

A minimum of one grab sample must be taken of the stormwater discharge resulting from a qualifying storm event during the first and second halves of the year. A qualifying event is defined as at least 0.1 inch ("measurable") of precipitation (defined as a "measurable" event), provided that the interval from the preceding measurable storm is at least 72 hours. The 72-hour storm interval is waived if the preceding measurable storm did not result in a stormwater discharge (e.g., a storm event in excess of 0.1 inches may not result in a stormwater discharge at some facilities). It also may be waived if the Permittee is able to document that less than a 72-hour interval is representative for local storm events during the sampling period. The grab sample must be taken during the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of the discharge. i.e. "first flush". If the sampled discharge commingles with process or non-process water, the Permittee must attempt to sample the stormwater discharge before it mixes with the non-stormwater. A sample must be collected from each outfall.

If there is no stormwater discharge from a qualifying storm event, no sample would be collected and documentation for this non-sample must be provided with the SWPPP (**Appendix L**). An adverse climatic conditions waiver form to be used under certain conditions if the storm event is not sampled is also included in **Appendix J**. If a sample is collected during a storm event that is later determined not to be a qualifying storm event, the results should be kept with the SWPPP.

The storm event must be documented using the Storm Event Data Form **Appendix J** provided by NYSDEC. The completed Storm Event Data Forms must be kept with the SWPPP (**Appendix N)**. Along with the monitoring results, the Permittee must provide the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled.

Analytical results for storm event sampling shall be submitted to NYSDEC electronically using a Discharge Monitoring Report (DMR) form **Appendix J**, and a copy also included with the SWPPP (**Appendix N**).

Benchmark monitoring is intended to provide a guideline for the owner/operator to determine the overall effectiveness of the SWPPP in controlling the discharge of pollutants to receiving waters. The benchmark monitoring required for this site is outlined under Sector J, Mineral Mining and Dressing (MSGP Part VII and Appendix C (industrial sectors SIC 1422-1429, Crushed and Broken Stone, including Rip Rap). Site activities are not included under Appendix D, Compliance Monitoring Requirements – Industrial Activities Subject to Effluent Limitation Guidelines; thus, no compliance monitoring is required and no numeric effluent limitations apply at the site. The only benchmark monitoring requirement (MSGP Table VII-J-2 for Dimension and Crushed Stone and Nonmetallic Minerals) is for Total Suspended Solids (TSS). The TSS cut-off concentration is 100 mg/L. The analysis shall be performed by a NYS Department of Health certified laboratory (ELAP certified).

Benchmark monitoring requirements are outlined in MSGP Part IV.F. Industrial sector facilities associated with mining construction sand and gravel are required to benchmark stormwater discharge monitoring semi-annually for the pollutants and concentrations identified in the following table.

POLLUTANT OF CONCERN	ANALYTICAL METHOD	BENCHMARK MONITORING CUT-OFF CONCENTRATION
Total Suspended Solids (TSS)	EPA 160.2	100 mg/L

Benchmark monitoring cut-off concentrations for individual industrial sectors are intended as a guideline for the permittee to determine the overall effectiveness of the SWPPP in controlling the discharge of pollutants to receiving waters.

The benchmark concentrations do not constitute direct numeric effluent limitations; therefore, a benchmark exceedance in and of itself, is not a permit violation. A separate corrective action form need not be submitted to NYSDEC as was previously the case for the prior MSGP. A benchmark monitoring exceedance form must be filed as a Discharge Monitoring Reports (DMRs). A copy of the DMR form and instructions for its electronic submittal to NYSDEC using EPA's NetDMR system are included in **Appendix J.** A copy of the benchmark monitoring exceedance form is included in **Appendix J**.

An exceedance signals the need for the Permittee to evaluate potential sources of stormwater contaminants at the facility. Any sources of contamination that are identified must be remedied. Such remedies may include implementation of additional non-structural or structural BMPs to prevent recurrence. The facility

SWPPP must be updated to reflect these revisions within 14 days of the inspection for items that can be readily resolved. If corrective actions at a facility do not result in achieving benchmark monitoring cut-off concentrations, the facility must continue efforts to implement additional BMPs. Failure to undertake and document the review or take the necessary corrective actions is a violation of the MSGP. Continued exceedance of benchmark monitoring cut-off concentrations may identify facilities that would be more appropriately covered under an individual SPDES permit. Benchmark monitoring will be conducted and submitted semi-annually (twice per year) representing January through June and July through December. Corrective actions and the positive outcomes of measures taken shall be apparent in subsequent DMRs and shall be documented in the Annual Certification Report.

F. ANNUAL CERTIFICATION REPORT

The Annual Certification Report (ACR) is the primary mechanism for reporting to the NYSDEC. The ACR must now be completed online with the NYSDEC nForm portal. A draft version of the Annual Certification Report Form is provided for an example in **Appendix I**.

An Annual Certification Report (ACR) form must be completed and submitted to the NYSDEC by January 28 of each year. This date is a revision from the March deadline included in the prior MSGP. Monitoring results for benchmark parameters, storm events and numeric effluent limitations if they apply to the Ruby Mountain facility, must be reported electronically on Discharge Monitoring Report (DMR) forms provided by the NYSDEC, instructions are provided in (**Appendix L**) and using EPA's online NetDMR system. The completed DMR forms and any additional monitoring requested by the NYSDEC, where applicable, must be submitted along with the ACR as described in Table 6.

Analytical results must be submitted for each outfall associated with industrial activity. For each outfall, one signed Discharge Monitoring Report (DMR) form must be submitted electronically to the NYSDEC per storm event sampled. Any exceedances and the corrective and long-term preventive actions must be described in the ACRs. Separate corrective action and non-compliance forms are no longer required.

Any sampling waivers (including representative outfalls or monitoring at inactive/unstaffed sites) should be described in a cover letter accompanying the ACR and DMR forms.

G. SUMMARY OF REPORTING

Summary of SWPPP-related reporting:

MONITORING TYPE	SUBMISSION DEADLINE
Comprehensive Annual Site Compliance Inspection	Retain Documentation with SWPPP, for minimum of 5 years.
Quarterly Inspections of BMPs	Retain Documentation with SWPPP. Answer applicable questions on the Annual Certification Report Form submitted by January 28.
Quarterly Visual Monitoring	Retain Documentation with SWPPP. Answer applicable questions on the Annual Certification Report Form submitted by January 28.
Annual Dry Weather Flow Inspection	Retain Documentation with SWPPP. Answer applicable questions on the Annual Certification Report Form and submit by January 28.
Semi-annual Benchmark Monitoring of Storm Event	Submit results semi-annually on a Discharge Monitoring Report via NetDMR along with the Annual Certification Report by January 28.
Weekly E&SC Inspection	Retain Documentation with SWPPP

H. RETENTION OF MONITORING RECORDS

SWPPP documents and monitoring records must be maintained pursuant to the following requirements:

Signature/Location - The SWPPP shall be signed and retained on-site at the facility.

Availability - The Permittee must keep a copy of the SWPPP on-site that is available to the NYSDEC for review at the time of an on-site inspection. The SWPPP must be made available upon request to the NYSDEC or local agency approving stormwater management plans. Also, in the interest of the public's right to know, the Permittee must make a copy of the SWPPP available to the public upon written request.

The Permittee must retain the SWPPP until at least one year after coverage under the MSGP terminates or expires. The Permittee must retain all records of monitoring information, copies of all reports required by the MSGP, and records of all data used to complete the NOI form to apply for coverage under the Permit, until at least one year after coverage under the permit terminates. This period may be explicitly modified or extended by request of the NYSDEC at any time. A copy of the current GP-0-17-004 MSGP (**Appendix D**) must be maintained with this SWPPP.

The Permittee must retain records of all monitoring information, copies of all reports required by a SPDES Permit, and records of all data used to complete the application for the Permit, including maintenance, instrumentation and calibration records, for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by written request of the NYSDEC.

Records of monitoring information must include:

- Date, exact place, and time of sampling or measurements;
- Individual(s) who performed the sampling or measurements;
- Date(s) analyses were performed;
- Individual(s) who performed the analyses;
- Analytical techniques or methods used;
- Results of such analyses; and
- Quality assurance/quality control documentation.

When records are stored electronically, the records must be preserved in a manner that reasonably assures their integrity and are acceptable and accessible to the NYSDEC.

The Permittee must make records available to the NYSDEC for inspection and copying or furnish to the NYSDEC within 25 business days of receipt of a NYSDEC request for such information, any information retained in accordance with this section.

10.0 SWPPP MODIFICATIONS

The NYSDEC may notify the Permittee at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall identify those provisions of the permit that are not being met, as well as the required modifications. The Permittee must make the required changes to the SWPPP within 30 days of receipt of such notification, unless permission for a later date is granted in writing by the NYSDEC and shall submit a written certification to the NYSDEC that the requested changes have been made.

The Permittee shall amend the SWPPP whenever:

a) There is a change in design, construction, operation, or maintenance at the facility which may have an effect on the potential for the discharge of pollutants from the facility which has not otherwise been addressed in the SWPPP; or

b) During inspections, monitoring, or investigations by facility personnel or by local, state, or federal officials it is determined that the SWPPP is inaccurate, incomplete, or ineffective in eliminating or significantly minimizing pollutants from sources or is otherwise not achieving the general objectives of controlling pollutants in discharges from the facility.

NYSDEC no longer requires submittal of a Notice of Modification Form. Rather, modifications shall be made by Permittee directly on the electronic copy of the Notice of Intent accessed in Permittee's online account. If a paper copy was originally submitted, an electronic copy will need to be developed to make the changes. Changes can only be made to the specific sections being updated. A copy of the NOI is included in **Appendix G** along with instructions for electronic submittals.

When the owner no longer wishes to participate in the MSGP program, they must submit a Notice of Termination, Starting with GP-0-23-001 the Department requires the Notice of Termination submitted online using NYSDECs nform portal. An example of the completed form is contained **in Appendix M**

APPENDIX A

Figures

Figure 1 - General Location Map

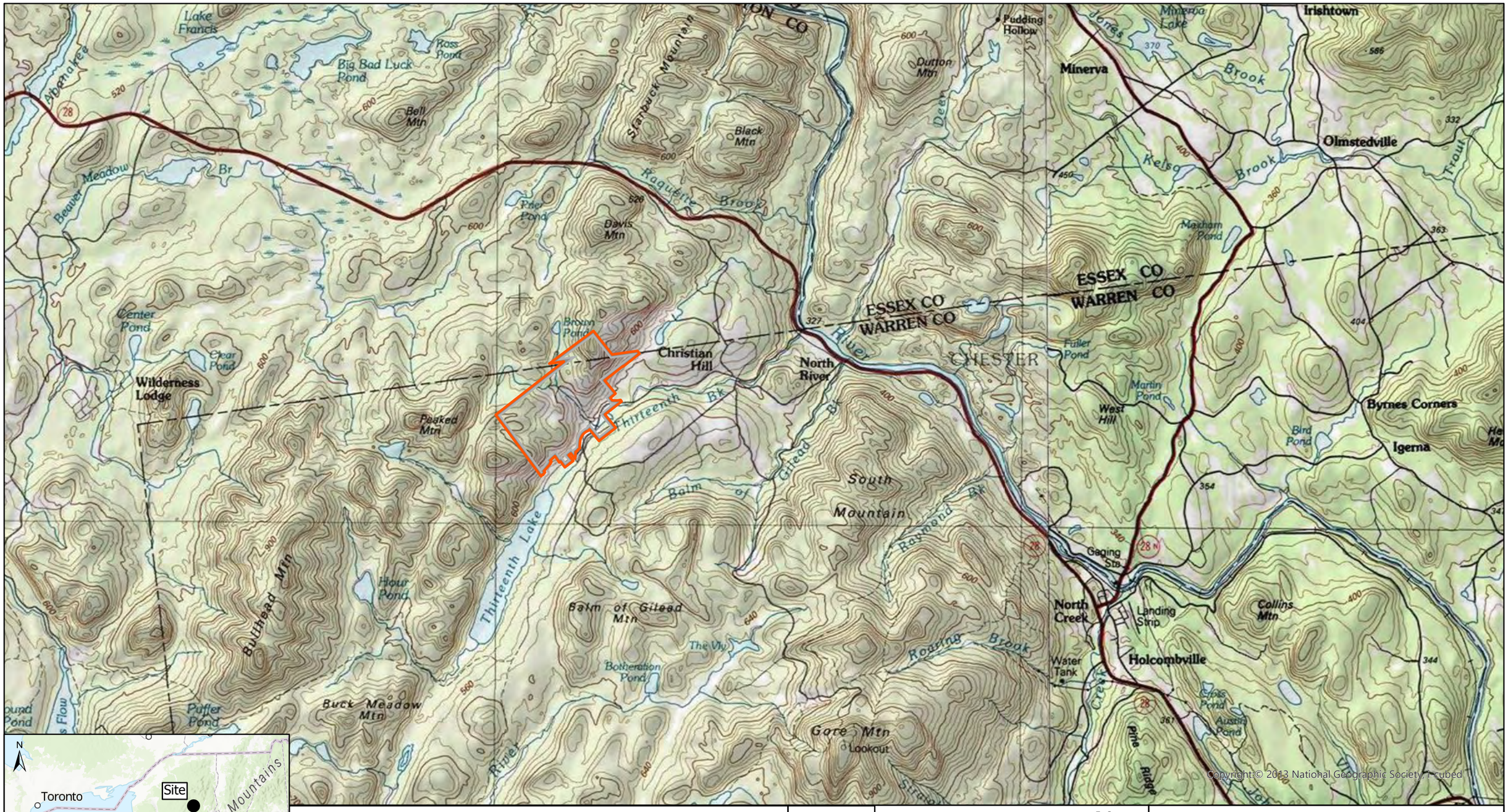
Figure 2 – SWPPPP - Existing Conditions

Figure 3 – SWPPP – Post-Development Conditions

Figure 4 – SWPPP Conditions – End of Phase 1

Figure 5 – SWPPP Conditions – End of Phase 2

Figure 6 – SWPPP Conditions – End of Phase 3



Map Legend (Above)

Barton Property Boundary

This document is not intended to be used for engineering purposes.

Map Information

Spatial Reference
NAD 1983 StatePlane New York East FIPS 3101 Feet

N

0 0.5 1 2 3 4
Miles

Figure 1 - Site Location Map

Date: 9/30/2022

H2H Geoscience Engineering, PLLC
179 River Street, Troy, NY, 12180
(518) 270-1620

H2H GEOSCIENCE ENGINEERING

LEGEND:

- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- LIFE OF MINE (195.5 A.C.)
- EXISTING DRAINAGE AREAS
- STREAM
- PONDS
- NWI WETLANDS
- DIVERSIONARY BERM
- LINED WATERWAY
- MSGP OUTFALL
- SPDES OUTFALL
- DIRECTION OF FLOW

DA-14A
DA-14
DA-7
DA-8
DA-6
DA-15
002A
001A
005A
DA-1
DA-5
DA-13
DA-16
003A
DA-10
DA-4
DA-2
DA-4A
DA-17
DA-9
004A
002
006A
002
DA-3
DA-12
DA-11

DRAWING NOTES:
1. CONTOUR INTERVAL = 2' MINOR, 10' MAJOR.

2. HORIZONTAL DATUM: NAD83 STATE PLAN, NEW YORK EAST, FEET
VERTICAL DATUM: NAVD88, FEET AMSL

3. TOPOGRAPHY AND PLANIMETRICS BASED ON AERIAL SURVEY BY BOWMAN PERFORMED APRIL 1ST, 2024.

4. PROPERTY LINE AND LIFE OF MINE PROVIDED BY CLIENT.

AREA NOTES:
PROPERTY (NORTH OF 13th LAKE RD): ±770 ACRES
PROPERTY (FULL): ±833 ACRES

SCALE IN FEET
0 100 200 400

N

DATE	REVISIONS RECORD/DESCRIPTION
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	6

THIS DRAWING IS NOT TO BE USED FOR ENGINEERING PURPOSES

DRAWN BY :	MVF
DESIGN BY :	MVF
CHECK BY :	TRT
PROJ. NO :	362.00
SCALE :	AS SHOWN
DATE :	07-03-2024

SWPPP - EXISTING CONDTIONS

BARTON MINES COMPANY, LLC

NORTH RIVER — WARREN COUNTY, NY

H2H GEOSCIENCE ENGINEERING
179 RIVER ST,
TROY, NY 12180
(518) 270-1620
WWW.H2HG-E.COM

FIGURE 2

SHEET 01 OF 01

DRAINAGE CALCULATIONS

DRAINAGE AREA 10 (DA-10)

DRAINAGE AREA (ACRES)	= 21.4 ACRES
DISTURBED AREA (ACRES)	= 21.4 ACRES
CURVE NUMBER	= 57
TIME OF CONC. (MINUTES)	= 6.7 MINUTES
PEAK FLOW (CFS)	= 13.73 CFS

SEDIMENT BASIN CALCULATIONS

REQUIRED BASIN SURFACE AREA	= 0.32 ACRES (14,000 SQFT)
REQUIRED STORAGE VOLUME	= 2.3 ACRE-FT
RISER CREST HEIGHT	= 7.0 FT
EMERGENCY SPILLWAY CREST HEIGHT	= 8.0 FT
TOTAL BASIN DEPTH (MIN.)	= 9.0 FT

LINED WATERWAY CALCULATIONS

SLOPE	= 6% (DA-10 W) ; 6% (DA-10 N)
BOTTOM WIDTH	= 2 FT
CHANNEL DEPTH	= 1.5 FT
SIDE SLOPE (RUN/RISE)	= 2:1
MAX VELOCITY (FPS)	= 3.82 (DA-10 W) ; 3.19 (DA-10 N)
CAPACITY (CFS)	= 48.23 (DA-10 W) ; 49.34 (DA-10 N)
AVERAGE DEPTH AT PEAK (FT)	= 0.57 (DA-10 W) ; 0.39 (DA-10 N)
D50	= 4-6 INCHES
DMAX	= 12 IN (DA-10 W) ; 6 IN (DA-10 N)

DRAINAGE AREA 11 (DA-11)

DRAINAGE AREA	= 19.2 ACRES
DISTURBED AREA	= 19.2 ACRES
CURVE NUMBER	= 56
TIME OF CONC.	= 2.9 MINUTES
PEAK FLOW	= 13.52 CFS

SEDIMENT BASIN CALCULATIONS

REQUIRED BASIN SURFACE AREA	= 0.29 ACRES (12,600 SQFT)
REQUIRED STORAGE VOLUME	= 2.0 ACRE-FT
RISER CREST HEIGHT	= 7.0 FT
EMERGENCY SPILLWAY CREST HEIGHT	= 8.0 FT
TOTAL BASIN DEPTH (MIN.)	= 9.0 FT

LINED WATERWAY CALCULATIONS

SLOPE	= 19% (DA-11 W) ; 5% (DA-11 S)
BOTTOM WIDTH	= 2 FT
CHANNEL DEPTH	= 1.5 FT (DA-11 W) ; 1 FT (DA-11 S)
SIDE SLOPE (RUN/RISE)	= 2:1
MAX VELOCITY (FPS)	= 6.36 (DA-11 W) ; 2.59 (DA-11 S)
CAPACITY (CFS)	= 88.06 (DA-11 W) ; 18.44 (DA-11 S)
AVERAGE DEPTH AT PEAK (FT)	= 0.48 (DA-11 W) ; 0.35 (DA-11 S)
D50 (INCHES)	= 4-6 INCHES
DMAX (INCHES)	= 12 IN (DA-11 W) ; 6 IN (DA-11 S)

DRAINAGE AREA 1 (DA-1)

DRAINAGE AREA	= 44.4 ACRES
DISTURBED AREA	= 44.4 ACRES
CURVE NUMBER	= 56
TIME OF CONC.	= 6.3 MINUTES
PEAK FLOW	= 25.68 CFS

SEDIMENT BASIN CALCULATIONS

REQUIRED BASIN SURFACE AREA	= 0.67 ACRES (29,500 SQFT)
REQUIRED STORAGE VOLUME	= 4.7 ACRE-FT
RISER CREST HEIGHT	= 7.0 FT
EMERGENCY SPILLWAY CREST HEIGHT	= 8.0 FT
TOTAL BASIN DEPTH (MIN.)	= 9.0 FT

LINED WATERWAY CALCULATIONS

SLOPE	= 15% (DA-1 N) ; 6% (DA-1 E)
BOTTOM WIDTH	= 2 FT
CHANNEL DEPTH	= 2 FT
SIDE SLOPE (RUN/RISE)	= 2:1
MAX VELOCITY (FPS)	= 6.04 (DA-1 N) ; 4.11 (DA-1 E)
CAPACITY (CFS)	= 147.36 (DA-1 N) ; 94.99 (DA-1 E)
AVERAGE DEPTH AT PEAK (FT)	= 0.55 (DA-1 N) ; 0.61 (DA-1 E)
D50	= 4-6 INCHES
DMAX	= 12 INCHES

DRAINAGE AREA 2 (DA-2)

DRAINAGE AREA	= 43.5 ACRES
DISTURBED AREA	= 43.5 ACRES
CURVE NUMBER	= 56
TIME OF CONC.	= 7.1 MINUTES
PEAK FLOW	= 23.73 CFS

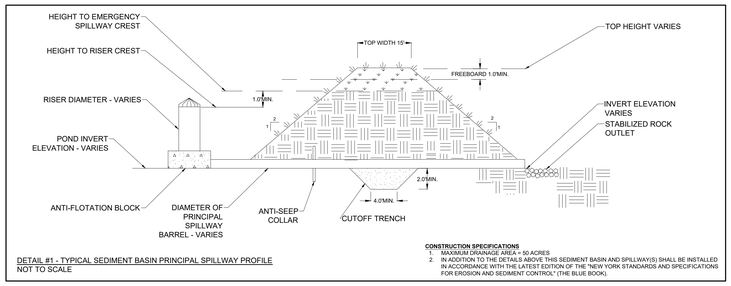
SEDIMENT BASIN CALCULATIONS

REQUIRED BASIN SURFACE AREA	= 0.65 ACRES (28,400 SQFT)
REQUIRED STORAGE VOLUME	= 4.4 ACRE-FT
RISER CREST HEIGHT	= 7.0 FT
EMERGENCY SPILLWAY CREST HEIGHT	= 8.0 FT
TOTAL BASIN DEPTH (MIN.)	= 9.0 FT

LINED WATERWAY CALCULATIONS

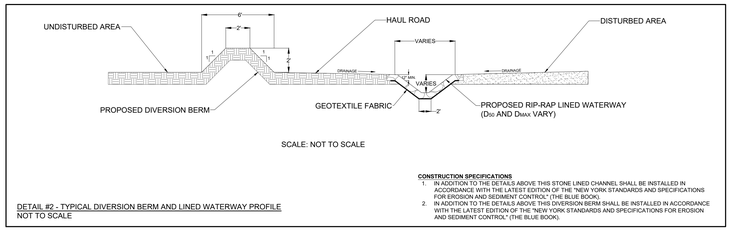
SLOPE	= 9% (DA-2 S) ; 6% (DA-2 E)
BOTTOM WIDTH	= 2 FT
CHANNEL DEPTH	= 2 FT (DA-2 S) ; 1.5 FT (DA-2 E)
SIDE SLOPE (RUN/RISE)	= 2:1
MAX VELOCITY (FPS)	= 5.14 (DA-2 S) ; 3.82 (DA-2 E)
CAPACITY (CFS)	= 111.13 (DA-2 S) ; 49.97 (DA-2 E)
AVERAGE DEPTH AT PEAK (FT)	= 0.68 FT (DA-2 S) ; 0.54 (DA-2 E)
D50 (INCHES)	= 4-6 INCHES
DMAX (INCHES)	= 12 IN (DA-11 W) ; 6 IN (DA-11 S)

DRAINAGE CALCULATION NOTES:
1. CURVE NUMBERS WERE USED THAT ARE REPRESENTATIVE OF SAND WITH <50% GRASS COVERAGE.
2. WATERSHED CALCULATIONS WERE MADE USING THE TR-20 METHOD IN HYDROCAD.
3. REQUIRED BASIN DIMENSIONS WERE DETERMINED BASED ON NYSDEC BLUE BOOK (2016) DESIGN CRITERIA.
4. DETAILS #1 AND #2 BELOW PROVIDE GENERAL DISPLAY OF CALCULATED DIMENSIONS AS THEY RELATE TO LINED WATERWAY AND SEDIMENT BASIN STRUCTURE.



DETAIL #1 - TYPICAL SEDIMENT BASIN PRINCIPAL SPILLWAY PROFILE
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS
1. MAXIMUM DRAINAGE AREA = 50 ACRES
2. IN ADDITION TO THE DETAILS ABOVE THIS SEDIMENT BASIN AND SPILLWAY(S) SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL" (THE BLUE BOOK).



SCALE: NOT TO SCALE

DETAIL #2 - TYPICAL DIVERSION BERM AND LINED WATERWAY PROFILE
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS
1. IN ADDITION TO THE DETAILS ABOVE THIS STONE LINED CHANNEL SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL" (THE BLUE BOOK).
2. IN ADDITION TO THE DETAILS ABOVE THIS DIVERSION BERM SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL" (THE BLUE BOOK).

LEGEND:
- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- LIFE OF MINE/PERMIT TERM AFFECTED AREA (267.0 ACRES)
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- DIVERSIONARY BERM
- LINED WATERWAY
- RUNOFF FLOW DIRECTION
- MULTI-SECTOR GENERAL PERMIT (MSGP) OUTFALL LOCATION
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION PATH

SCALE IN FEET
0 100 200 400

DRAWING NOTES:
1. CONTOUR INTERVAL = 10'
2. HORIZONTAL DATUM: NAD83 STATE PLAN, NEW YORK EAST, FEET VERTICAL DATUM: NAVD88, FEET AMSL
3. TOPOGRAPHY AND PLANIMETRICS BASED ON AERIAL SURVEY BY BOWMAN PERFORMED APRIL 1ST, 2024.
4. PROPERTY LINE AND LIFE OF MINE PROVIDED BY CLIENT.

DATE	REVISIONS RECORD/DESCRIPTION
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THIS DRAWING IS NOT TO BE USED FOR ENGINEERING PURPOSES

DRAWN BY :	MVF
DESIGN BY :	MVF
CHECK BY :	TRT
PROJ. NO :	362.00
SCALE :	AS SHOWN
DATE :	07-03-2024

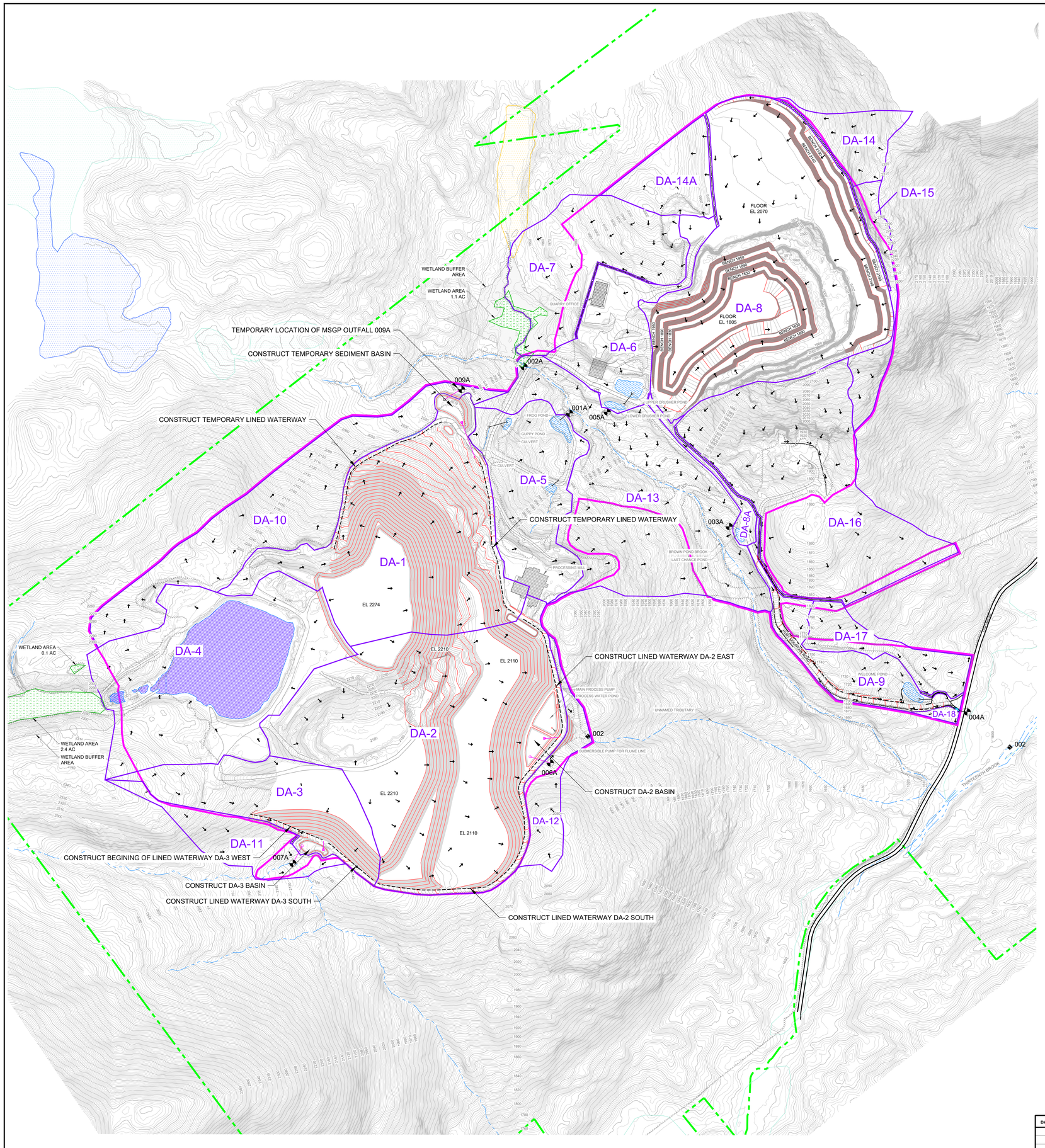
SWPPP - POST DEVELOPMENT CONDTIONS

BARTON MINES, LLC - RUBY MOUNTAIN MINE

NORTH RIVER — WARREN COUNTY, NY

H2H GEOSCIENCE ENGINEERING
179 RIVER ST.
TROY, NY 12180
(518) 270-1620
WWW.H2HG-E.COM

FIGURE 3



SUMMARY OF PHASE ONE STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL CHANGES

TAILINGS PILE AREA

DRAINAGE AREA 1 (DA-1)
- DRAINAGE AREA INCREASES FROM 18.4 TO 29.2 ACRES.
- TEMPORARY SEDIMENT BASIN CONSTRUCTED.
- MSGP OUTFALL #009A INSTALLED IN TEMPORARY LOCATION.
- STORMWATER DISCHARGES TO BROWN POND BROOK THROUGH TEMPORARY BASIN, OUTFALL 009A, GUPPY, AND FROG POND.
- ~2,600 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED IN TEMPORARY LOCATION.
- ~2,600 FT OF LINED WATERWAY CONSTRUCTED IN TEMPORARY LOCATION.
- ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

DRAINAGE AREA 2 (DA-2)
- TAILINGS PILE EXPANDS TO ULTIMATE LATERAL EXTENTS.
- DRAINAGE AREA INCREASES FROM 42.9 TO 44.0 ACRES.
- PERMANENT SEDIMENT BASIN CONSTRUCTED (SEE FIG 3 FOR DETAILS).
- MSGP OUTFALL #006A INSTALLED IN PERMANENT LOCATION (225' SE OF EXISTING).
- STORMWATER DISCHARGES TO BROWN POND POND BROOK THROUGH DA-1 BASIN AND OUTFALL 009A.
- ~2,500 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED IN PERMANENT LOCATION.
- ~2,500 FT OF LINED WATERWAY CONSTRUCTED IN PERMANENT LOCATION.
- ~2,500 FT OF PERIMETER BERM CONSTRUCTED IN PERMANENT LOCATION.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

DRAINAGE AREA 3 (DA-3)
- DRAINAGE AREA DECREASES FROM 28.7 ACRES TO 27.0 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DRAINS INTERNALLY TO UPPER POND.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 4 (DA-4)
- DRAINAGE AREA INCREASES FROM 6.7 ACRES TO 11.8 ACRES WITH PILE EXPANSION
- PERMANENT SEDIMENT BASIN CONSTRUCTED (SEE FIG 3 FOR DETAILS).
- MSGP OUTFALL #007A INSTALLED IN PERMANENT LOCATION
- STORMWATER DISCHARGES TO THIRTEENTH BROOK THROUGH DA-7 BASIN, OUTFALL 009A AND AN UNNAMED TRIBUTARY.
- ~850 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED IN PERMANENT LOCATION.
- ~850 FT OF LINED WATERWAY CONSTRUCTED IN PERMANENT LOCATION.
- ~850 FT OF PERIMETER BERM CONSTRUCTED IN PERMANENT LOCATION.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

QUARRY AREA

DRAINAGE AREA 8 (DA-8)
- QUARRY FLOOR DEEPENS TO A LEVEL BELOW SURROUNDING GRADE, CHANGING DRAINAGE PATTERNS IN THE AREA.
- QUARRY EXPANDS LATERALLY NORTH AND EAST TO ITS ULTIMATE EASTERN EXTENTS.
- DRAINAGE AREA INCREASES FROM 34.1 TO 39.1 ACRES.
- STORMWATER DRAINS INTERNALLY TO QUARRY SUMP.
- 1300 FT PERMANENT DIVERSION BERM INSTALLED ALONG EASTERN EXTENT OF QUARRY TO PREVENT STORMWATER RUN-ON.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.
- TEMPORARY DIVERSIONARY BERM INSTALLED AT WESTERN EXTENT OF DISTURBED AREA TO DIRECT STORMWATER TO QUARRY SUMP.

DRAINAGE AREA 8A (DA-8A)
- FORMERLY PART OF DA-7, NOW SEPARATED DUE CHANGE IN DA-7 DRAINAGE PATTERNS.
- DRAINAGE AREA IS 1.2 ACRES CONSISTING PRIMARILY OF RUBY MOUNTAIN ROAD.
- STORMWATER DRAINS TO BROWN POND BROOK THROUGH LAST CHANCE POND AND OUTFALL 003A.
- NO ADDITIONAL PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

SUMMARY OF OTHER DRAINAGE AREAS

DRAINAGE AREA 5 (DA-5)
- AREA INCREASES FROM 12.2 TO 12.1 ACRES BASED ON TAILINGS PILE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 6 (DA-6)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 7 (DA-7)
- AREA INCREASES FROM 12.7 TO 13.2 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 10 (DA-10)
- DRAINAGE AREA INCREASES FROM 0.6 TO 17.1 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 11 (DA-11)
- DRAINAGE AREA DECREASES FROM 10.2 TO 5.5 ACRES BASED ON TAILINGS PILE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 12 (DA-12)
- DRAINAGE AREA DECREASES FROM 13.5 TO 4.2 ACRES BASED ON TAILINGS PILE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 13 (DA-13)
- DRAINAGE AREA INCREASES FROM 25.2 TO 25.7 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 14 (DA-14)
- AREA DECREASES FROM 4.9 TO 3.8 ACRES BASED ON QUARRY EXPANSION AND BERM CONSTRUCTION ALONG DA-7.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 14A (DA-14A)
- AREA INCREASES FROM 4.1 TO 5.0 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 15 (DA-15)
- DRAINAGE AREA INCREASES FROM 1.8 TO 3.3 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION AND BERM CONSTRUCTION ALONG DA-7.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 16 (DA-16)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 17 (DA-17)
- DA-17 INCREASES FROM 3.6 TO 4.6 ACRES BASED ON PROPOSED LIFE OF MINE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 18 (DA-18)
- DA-18 IS FORMED, A 0.3 ACRE AREA SOUTH OF THE SITE ENTRANCE CREATED BASED ON PROPOSED LIFE OF MINE EXPANSION. THE AREA DRAINS OVERLAND TO THE ROADSIDE DITCH SOUTH OF RUBY MOUNTAIN ROAD.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

LEGEND:
- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- LIFE OF MINE/PERMIT TERM AFFECTED AREA (267.0 ACRES)
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- DIVERSIONARY BERM (NOT SHOWN ON EXTERIOR OF ACCESS ROAD)
- LINED WATERWAY
- RUNOFF FLOW DIRECTION
- MULTI-SECTOR GENERAL PERMIT (MSGP) OUTFALL LOCATION
- DRAINAGE AREA BOUNDARY

DRAWING NOTES:
1. CONTOUR INTERVAL = 10'
2. HORIZONTAL DATUM: NAD83 STATE PLAN, NEW YORK EAST, FEET VERTICAL DATUM: NAVD88, FEET AMSL
3. TOPOGRAPHY AND PLANIMETRICS BASED ON AERIAL SURVEY BY BOWMAN PERFORMED APRIL 1ST, 2024.
4. PROPERTY LINE AND LIFE OF MINE PROVIDED BY CLIENT.

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PROJ. NO :	362.00
SCALE :	AS SHOWN
DATE :	07-03-2024

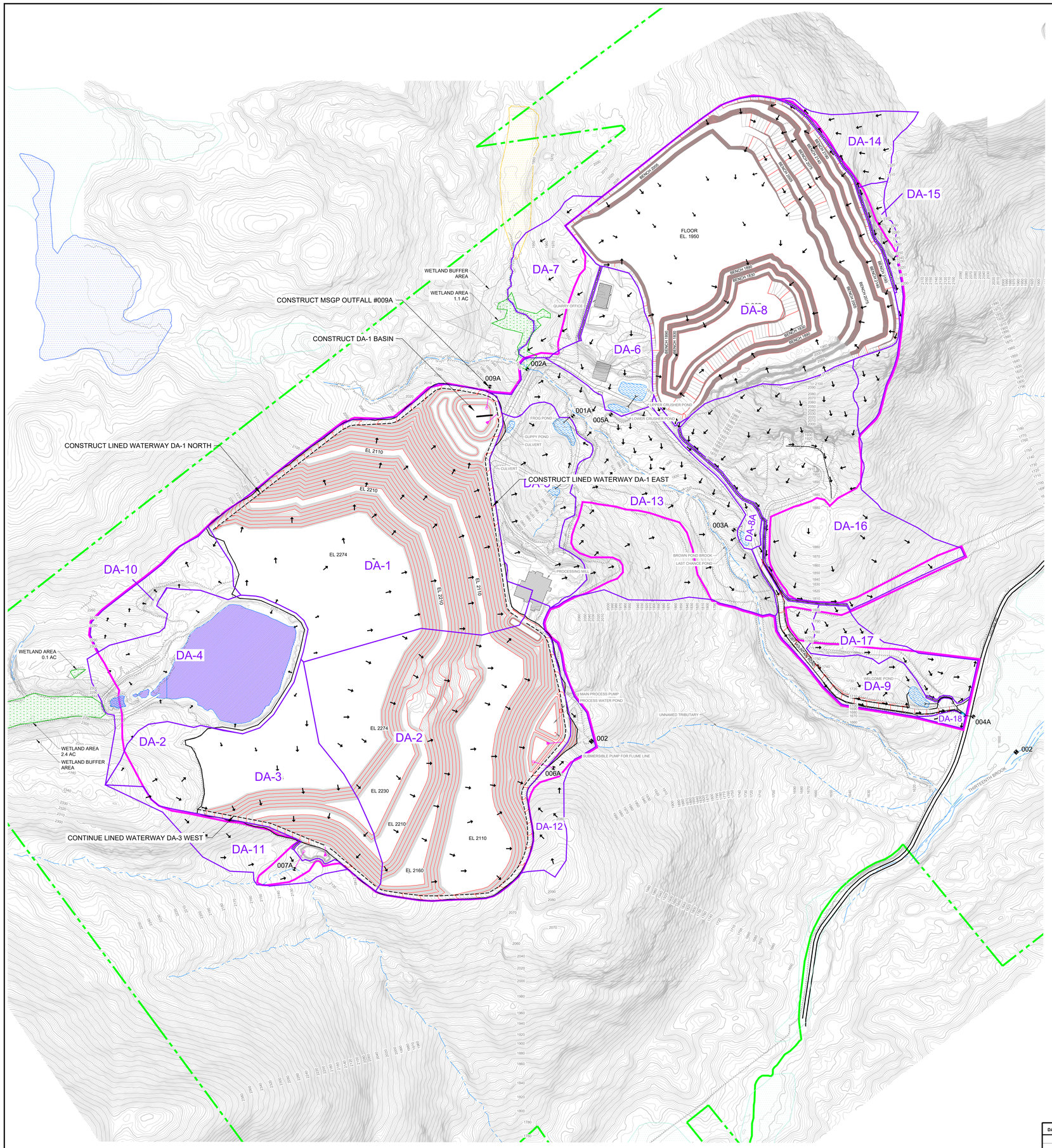
SWPPP - END OF PHASE 1 CONDITIONS

BARTON MINES, LLC - RUBY MOUNTAIN MINE

NORTH RIVER — WARREN COUNTY, NY

H2H GEOSCIENCE ENGINEERING
179 RIVER ST,
TROY, NY 12180
(518) 270-1420
WWW.H2HG-E.COM

FIGURE 4



SUMMARY OF PHASE TWO STORMWATER CONTROL AND EROSION AND SEDIMENT CONTROL CHANGES

TAILINGS PILE AREA

DRAINAGE AREA 1 (DA-1)

- TAILINGS PILE EXPANDS TO ULTIMATE LATERAL EXTENTS.
- DRAINAGE AREA INCREASES FROM 28.6 TO 44.1 ACRES.
- PERMANENT SEDIMENT BASIN INSTALLED (SEE FIG 3 FOR DETAILS).
- MSGP OUTFALL #009A INSTALLED IN PERMANENT LOCATION.
- STORMWATER DISCHARGES TO BROWN POND BROOK THROUGH DA-1 BASIN AND OUTFALL 009A.
- ~3,300 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED.
- ~3,300 FT OF LINED WATERWAY CONSTRUCTED.
- ~3,300 FT OF PERIMETER BERM CONSTRUCTED.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

DRAINAGE AREA 2 (DA-2)

- DRAINAGE AREA DECREASES FROM 44.0 ACRES TO 42.5 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DISCHARGES TO BROWN POND BROOK THROUGH DA-2 BASIN, OUTFALL 006A AND UNNAMED TRIBUTARY.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 3 (DA-3)

- DRAINAGE AREA DECREASES FROM 27.0 ACRES TO 18.5 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DRAINS INTERNALLY TO UPPER POND.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 4 (DA-4)

- DRAINAGE AREA INCREASES FROM 11.8 ACRES TO 19.7 ACRES BASED ON PILE EXPANSION.
- STORMWATER DISCHARGES TO THIRTEENTH BROOK THROUGH DA-11 BASIN, OUTFALL 007A AND UNNAMED TRIBUTARY.
- ~250 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED.
- ~250 FT OF LINED WATERWAY CONSTRUCTED.
- ~250 FT OF PERIMETER BERM CONSTRUCTED.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

QUARRY AREA

DRAINAGE AREA 8 (DA-8)

- QUARRY EXPANDS LATERALLY NORTH TO ITS ULTIMATE NORTHERN EXTENT.
- DRAINAGE AREA INCREASES FROM 32.9 TO 52.1 ACRES.
- STORMWATER DRAINS INTERNALLY TO QUARRY SUMP.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

SUMMARY OF OTHER DRAINAGE AREAS

DRAINAGE AREA 5 (DA-5)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 6 (DA-6)
- DRAINAGE AREA DECREASES FROM 10.0 TO 7.1 ACRES BASED ON QUARRY EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 7 (DA-7)
- DRAINAGE AREA DECREASES FROM 13.2 TO 7.3 ACRES BASED ON QUARRY EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 9 (DA-9)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 10 (DA-10)
- DRAINAGE AREA DECREASES FROM 17.5 TO 5.4 ACRES BASED ON TAILINGS PILE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 11 (DA-11)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 12 (DA-12)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 13 (DA-13)
- DRAINAGE AREA DECREASES FROM 25.7 TO 25.6 ACRES BASED ON TAILINGS PILE EXPANSION.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 14 (DA-14)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 14A (DA-14A)
- DRAINAGE AREA IS ABSORBED INTO DA-7 BASED ON QUARRY EXPANSION

DRAINAGE AREA 15 (DA-15)
- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 16 (DA-16)
- NO CHANGE TO DRAINAGE AREA EXTENTS.

NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 17 (DA-17)
- NO CHANGE TO DRAINAGE AREA EXTENTS.

NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 18 (DA-18)
- NO CHANGE TO DRAINAGE AREA EXTENTS.

NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

LEGEND:

- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- LIFE OF MINE/PERMIT TERM AFFECTED AREA (267.0 ACRES)
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- DIVERSIONARY BERM (NOT SHOWN ON EXTERIOR OF ACCESS ROAD)
- LINED WATERWAY
- RUNOFF FLOW DIRECTION
- MULTI-SECTOR GENERAL PERMIT (MSGP) OUTFALL LOCATION
- DRAINAGE AREA BOUNDARY

SCALE IN FEET
0 100 200 400

DRAWING NOTES:
1. CONTOUR INTERVAL = 10'
2. HORIZONTAL DATUM: NAD83 STATE PLAN, NEW YORK EAST, FEET VERTICAL DATUM: NAVD88, FEET AMSL
3. TOPOGRAPHY AND PLANIMETRICS BASED ON AERIAL SURVEY BY BOWMAN PERFORMED APRIL 1ST, 2024.
4. PROPERTY LINE AND LIFE OF MINE PROVIDED BY CLIENT.

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PROJ. NO :	362.00
SCALE :	AS SHOWN
DATE :	12-29-2022

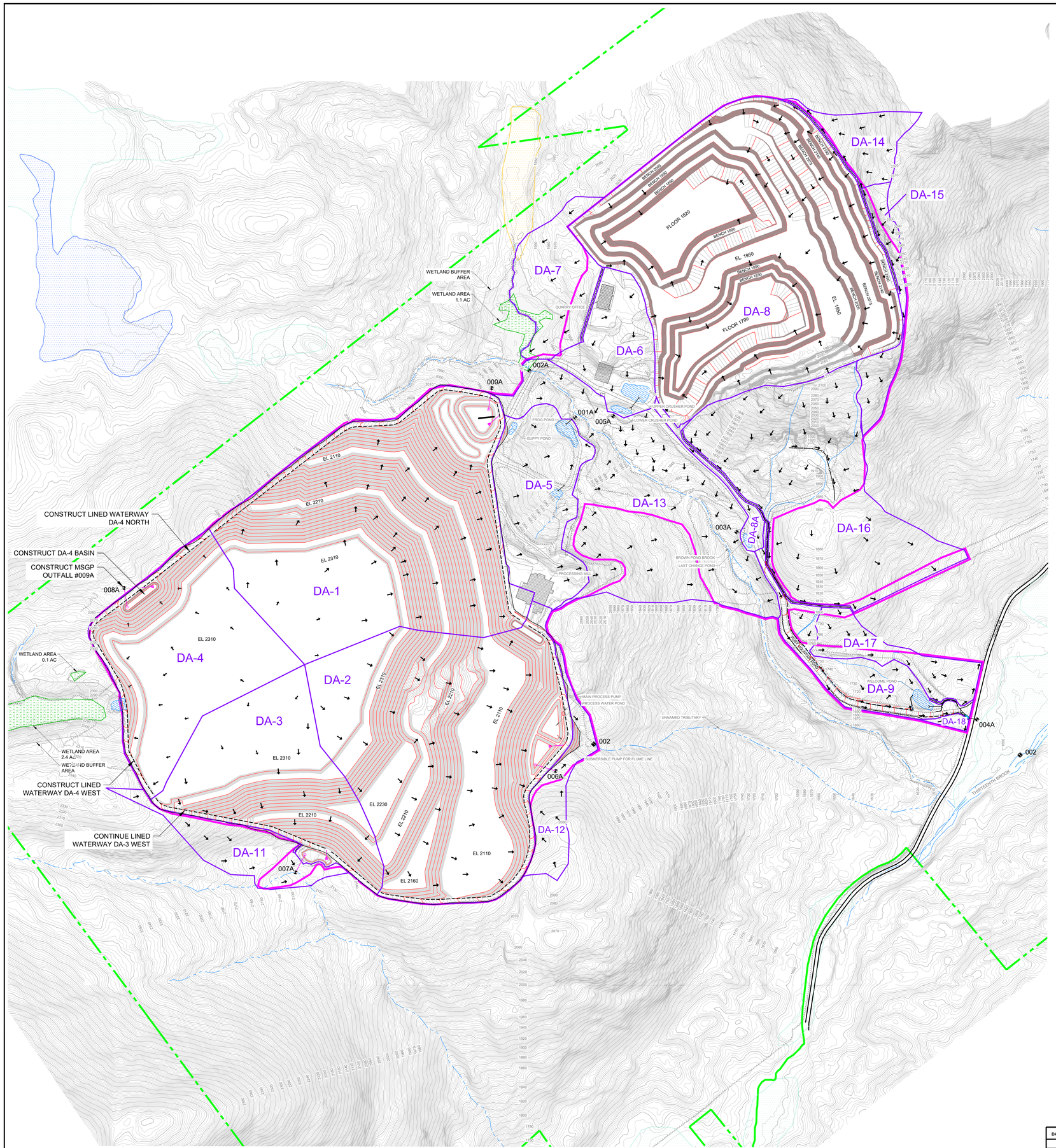
SWPPP CONDITIONS - END OF PHASE 2

BARTON MINES, LLC - RUBY MOUNTAIN MINE

NORTH RIVER — WARREN COUNTY, NY

H2H GEOSCIENCE ENGINEERING
179 RIVER ST, TROY, NY 12180
(518) 270-1620
WWW.H2HG-E.COM

FIGURE 5



SUMMARY OF PHASE THREE STORMWATER CONTROL AND EROSION AND SEDIMENT CONTROL CHANGES

TAILINGS PILE AREA

DRAINAGE AREA 1 (DA-1)

- DRAINAGE AREA INCREASES FROM 44.1 TO 44.8 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DISCHARGES TO BROWN POND BROOK THROUGH DA-1 BASIN AND OUTFALL 009A.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 2 (DA-2)

- DRAINAGE AREA INCREASES FROM 42.5 TO 43.0 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DISCHARGES TO BROWN POND BROOK THROUGH DA-2 BASIN, OUTFALL 006A AND UNNAMED TRIBUTARY.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 3 (DA-3)

- TAILINGS PILE EXPANDS TO ULTIMATE LATERAL EXTENTS.
- DRAINAGE AREA INCREASES FROM 18.6 TO 21.4 ACRES.
- PERMANENT SEDIMENT BASIN INSTALLED (SEE FIG 3 FOR DETAILS).
- MSGP OUTFALL #008A INSTALLED IN PERMANENT LOCATION.
- STORMWATER DISCHARGES NORTH TO A NWI MAPPED POND THROUGH DA-10 BASIN AND OUTFALL 008A.
- ~2,000 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED.
- ~2,000 FT OF LINED WATERWAY CONSTRUCTED.
- ~2,000 FT OF PERIMETER BERM CONSTRUCTED.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

DRAINAGE AREA 4 (DA-4)

- TAILINGS PILE EXPANDS TO ULTIMATE LATERAL EXTENT
- DRAINAGE AREA DECREASES FROM 19.7 ACRES TO 11.8 ACRES DUE TO CHANGE IN TAILINGS PILE GEOMETRY.
- STORMWATER DISCHARGES TO THIRTEENTH BROOK THROUGH DA-11 BASIN, OUTFALL 007A AND UNNAMED TRIBUTARY.
- ~300 FT OF STABILIZED PERIMETER ACCESS ROAD INSTALLED.
- ~300 FT OF LINED WATERWAY CONSTRUCTED.
- ~300 FT OF PERIMETER BERM CONSTRUCTED.
- BERM AND ANY EXTERIOR DRAINING GRADING WILL BE HYDROSEEDED AND COVERED WITH STRAW MULCH IMMEDIATELY UPON PLACEMENT.
- SILT FENCE OR SILT SOCK WILL BE PLACED DOWNSLOPE OF ANY EXTERIOR DRAINING DISTURBED AREA UNTIL STABILIZATION IS ACHIEVED.

QUARRY AREA

DRAINAGE AREA 8 (DA-8)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- STORMWATER DRAINS INTERNALLY TO QUARRY SUMP.
- NO CHANGES TO PERMANENT STORMWATER CONTROLS.
- NO ADDITIONAL EROSION AND SEDIMENT CONTROLS REQUIRED.

DRAINAGE AREA 8A (DA-8A)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

SUMMARY OF OTHER DRAINAGE AREAS

DRAINAGE AREA 5 (DA-5)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 6 (DA-6)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 7 (DA-7)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 9 (DA-9)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 10 (DA-10)

- DRAINAGE AREA IS ABSORBED INTO DA-4 BASED ON PILE EXPANSION

DRAINAGE AREA 11 (DA-11)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 12 (DA-12)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 13 (DA-13)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 14 (DA-14)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 15 (DA-15)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS

DRAINAGE AREA 16 (DA-16)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 17 (DA-17)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

DRAINAGE AREA 18 (DA-18)

- NO CHANGE TO DRAINAGE AREA EXTENTS.
- NO ADDITIONAL DISTURBANCE, CHANGE TO DRAINAGE PATTERNS OR ADDITIONAL STORMWATER AND E&S CONTROLS.

LEGEND:

- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- LIFE OF MINE/PERMIT TERM AFFECTED AREA (267.0 ACRES)
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- DIVERSIONARY BERM (NOT SHOWN ON EXTERIOR OF ACCESS ROAD)
- LINED WATERWAY
- RUNOFF FLOW DIRECTION
- MULTI-SECTOR GENERAL PERMIT (MSGP) OUTFALL LOCATION
- DRAINAGE AREA BOUNDARY

SCALE IN FEET
0 100 200 400

DRAWING NOTES:

1. CONTOUR INTERVAL = 10'
2. HORIZONTAL DATUM: NAD83 STATE PLAN, NEW YORK EAST, FEET VERTICAL DATUM: NAVD88, FEET AMSL
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SCALE :	AS SHOWN
DATE :	07-03-2024

SWPPP - END OF PHASE 3 CONDITIONS

BARTON MINES, LLC - RUBY MOUNTAIN MINE

NORTH RIVER — WARREN COUNTY, NY

H2H GEOSCIENCE ENGINEERING
179 RIVER ST,
TROY, NY 12180
(518) 270-1620
WWW.H2HG-E.COM

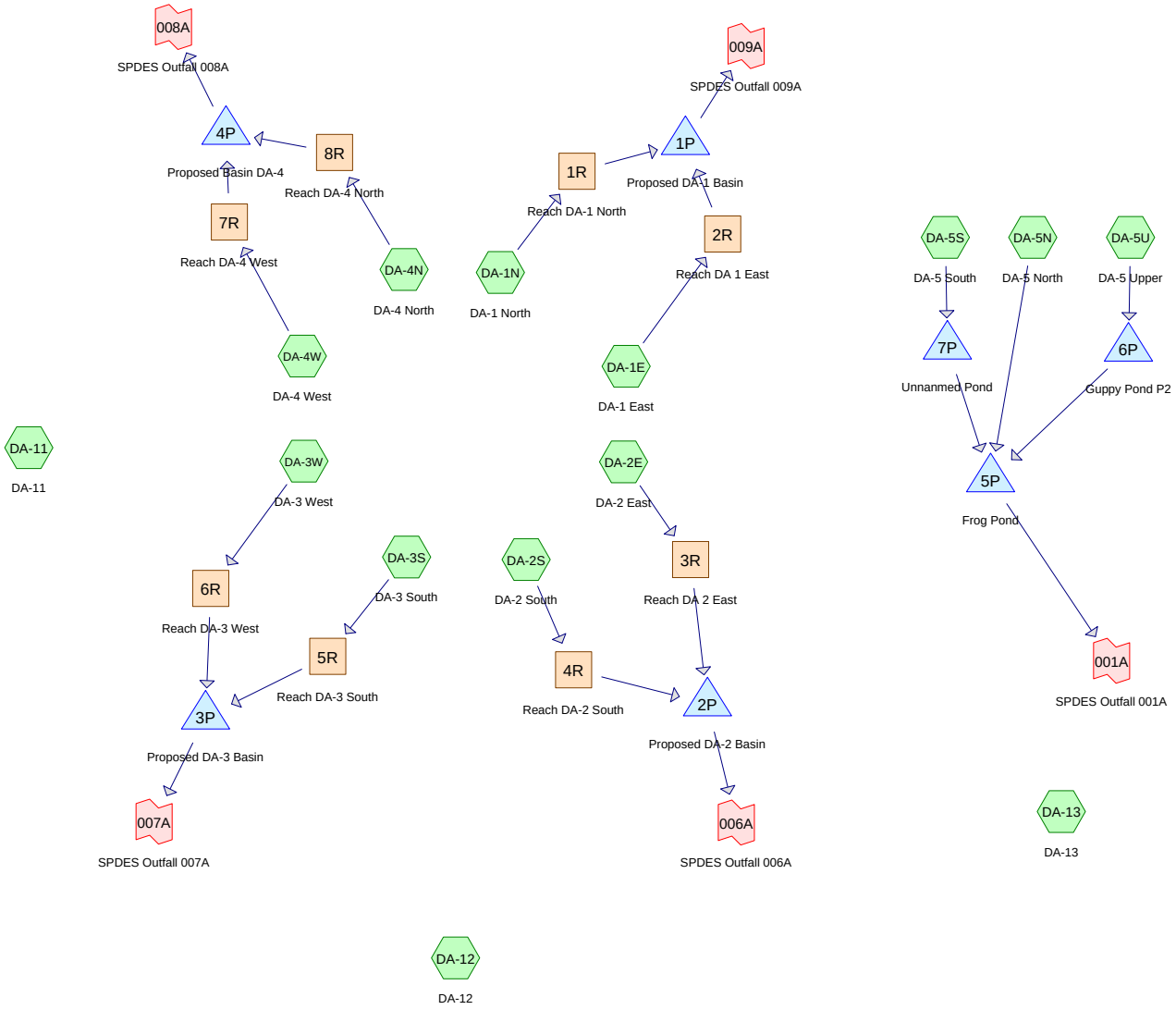
FIGURE 6

APPENDIX B

HydroCAD Output

10-Year Storm – Stormwater System Analysis

100-Year Storm – Stormwater System Analysis



Routing Diagram for 2024 Barton West Phase 4

Prepared by Bowman Consulting Group, Printed 7/3/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
61.850	55	<50% Grass cover, Poor, HSG A (DA-2E, DA-2S, DA-4N, DA-4W)
18.300	55	<50% Grass cover, Poor, HSG B (DA-3S, DA-3W)
2.503	74	>75% Grass cover, Good, HSG C (DA-13)
0.230	72	Dirt roads, HSG A (DA-13)
7.332	87	Dirt roads, HSG C (DA-13, DA-5N, DA-5S, DA-5U)
5.900	85	Gravel roads, HSG B (DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W)
42.450	55	Loose Sand (DA-1E, DA-1N)
1.206	98	Paved parking, HSG B (DA-13)
4.597	36	Woods, Fair, HSG A (DA-12, DA-13)
30.906	73	Woods, Fair, HSG C (DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U)
175.274	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
66.677	HSG A	DA-12, DA-13, DA-2E, DA-2S, DA-4N, DA-4W
25.406	HSG B	DA-13, DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
40.741	HSG C	DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U
0.000	HSG D	
42.450	Other	DA-1E, DA-1N
175.274		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
61.850	18.300	0.000	0.000	0.000	80.150	<50% Grass cover, Poor	DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
0.000	0.000	2.503	0.000	0.000	2.503	>75% Grass cover, Good	DA-13
0.230	0.000	7.332	0.000	0.000	7.562	Dirt roads	DA-13, DA-5N, DA-5S, DA-5U
0.000	5.900	0.000	0.000	0.000	5.900	Gravel roads	DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
0.000	0.000	0.000	0.000	42.450	42.450	Loose Sand	DA-1E, DA-1N
0.000	1.206	0.000	0.000	0.000	1.206	Paved parking	DA-13
4.597	0.000	30.906	0.000	0.000	35.503	Woods, Fair	DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U
66.677	**25.406**	**40.741**	**0.000**	**42.450**	**175.274**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	1,959.00	1,956.00	90.0	0.0333	0.025	0.0	18.0	0.0	
2	2P	1,997.00	1,994.00	90.0	0.0333	0.025	0.0	18.0	0.0	
3	3P	2,125.00	2,124.00	90.0	0.0111	0.025	0.0	18.0	0.0	
4	4P	2,231.00	2,230.00	180.0	0.0056	0.012	0.0	18.0	0.0	
5	5P	1,882.00	1,881.00	60.0	0.0167	0.025	0.0	18.0	0.0	
6	7P	1,924.00	1,921.00	40.0	0.0750	0.013	0.0	24.0	0.0	

Time span=0.00-60.00 hrs, dt=0.04 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA-11: DA-11 Runoff Area=5.525 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=1,939' Tc=33.3 min CN=73 Runoff=6.82 cfs 0.730 af

Subcatchment DA-12: DA-12 Runoff Area=4.245 ac 0.00% Impervious Runoff Depth=0.80"
Flow Length=646' Tc=26.9 min CN=60 Runoff=2.48 cfs 0.284 af

Subcatchment DA-13: DA-13 Runoff Area=1,122,015 sf 4.68% Impervious Runoff Depth=1.45"
Flow Length=2,100' Tc=2.7 min CN=71 Runoff=72.57 cfs 3.111 af

Subcatchment DA-1E: DA-1 East Runoff Area=19.000 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=2,250' Tc=5.9 min CN=56 Runoff=16.76 cfs 0.961 af

Subcatchment DA-1N: DA-1 North Runoff Area=25.400 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=2,350' Tc=6.3 min CN=56 Runoff=21.99 cfs 1.285 af

Subcatchment DA-2E: DA-2 East Runoff Area=13.700 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=2,117' Tc=7.1 min CN=56 Runoff=11.37 cfs 0.693 af

Subcatchment DA-2S: DA-2 South Runoff Area=29.800 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=2,117' Tc=7.1 min CN=56 Runoff=24.73 cfs 1.508 af

Subcatchment DA-3S: DA-3 South Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=0.65"
Flow Length=1,142' Tc=2.9 min CN=57 Runoff=3.94 cfs 0.191 af

Subcatchment DA-3W: DA-3 West Runoff Area=15.700 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,142' Tc=2.9 min CN=56 Runoff=15.97 cfs 0.794 af

Subcatchment DA-4N: DA-4 North Runoff Area=6.000 ac 0.00% Impervious Runoff Depth=0.65"
Flow Length=1,610' Tc=6.7 min CN=57 Runoff=5.67 cfs 0.327 af

Subcatchment DA-4W: DA-4 West Runoff Area=15.400 ac 0.00% Impervious Runoff Depth=0.65"
Flow Length=1,610' Tc=6.7 min CN=57 Runoff=14.55 cfs 0.839 af

Subcatchment DA-5N: DA-5 North Runoff Area=5.786 ac 0.00% Impervious Runoff Depth=2.03"
Flow Length=320' Tc=10.0 min CN=79 Runoff=17.90 cfs 0.978 af

Subcatchment DA-5S: DA-5 South Runoff Area=5.117 ac 0.00% Impervious Runoff Depth=2.11"
Flow Length=296' Tc=9.3 min CN=80 Runoff=16.88 cfs 0.899 af

Subcatchment DA-5U: DA-5 Upper Runoff Area=0.343 ac 0.00% Impervious Runoff Depth=2.44"
Flow Length=548' Tc=8.7 min CN=84 Runoff=1.33 cfs 0.070 af

Reach 1R: Reach DA-1 North Avg. Flow Depth=0.71' Max Vel=6.96 fps Inflow=21.99 cfs 1.285 af
n=0.050 L=2,000.0' S=0.1510 '/' Capacity=147.36 cfs Outflow=16.99 cfs 1.285 af

Reach 2R: Reach DA 1 East Avg. Flow Depth=0.78' Max Vel=4.73 fps Inflow=16.76 cfs 0.961 af
n=0.050 L=1,275.0' S=0.0627 '/' Capacity=94.99 cfs Outflow=13.13 cfs 0.961 af

Reach 3R: Reach DA 2 East Avg. Flow Depth=0.69' Max Vel=4.37 fps Inflow=11.37 cfs 0.693 af
n=0.050 L=750.0' S=0.0613 '/' Capacity=49.97 cfs Outflow=10.15 cfs 0.693 af

Reach 4R: Reach DA-2 South Avg. Flow Depth=0.87' Max Vel=5.84 fps Inflow=24.73 cfs 1.508 af
n=0.050 L=1,700.0' S=0.0859 '/' Capacity=111.13 cfs Outflow=19.07 cfs 1.508 af

Reach 5R: Reach DA-3 South Avg. Flow Depth=0.43' Max Vel=2.91 fps Inflow=3.94 cfs 0.191 af
n=0.050 L=350.0' S=0.0457 '/' Capacity=18.44 cfs Outflow=3.61 cfs 0.191 af

Reach 6R: Reach DA-3 West Avg. Flow Depth=0.61' Max Vel=7.15 fps Inflow=15.97 cfs 0.794 af
n=0.050 L=1,050.0' S=0.1905 '/' Capacity=88.06 cfs Outflow=14.02 cfs 0.794 af

Reach 7R: Reach DA-4 West Avg. Flow Depth=0.73' Max Vel=4.32 fps Inflow=14.55 cfs 0.839 af
n=0.050 L=1,400.0' S=0.0571 '/' Capacity=48.23 cfs Outflow=10.97 cfs 0.839 af

Reach 8R: Reach DA-4 North Avg. Flow Depth=0.49' Max Vel=3.59 fps Inflow=5.67 cfs 0.327 af
n=0.050 L=485.0' S=0.0598 '/' Capacity=49.34 cfs Outflow=5.23 cfs 0.327 af

Pond 1P: Proposed DA-1 Basin Peak Elev=1,963.30' Storage=2.246 af Inflow=30.10 cfs 2.246 af
Outflow=0.00 cfs 0.000 af

Pond 2P: Proposed DA-2 Basin Peak Elev=2,001.50' Storage=2.201 af Inflow=29.24 cfs 2.201 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Proposed DA-3 Basin Peak Elev=2,129.43' Storage=0.985 af Inflow=17.58 cfs 0.985 af
Outflow=0.00 cfs 0.000 af

Pond 4P: Proposed Basin DA-4 Peak Elev=2,235.56' Storage=1.166 af Inflow=16.01 cfs 1.166 af
Outflow=0.00 cfs 0.000 af

Pond 5P: Frog Pond Peak Elev=1,890.15' Storage=34,309 cf Inflow=31.78 cfs 1.849 af
Primary=11.31 cfs 1.700 af Secondary=0.00 cfs 0.000 af Outflow=11.31 cfs 1.700 af

Pond 6P: Guppy Pond P2 Peak Elev=1,954.53' Storage=3,040 cf Inflow=1.33 cfs 0.070 af
Outflow=0.00 cfs 0.000 af

Pond 7P: Unnanmed Pond Peak Elev=1,926.44' Storage=4,239 cf Inflow=16.88 cfs 0.899 af
Outflow=14.32 cfs 0.871 af

Link 001A: SPDES Outfall 001A delayed by 0.1 min before 48.00 hrs Inflow=11.31 cfs 1.700 af
Primary=11.28 cfs 1.680 af Secondary=0.05 cfs 0.020 af

Link 006A: SPDES Outfall 006A delayed by 0.1 min before 48.00 hrs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link 007A: SPDES Outfall 007A delayed by 0.1 min before 48.00 hrs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link 008A: SPDES Outfall 008A delayed by 0.1 min before 48.00 hrs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link 009A: SPDES Outfall 009A delayed by 0.1 min before 48.00 hrs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Total Runoff Area = 175.274 ac Runoff Volume = 12.668 af Average Runoff Depth = 0.87"
99.31% Pervious = 174.068 ac 0.69% Impervious = 1.206 ac

Summary for Subcatchment DA-11: DA-11

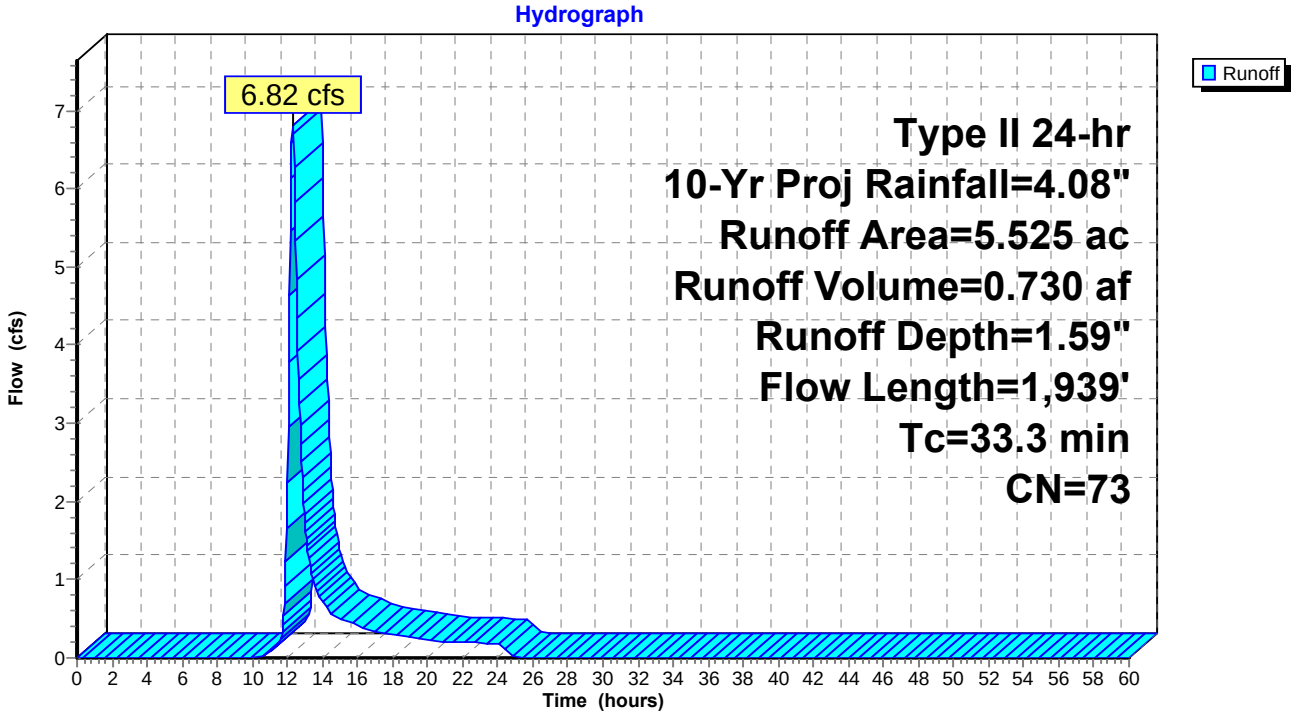
Runoff = 6.82 cfs @ 12.30 hrs, Volume= 0.730 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
5.525	73	Woods, Fair, HSG C
5.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.1100	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.62"
8.9	1,129	0.1770	2.10		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
3.5	710	0.0110	3.40	13.59	**Channel Flow,** Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.035 Earth, dense weeds
33.3	1,939	Total			

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

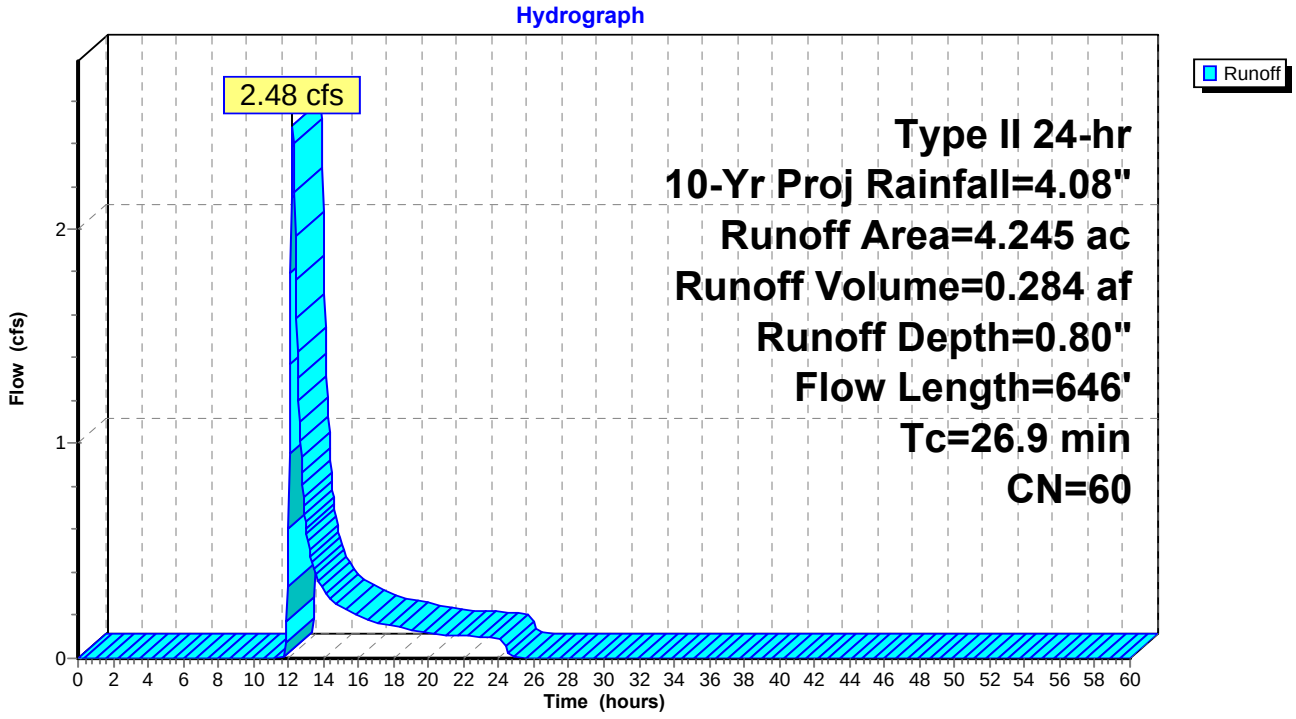
Runoff = 2.48 cfs @ 12.25 hrs, Volume= 0.284 af, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
1.528	36	Woods, Fair, HSG A
2.717	73	Woods, Fair, HSG C
4.245	60	Weighted Average
4.245		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	108	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
3.8	538	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.9	646	Total			

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

[49] Hint: Tc<2dt may require smaller dt

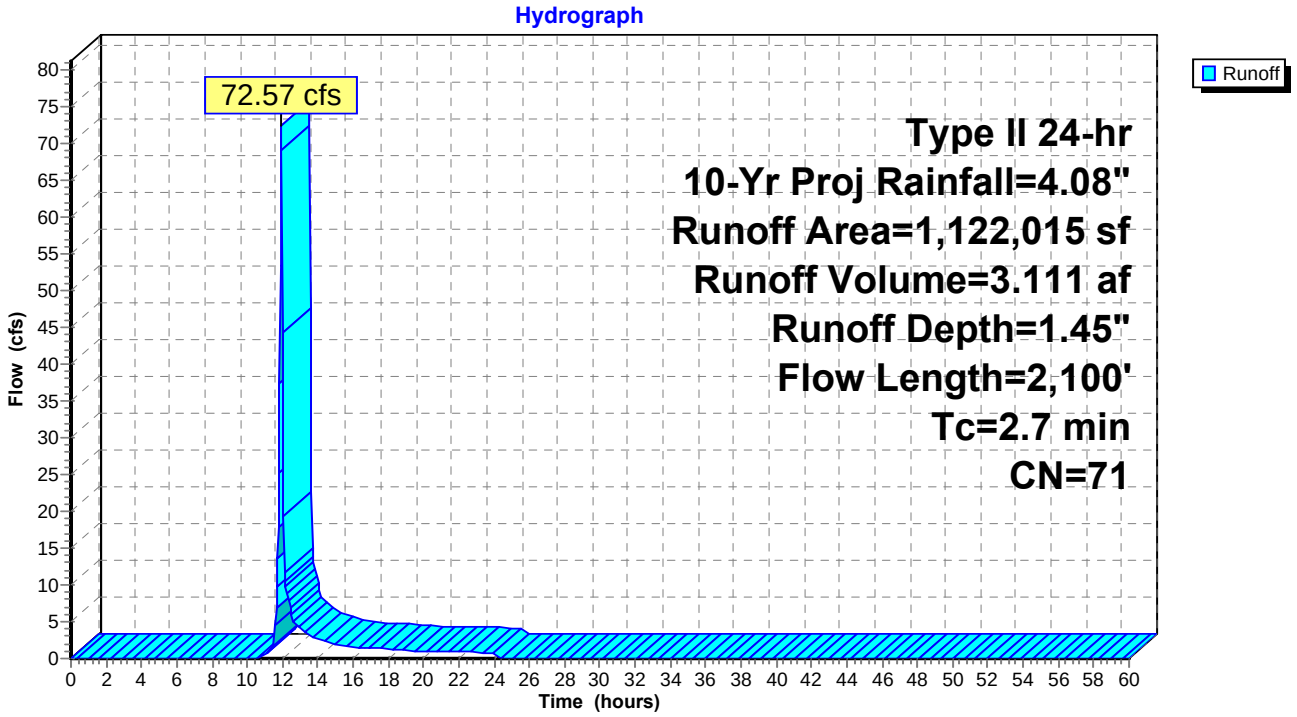
Runoff = 72.57 cfs @ 11.94 hrs, Volume= 3.111 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
52,533	98	Paved parking, HSG B
10,019	72	Dirt roads, HSG A
89,777	87	Dirt roads, HSG C
133,686	36	Woods, Fair, HSG A
726,969	73	Woods, Fair, HSG C
109,031	74	>75% Grass cover, Good, HSG C
1,122,015	71	Weighted Average
1,069,482		95.32% Pervious Area
52,533		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0600	1.93		**Sheet Flow, sheet flow** Smooth surfaces n= 0.011 P2= 2.62"
1.8	2,000	0.0910	18.52	255.59	**Channel Flow,** Area= 13.8 sf Perim= 10.0' r= 1.38' n= 0.030 Earth, grassed & winding
2.7	2,100	Total			

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-1E: DA-1 East

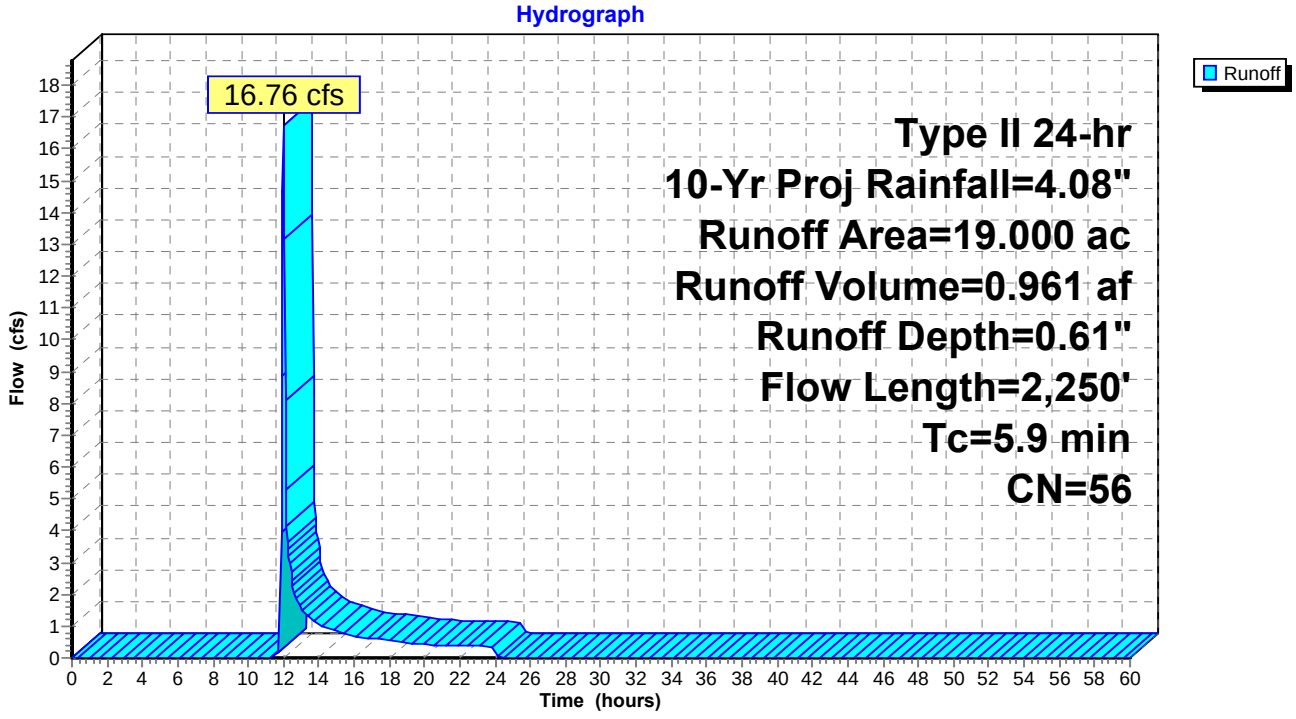
Runoff = 16.76 cfs @ 11.99 hrs, Volume= 0.961 af, Depth= 0.61"
Routed to Reach 2R : Reach DA 1 East

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	18.150	55	Loose Sand
	0.850	85	Gravel roads, HSG B
	19.000	56	Weighted Average
	19.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3733	4.35		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
5.3	2,100	0.1667	6.57		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	2,250	Total			

Subcatchment DA-1E: DA-1 East



Summary for Subcatchment DA-1N: DA-1 North

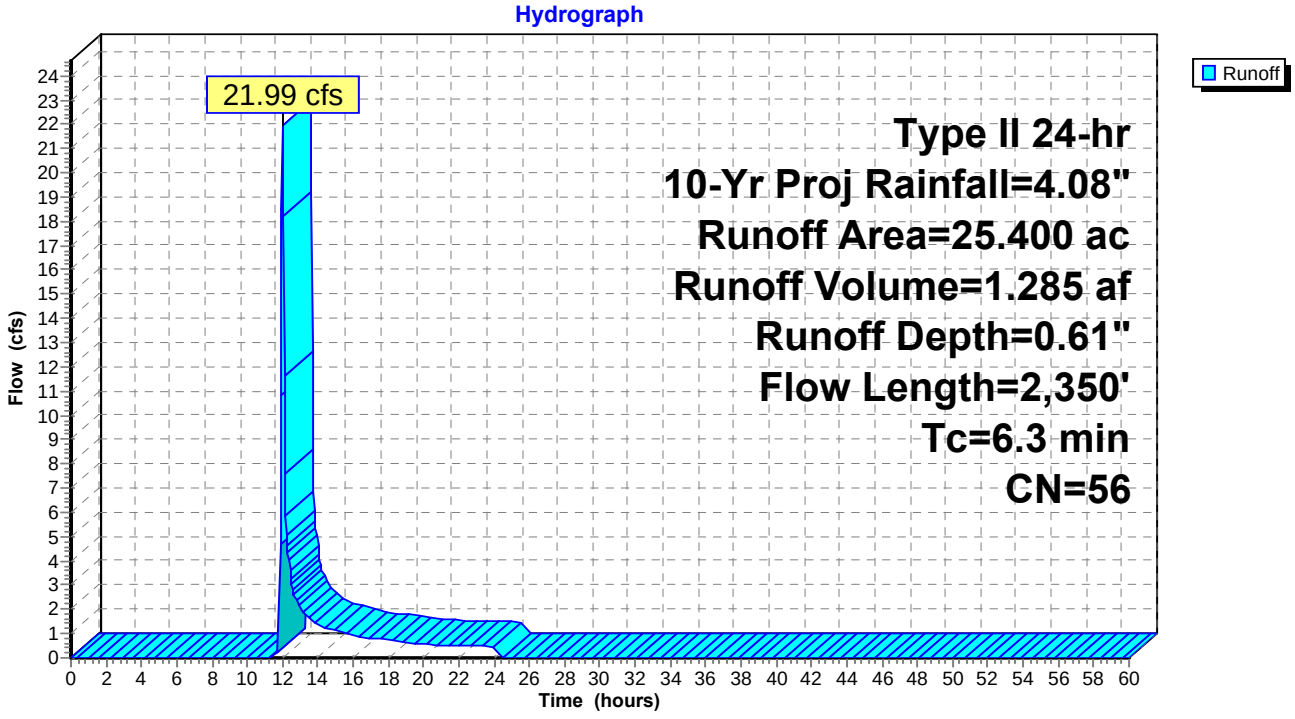
Runoff = 21.99 cfs @ 12.00 hrs, Volume= 1.285 af, Depth= 0.61"
Routed to Reach 1R : Reach DA-1 North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	24.300	55	Loose Sand
	1.100	85	Gravel roads, HSG B
	25.400	56	Weighted Average
	25.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3467	4.23		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
5.7	2,200	0.1600	6.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.3	2,350	Total			

Subcatchment DA-1N: DA-1 North



Summary for Subcatchment DA-2E: DA-2 East

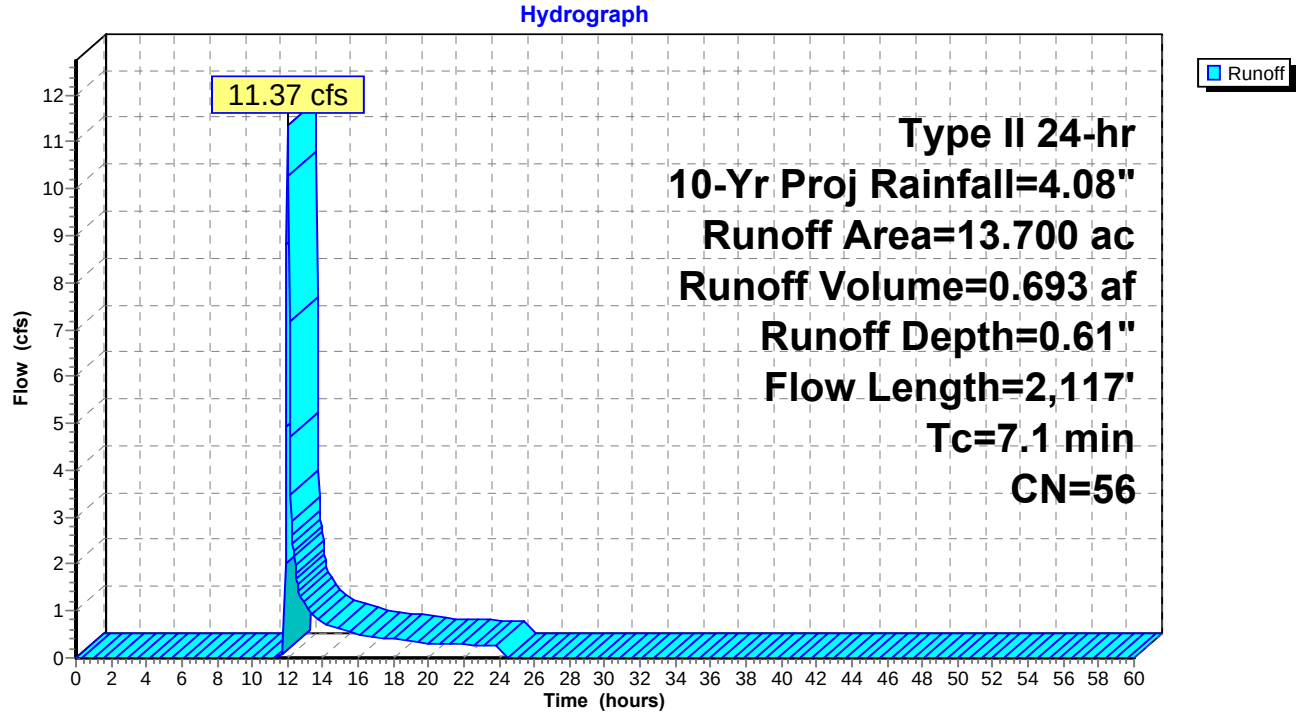
Runoff = 11.37 cfs @ 12.01 hrs, Volume= 0.693 af, Depth= 0.61"
Routed to Reach 3R : Reach DA 2 East

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	13.100	55	<50% Grass cover, Poor, HSG A
	0.600	85	Gravel roads, HSG B
	13.700	56	Weighted Average
	13.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.1330	2.88		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.2	1,967	0.1070	5.27		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
7.1	2,117	Total			

Subcatchment DA-2E: DA-2 East



Summary for Subcatchment DA-2S: DA-2 South

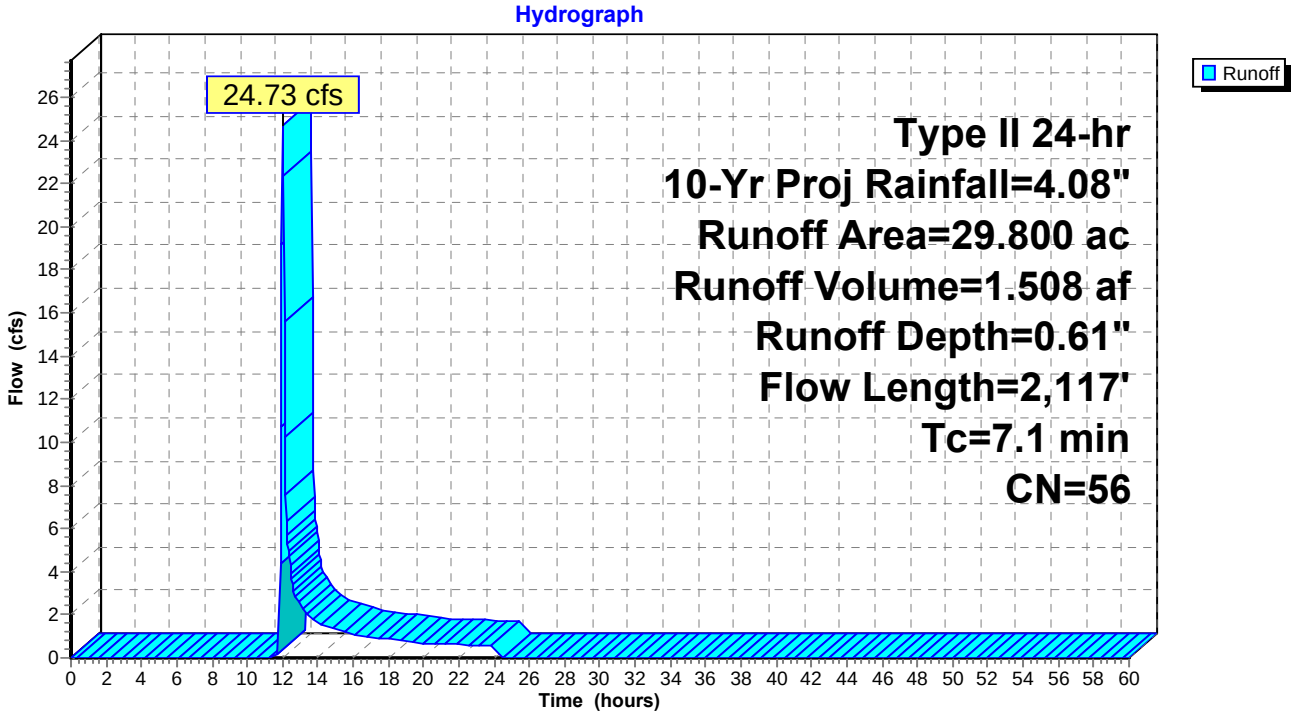
Runoff = 24.73 cfs @ 12.01 hrs, Volume= 1.508 af, Depth= 0.61"
Routed to Reach 4R : Reach DA-2 South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	28.600	55	<50% Grass cover, Poor, HSG A
	1.200	85	Gravel roads, HSG B
	29.800	56	Weighted Average
	29.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.1330	2.88		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.2	1,967	0.1070	5.27		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
7.1	2,117	Total			

Subcatchment DA-2S: DA-2 South



Summary for Subcatchment DA-3S: DA-3 South

[49] Hint: Tc<2dt may require smaller dt

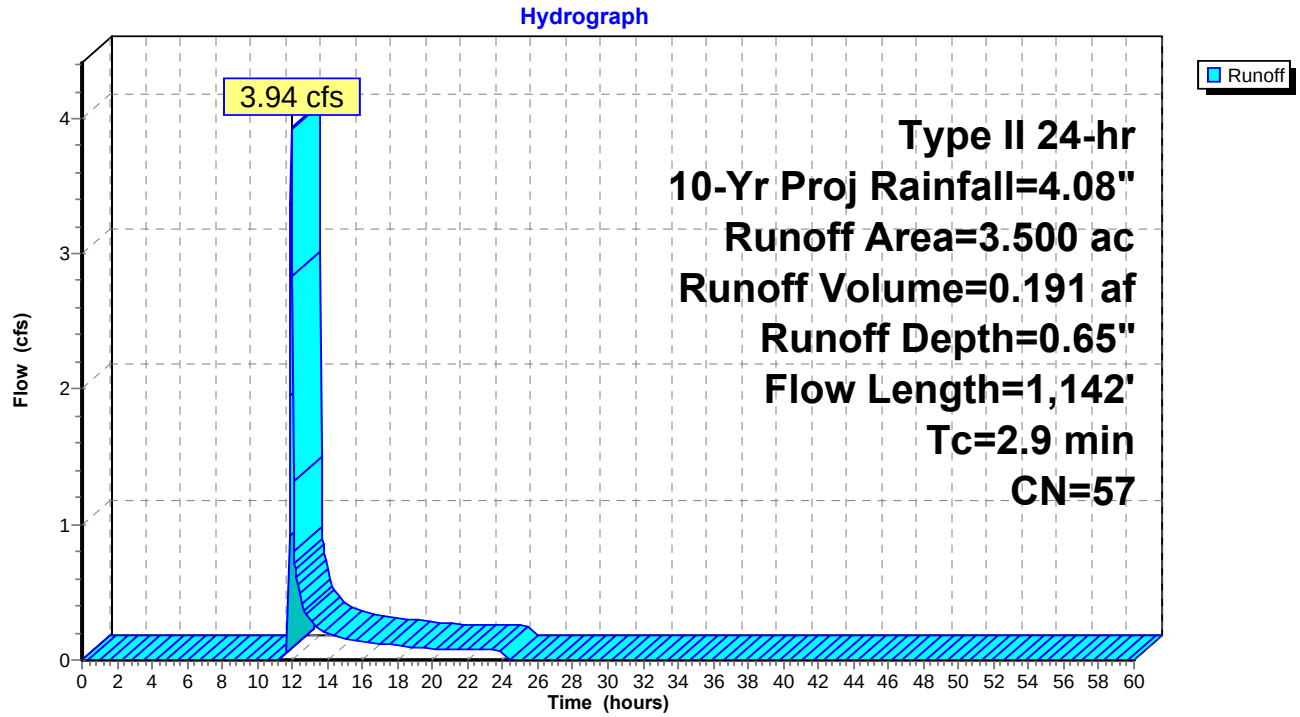
Runoff = 3.94 cfs @ 11.95 hrs, Volume= 0.191 af, Depth= 0.65"
Routed to Reach 5R : Reach DA-3 South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	3.300	55	<50% Grass cover, Poor, HSG B
	0.200	85	Gravel roads, HSG B
	3.500	57	Weighted Average
	3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.2900	3.93		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
2.3	992	0.2000	7.20		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.9	1,142	Total			

Subcatchment DA-3S: DA-3 South



Summary for Subcatchment DA-3W: DA-3 West

[49] Hint: Tc<2dt may require smaller dt

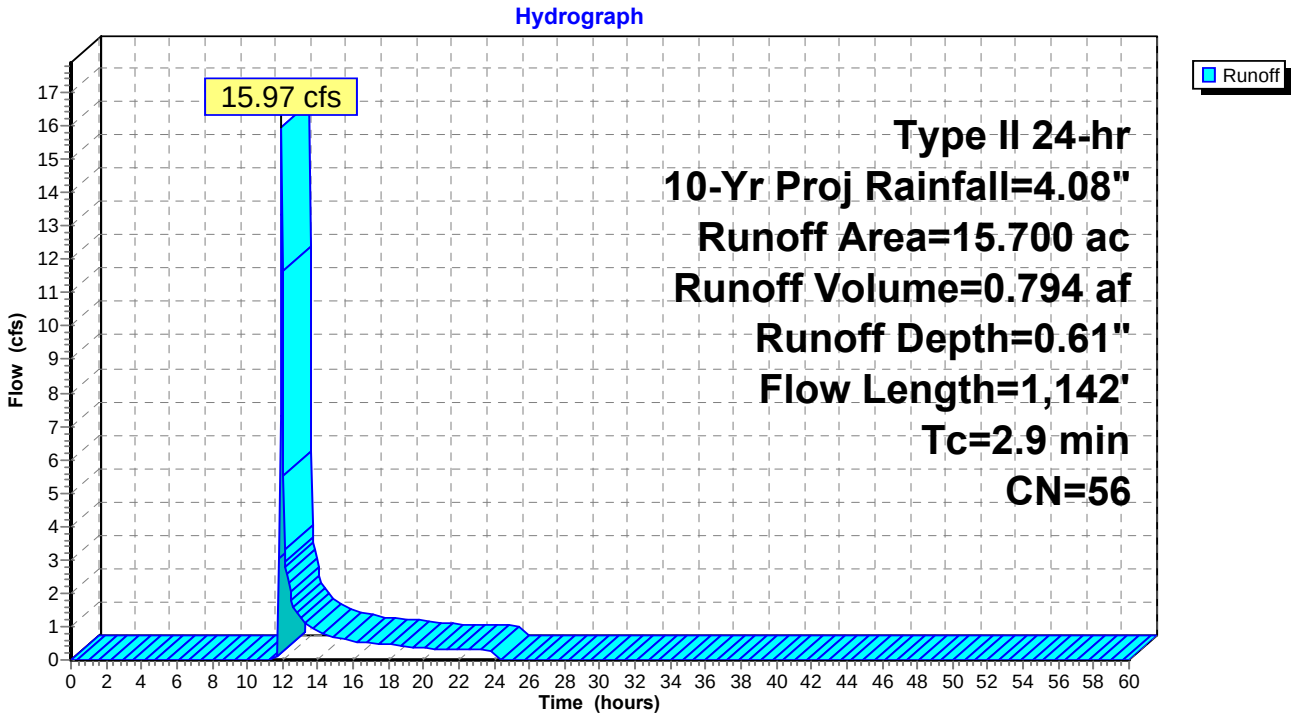
Runoff = 15.97 cfs @ 11.96 hrs, Volume= 0.794 af, Depth= 0.61"
Routed to Reach 6R : Reach DA-3 West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	15.000	55	<50% Grass cover, Poor, HSG B
	0.700	85	Gravel roads, HSG B
	15.700	56	Weighted Average
	15.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.2900	3.93		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
2.3	992	0.2000	7.20		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.9	1,142	Total			

Subcatchment DA-3W: DA-3 West



Summary for Subcatchment DA-4N: DA-4 North

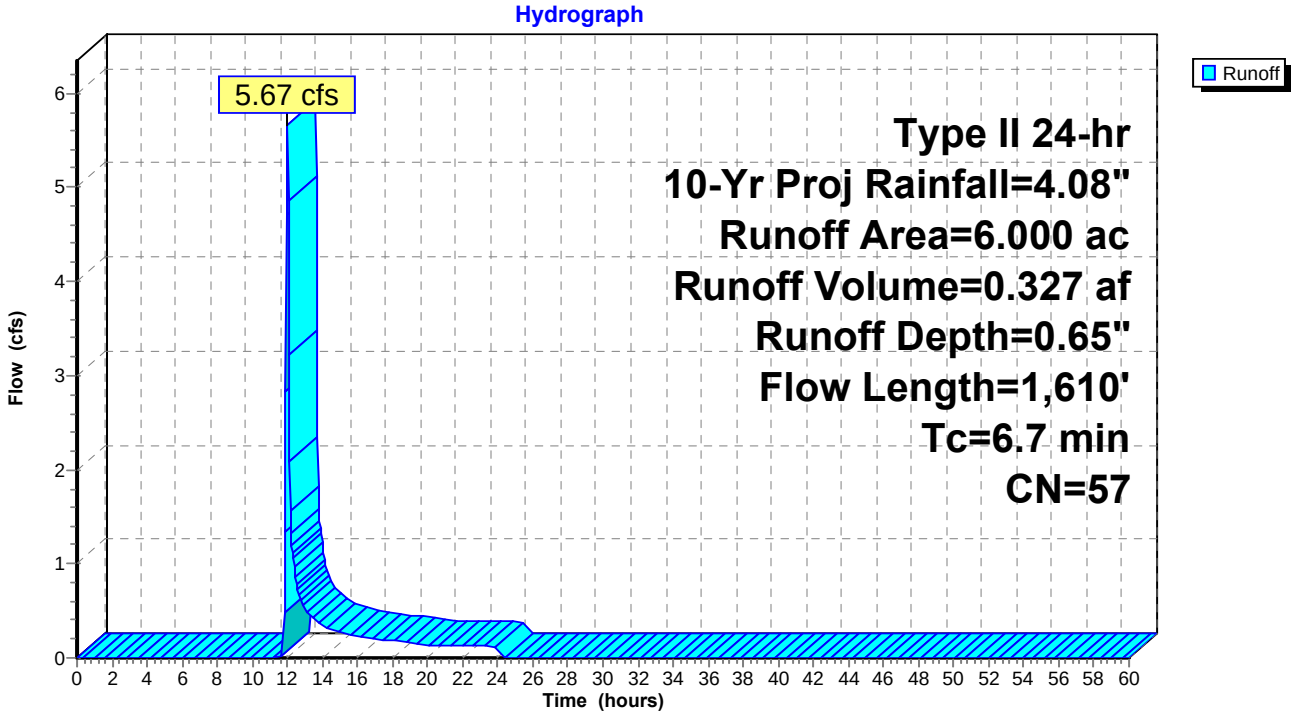
Runoff = 5.67 cfs @ 12.00 hrs, Volume= 0.327 af, Depth= 0.65"
Routed to Reach 8R : Reach DA-4 North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	5.700	55	<50% Grass cover, Poor, HSG A
	0.300	85	Gravel roads, HSG B
	6.000	57	Weighted Average
	6.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3100	4.04		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.1	1,460	0.0610	3.98		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.7	1,610	Total			

Subcatchment DA-4N: DA-4 North



Summary for Subcatchment DA-4W: DA-4 West

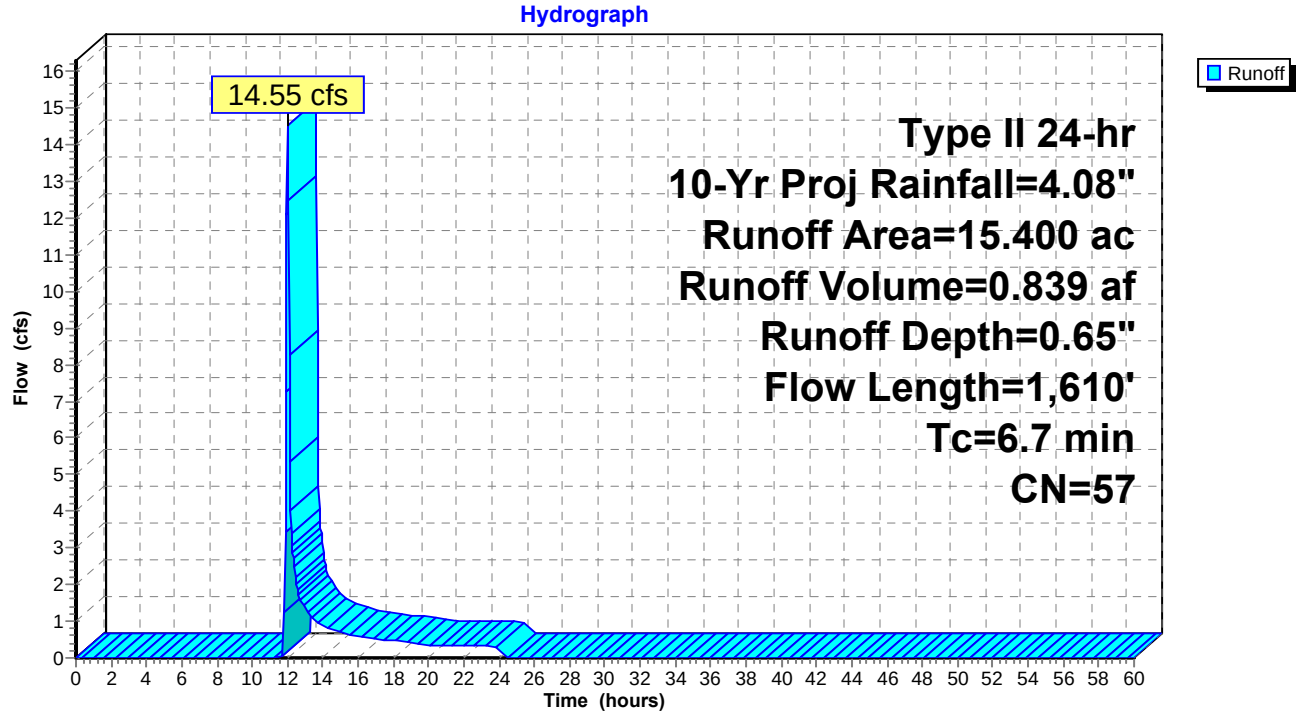
Runoff = 14.55 cfs @ 12.00 hrs, Volume= 0.839 af, Depth= 0.65"
Routed to Reach 7R : Reach DA-4 West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

	Area (ac)	CN	Description
*	14.450	55	<50% Grass cover, Poor, HSG A
	0.950	85	Gravel roads, HSG B
	15.400	57	Weighted Average
	15.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3100	4.04		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.1	1,460	0.0610	3.98		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.7	1,610	Total			

Subcatchment DA-4W: DA-4 West



Summary for Subcatchment DA-5N: DA-5 North

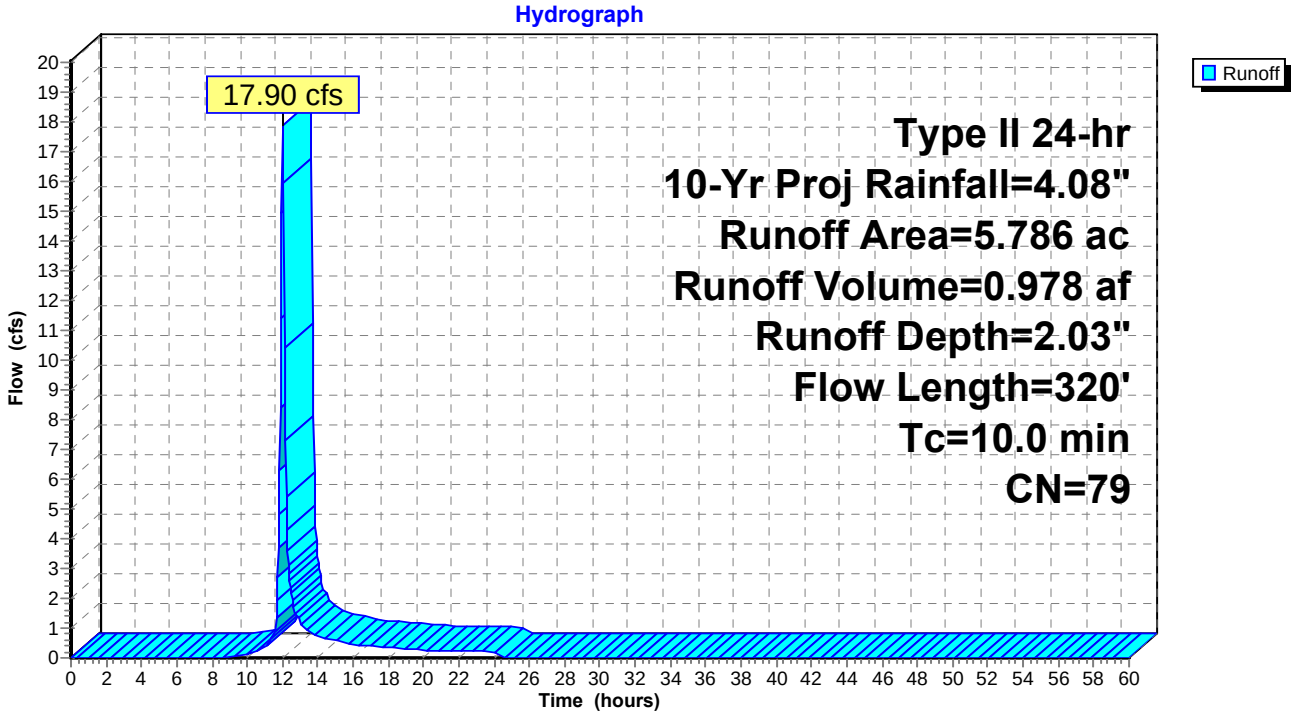
Runoff = 17.90 cfs @ 12.02 hrs, Volume= 0.978 af, Depth= 2.03"
Routed to Pond 5P : Frog Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
2.425	87	Dirt roads, HSG C
3.361	73	Woods, Fair, HSG C
5.786	79	Weighted Average
5.786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.2600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.5	220	0.2300	2.40		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
10.0	320	Total			

Subcatchment DA-5N: DA-5 North



Summary for Subcatchment DA-5S: DA-5 South

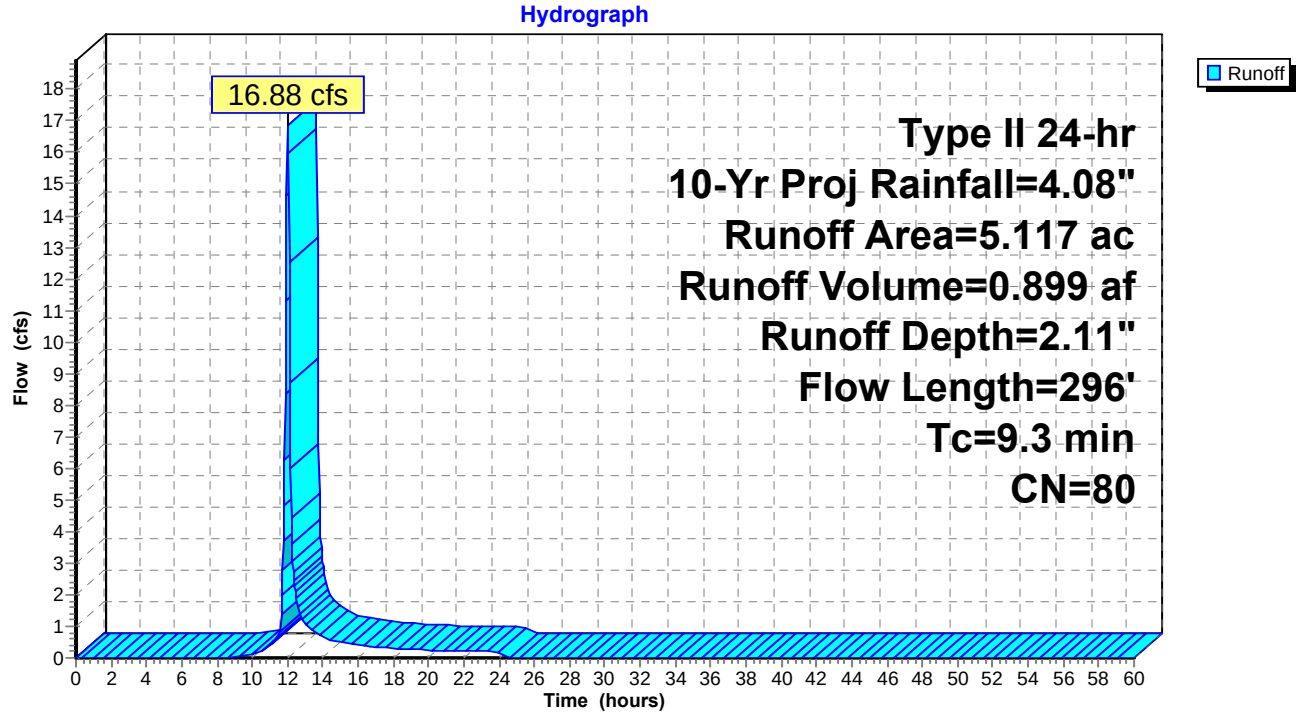
Runoff = 16.88 cfs @ 12.01 hrs, Volume= 0.899 af, Depth= 2.11"
Routed to Pond 7P : Unnanmed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
2.587	87	Dirt roads, HSG C
2.530	73	Woods, Fair, HSG C
5.117	80	Weighted Average
5.117		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.3000	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.3	196	0.2550	2.52		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
9.3	296	Total			

Subcatchment DA-5S: DA-5 South



Summary for Subcatchment DA-5U: DA-5 Upper

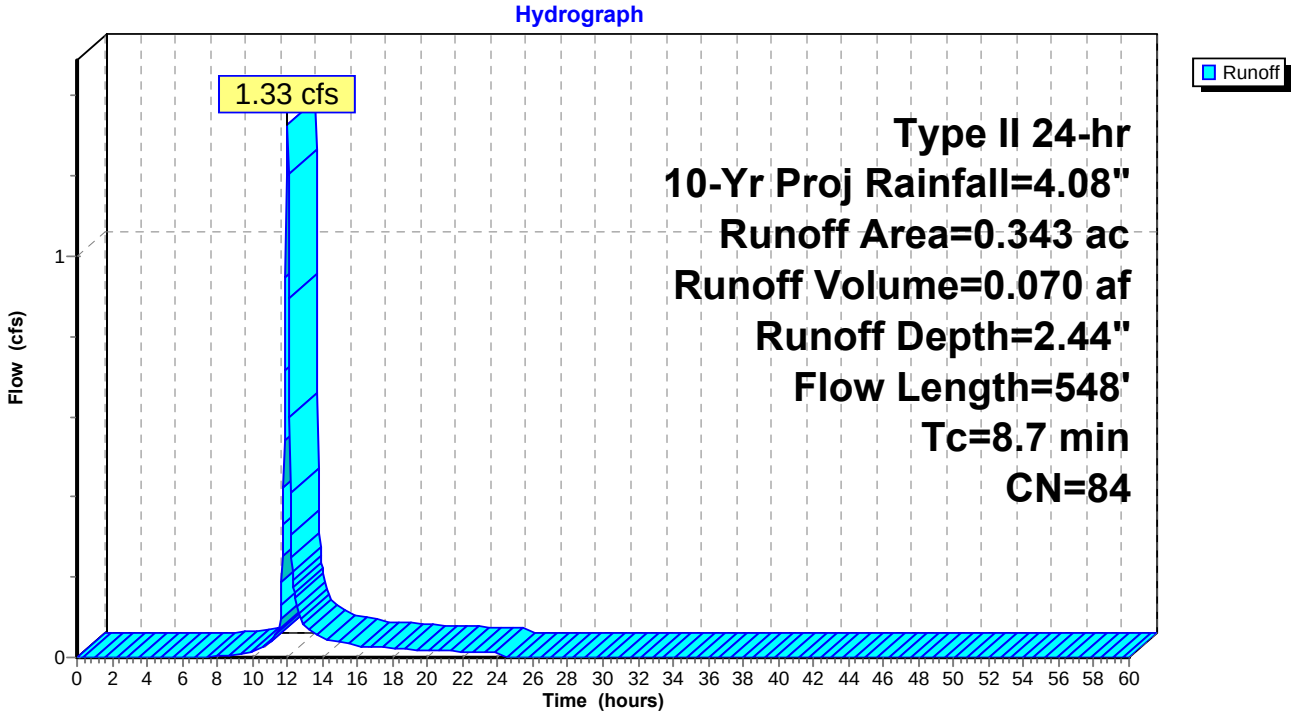
Runoff = 1.33 cfs @ 12.00 hrs, Volume= 0.070 af, Depth= 2.44"
Routed to Pond 6P : Guppy Pond P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
0.259	87	Dirt roads, HSG C
0.084	73	Woods, Fair, HSG C
0.343	84	Weighted Average
0.343		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.4200	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.3	190	0.2530	2.51		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
0.4	258	0.1000	11.45	45.80	**Channel Flow,** Area= 4.0 sf Perim= 6.4' r= 0.63' n= 0.030 Earth, grassed & winding
8.7	548	Total			

Subcatchment DA-5U: DA-5 Upper



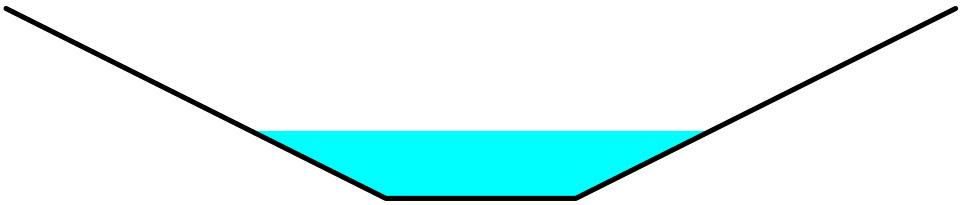
Summary for Reach 1R: Reach DA-1 North

Inflow Area = 25.400 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 21.99 cfs @ 12.00 hrs, Volume= 1.285 af
Outflow = 16.99 cfs @ 12.05 hrs, Volume= 1.285 af, Atten= 23%, Lag= 3.1 min
Routed to Pond 1P : Proposed DA-1 Basin

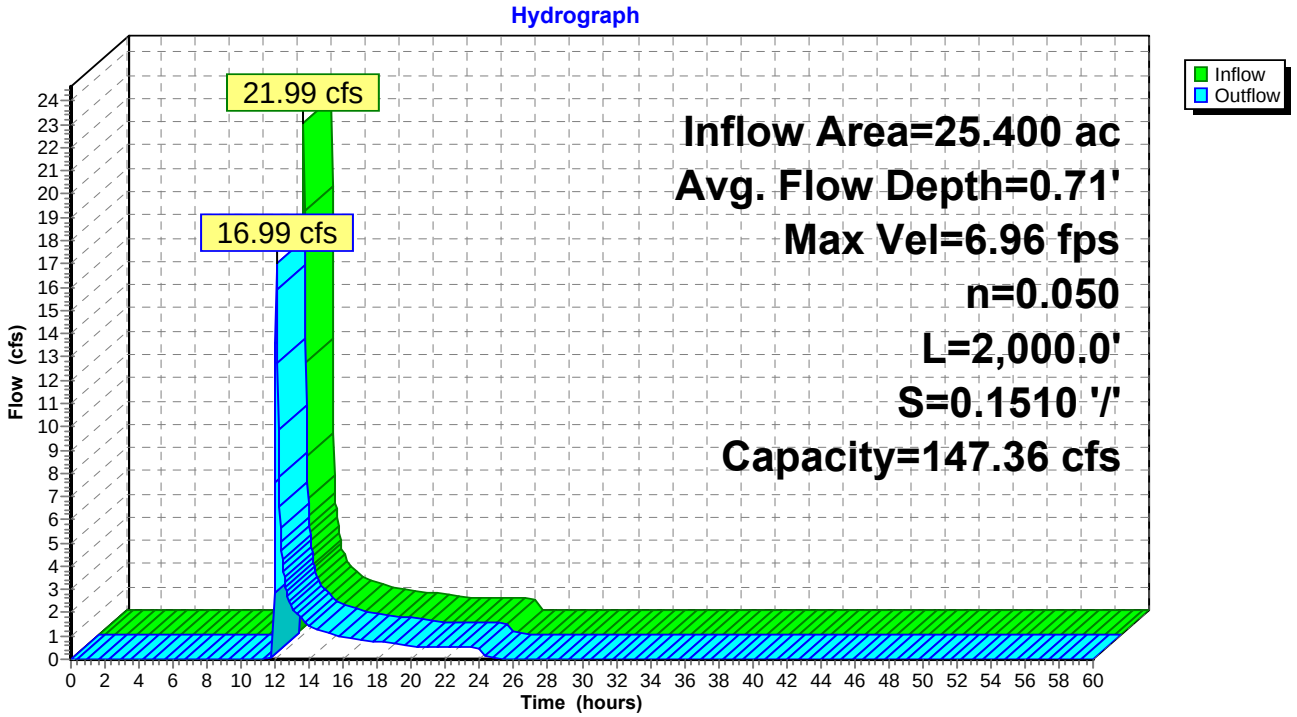
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.96 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 14.3 min

Peak Storage= 4,870 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 4.85'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 147.36 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 2,000.0' Slope= 0.1510 '/'
Inlet Invert= 2,270.00', Outlet Invert= 1,968.00'



Reach 1R: Reach DA-1 North



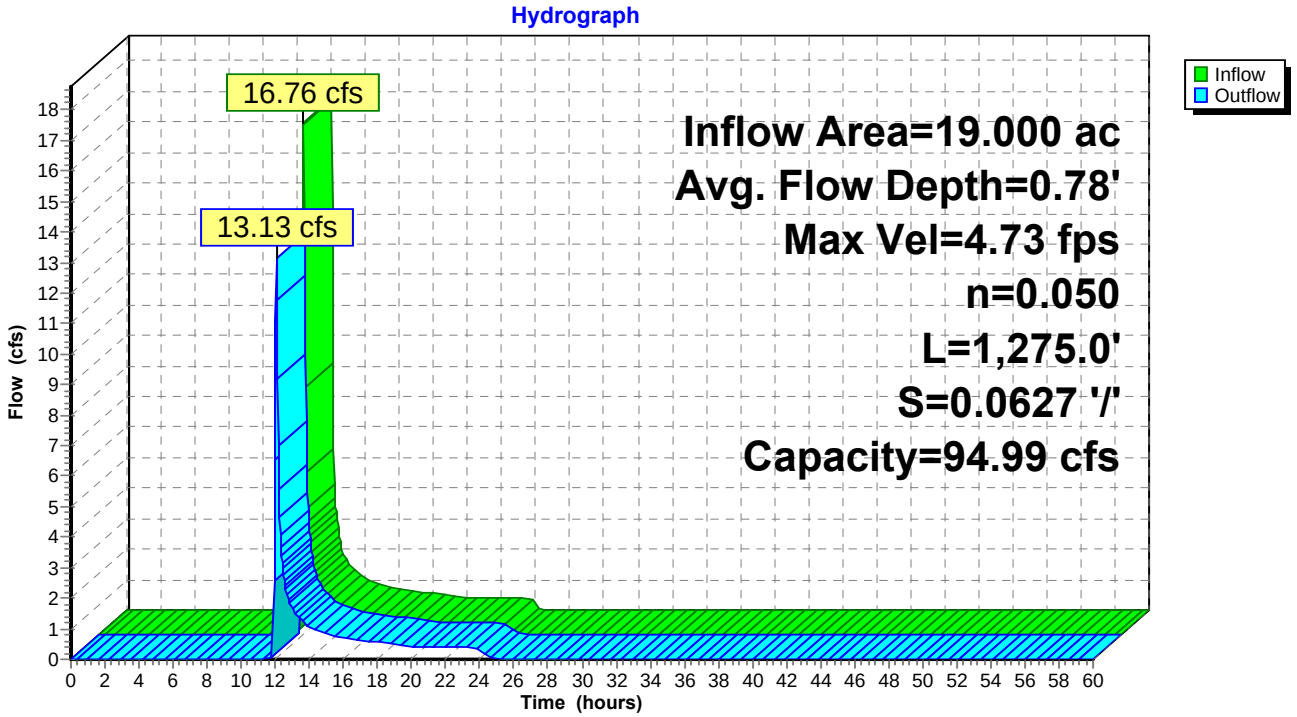
Summary for Reach 2R: Reach DA 1 East

Inflow Area = 19.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 16.76 cfs @ 11.99 hrs, Volume= 0.961 af
Outflow = 13.13 cfs @ 12.04 hrs, Volume= 0.961 af, Atten= 22%, Lag= 3.0 min
Routed to Pond 1P : Proposed DA-1 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.73 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 13.5 min

Peak Storage= 3,542 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.78' , Surface Width= 5.12'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 94.99 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,275.0' Slope= 0.0627 '/'
Inlet Invert= 2,048.00', Outlet Invert= 1,968.00'



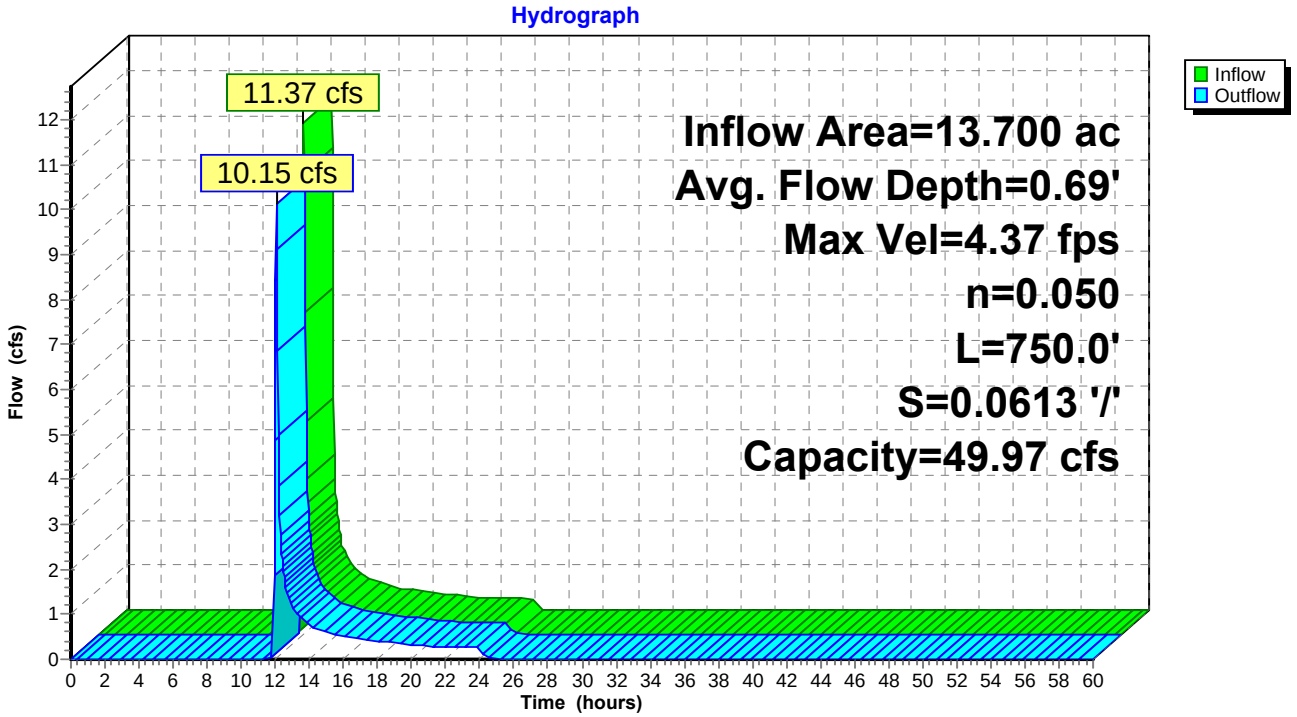
Summary for Reach 3R: Reach DA 2 East

Inflow Area = 13.700 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 11.37 cfs @ 12.01 hrs, Volume= 0.693 af
Outflow = 10.15 cfs @ 12.05 hrs, Volume= 0.693 af, Atten= 11%, Lag= 2.2 min
Routed to Pond 2P : Proposed DA-2 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.37 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 8.5 min

Peak Storage= 1,741 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.69' , Surface Width= 4.75'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 49.97 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 750.0' Slope= 0.0613 '/'
Inlet Invert= 2,052.00', Outlet Invert= 2,006.00'



Summary for Reach 4R: Reach DA-2 South

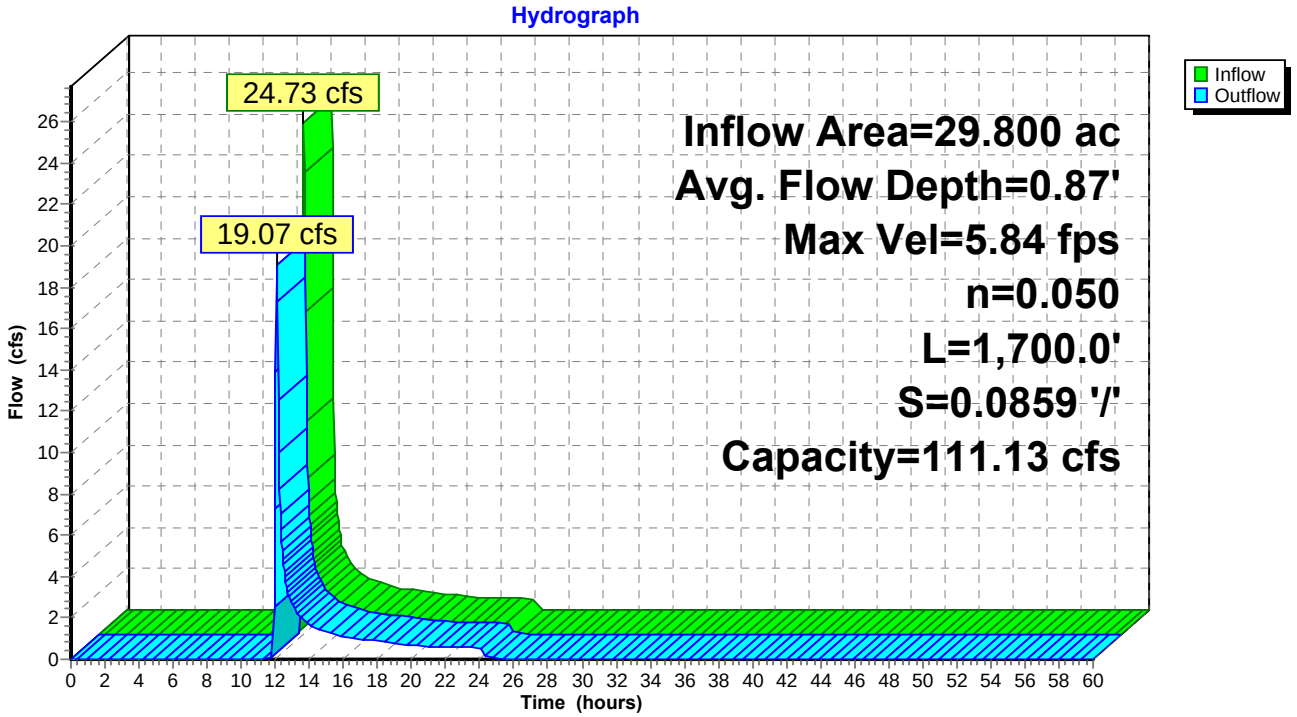
Inflow Area = 29.800 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 24.73 cfs @ 12.01 hrs, Volume= 1.508 af
Outflow = 19.07 cfs @ 12.06 hrs, Volume= 1.508 af, Atten= 23%, Lag= 3.2 min
Routed to Pond 2P : Proposed DA-2 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 14.4 min

Peak Storage= 5,531 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 5.48'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 111.13 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,700.0' Slope= 0.0859 '/'
Inlet Invert= 2,152.00', Outlet Invert= 2,006.00'

Reach 4R: Reach DA-2 South



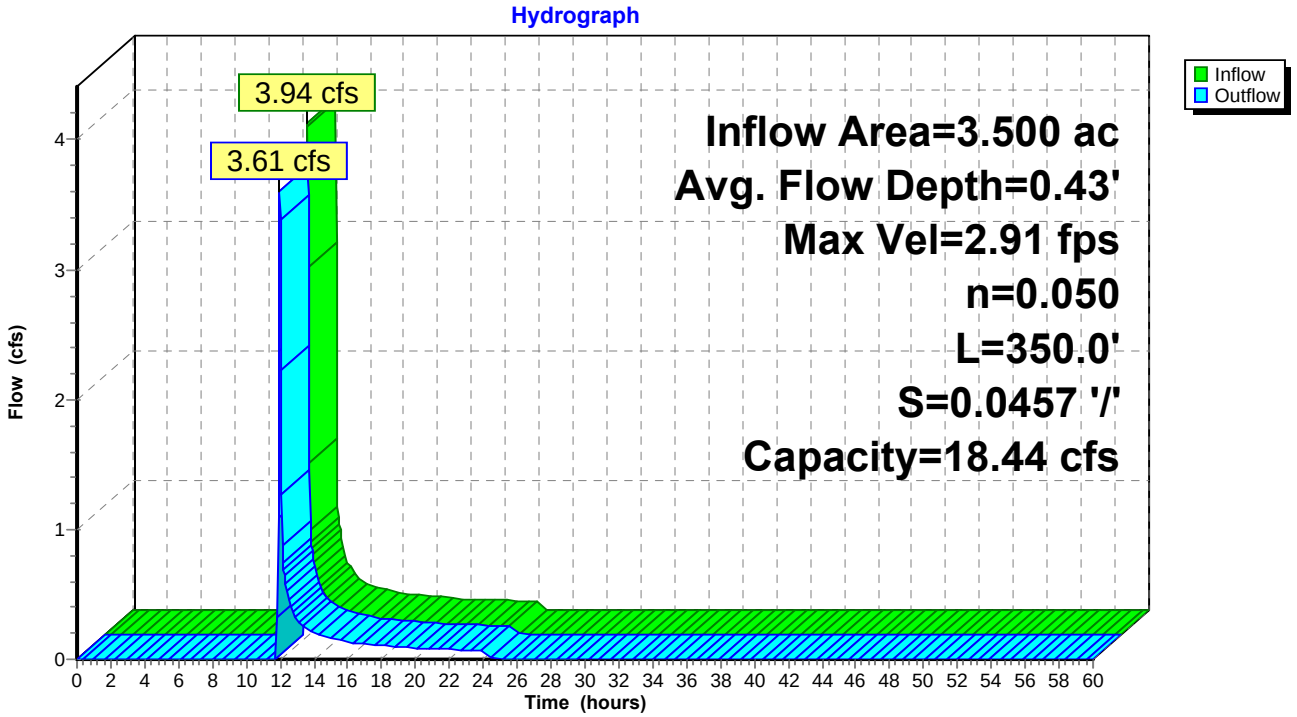
Summary for Reach 5R: Reach DA-3 South

Inflow Area = 3.500 ac, 0.00% Impervious, Inflow Depth = 0.65" for 10-Yr Proj event
Inflow = 3.94 cfs @ 11.95 hrs, Volume= 0.191 af
Outflow = 3.61 cfs @ 11.98 hrs, Volume= 0.191 af, Atten= 8%, Lag= 1.4 min
Routed to Pond 3P : Proposed DA-3 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.91 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 6.6 min

Peak Storage= 431 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 3.72'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 18.44 cfs

2.00' x 1.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 350.0' Slope= 0.0457 '/'
Inlet Invert= 2,148.00', Outlet Invert= 2,132.00'



Summary for Reach 6R: Reach DA-3 West

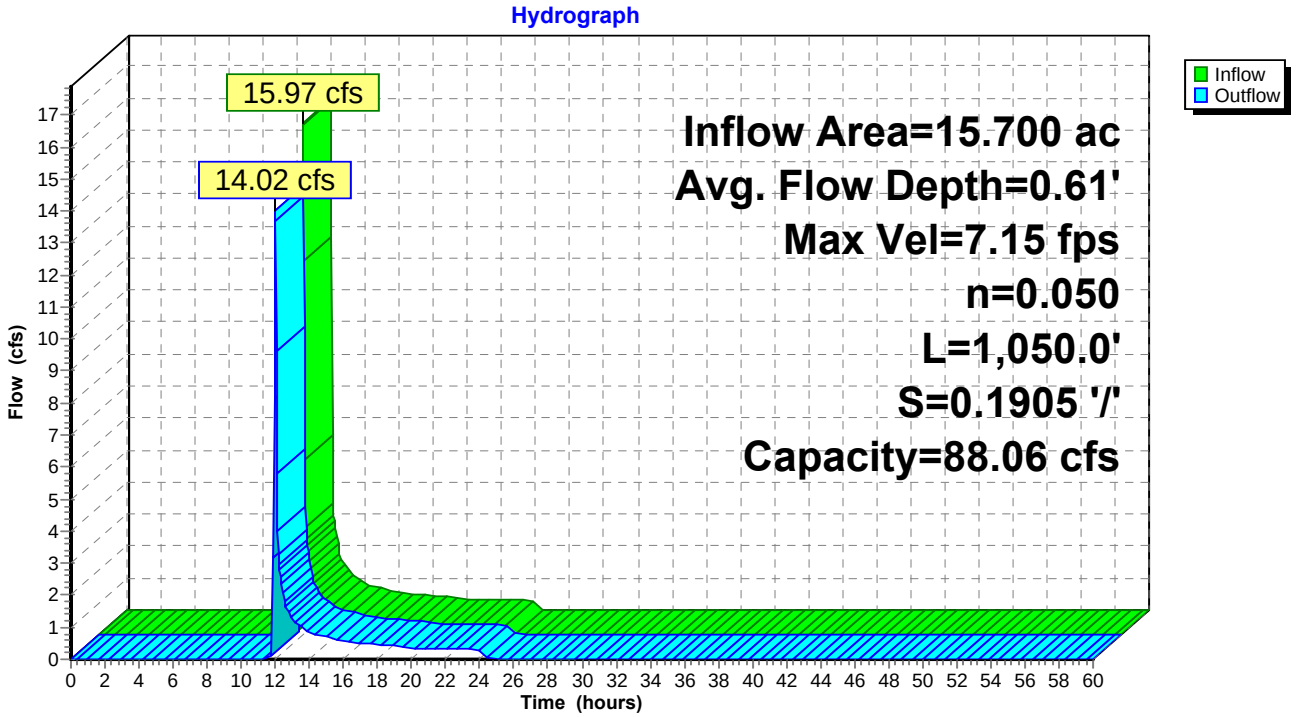
Inflow Area = 15.700 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 15.97 cfs @ 11.96 hrs, Volume= 0.794 af
Outflow = 14.02 cfs @ 11.98 hrs, Volume= 0.794 af, Atten= 12%, Lag= 1.7 min
Routed to Pond 3P : Proposed DA-3 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.15 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 7.6 min

Peak Storage= 2,048 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 4.43'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 88.06 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 1,050.0' Slope= 0.1905 '/'
Inlet Invert= 2,332.00', Outlet Invert= 2,132.00'

Reach 6R: Reach DA-3 West



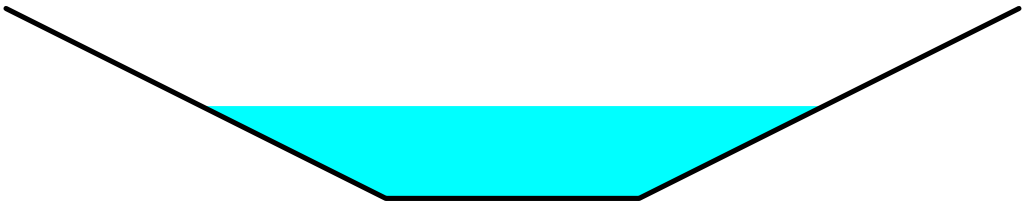
Summary for Reach 7R: Reach DA-4 West

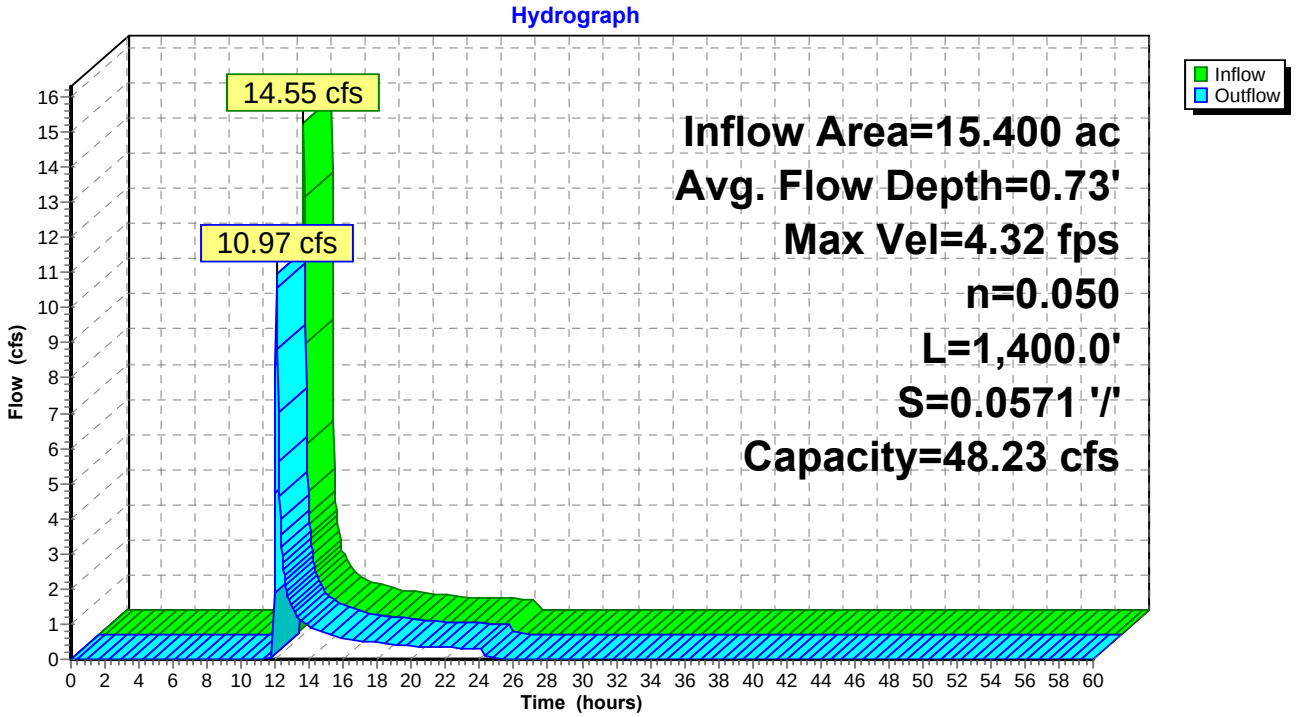
Inflow Area = 15.400 ac, 0.00% Impervious, Inflow Depth = 0.65" for 10-Yr Proj event
Inflow = 14.55 cfs @ 12.00 hrs, Volume= 0.839 af
Outflow = 10.97 cfs @ 12.06 hrs, Volume= 0.839 af, Atten= 25%, Lag= 3.3 min
Routed to Pond 4P : Proposed Basin DA-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.32 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 17.3 min

Peak Storage= 3,531 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.73' , Surface Width= 4.92'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 48.23 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 1,400.0' Slope= 0.0571 '/'
Inlet Invert= 2,320.00', Outlet Invert= 2,240.00'





Summary for Reach 8R: Reach DA-4 North

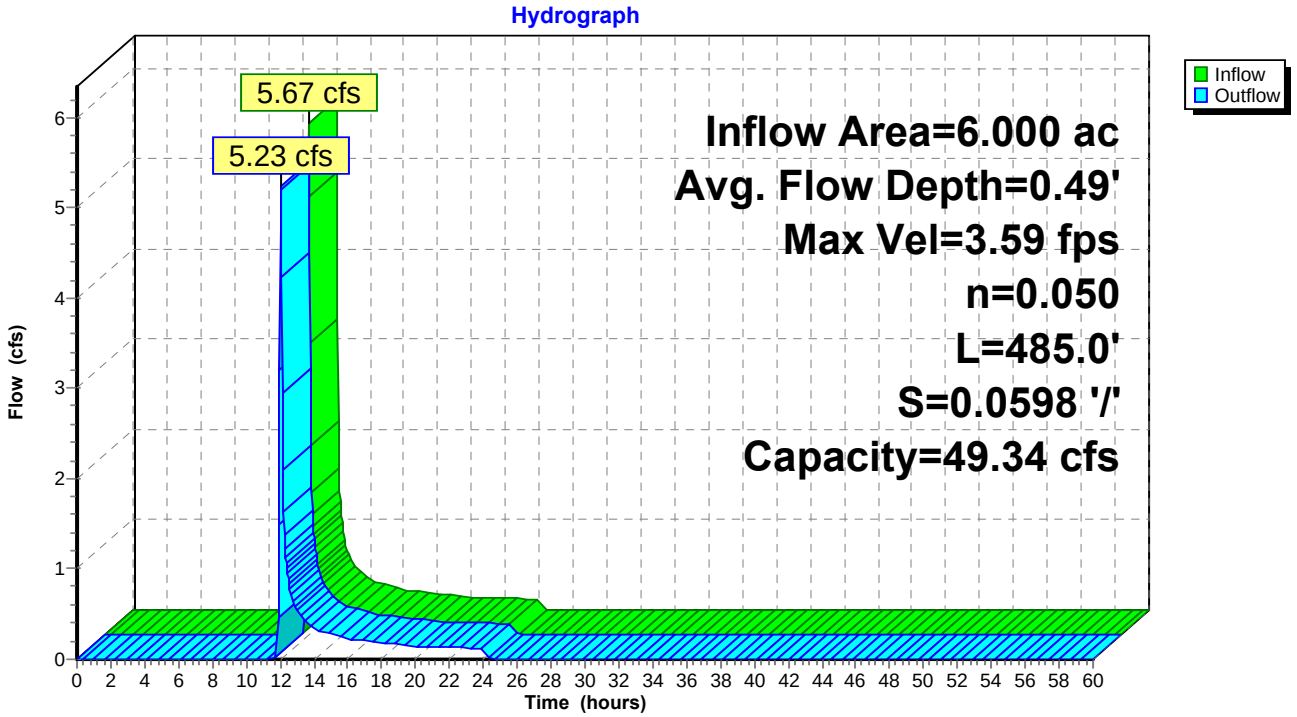
Inflow Area = 6.000 ac, 0.00% Impervious, Inflow Depth = 0.65" for 10-Yr Proj event
Inflow = 5.67 cfs @ 12.00 hrs, Volume= 0.327 af
Outflow = 5.23 cfs @ 12.03 hrs, Volume= 0.327 af, Atten= 8%, Lag= 1.7 min
Routed to Pond 4P : Proposed Basin DA-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 6.8 min

Peak Storage= 706 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 3.96'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 49.34 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 485.0' Slope= 0.0598 '/'
Inlet Invert= 2,269.00', Outlet Invert= 2,240.00'

Reach 8R: Reach DA-4 North



Summary for Pond 1P: Proposed DA-1 Basin

Inflow Area = 44.400 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 30.10 cfs @ 12.05 hrs, Volume= 2.246 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 009A : SPDES Outfall 009A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,963.30' @ 40.84 hrs Storage= 2.246 af

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

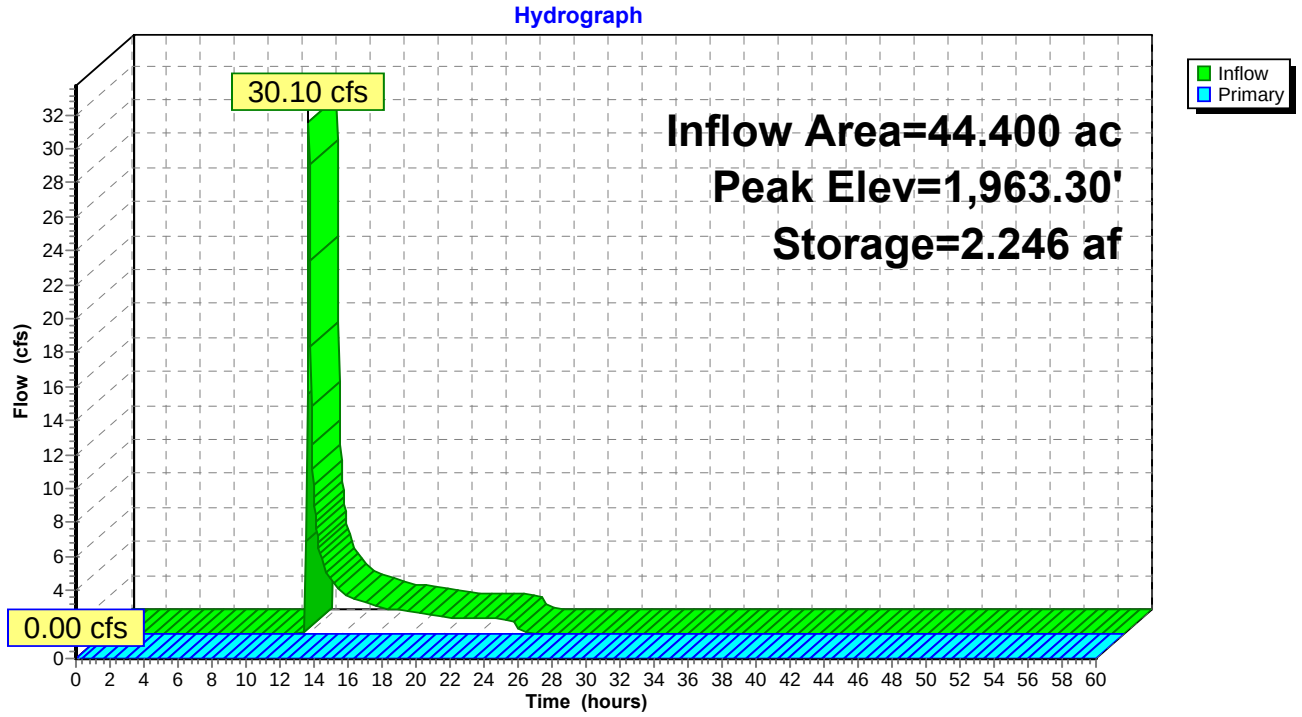
Volume	Invert	Avail.Storage	Storage Description
#1	1,959.00'	4.700 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
1,959.00	0.000
1,968.00	4.700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,959.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,959.00' / 1,956.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,966.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,959.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: Proposed DA-1 Basin



Summary for Pond 2P: Proposed DA-2 Basin

Inflow Area = 43.500 ac, 0.00% Impervious, Inflow Depth = 0.61" for 10-Yr Proj event
Inflow = 29.24 cfs @ 12.06 hrs, Volume= 2.201 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 006A : SPDES Outfall 006A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,001.50' @ 42.44 hrs Storage= 2.201 af

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

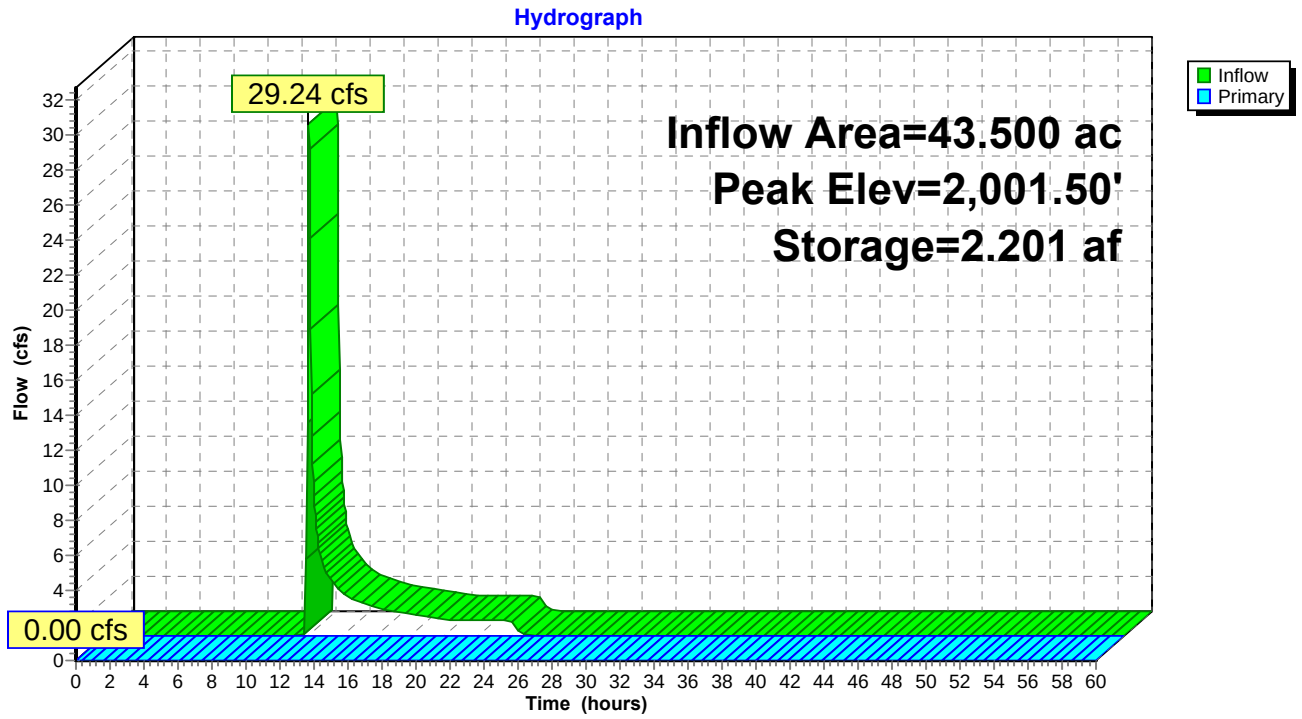
Volume	Invert	Avail.Storage	Storage Description
#1	1,997.00'	4.400 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
1,997.00	0.000
2,006.00	4.400

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,997.00' / 1,994.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	2,004.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,997.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: Proposed DA-2 Basin



Summary for Pond 3P: Proposed DA-3 Basin

Inflow Area = 19.200 ac, 0.00% Impervious, Inflow Depth = 0.62" for 10-Yr Proj event
Inflow = 17.58 cfs @ 11.98 hrs, Volume= 0.985 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 007A : SPDES Outfall 007A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,129.43' @ 33.04 hrs Storage= 0.985 af

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

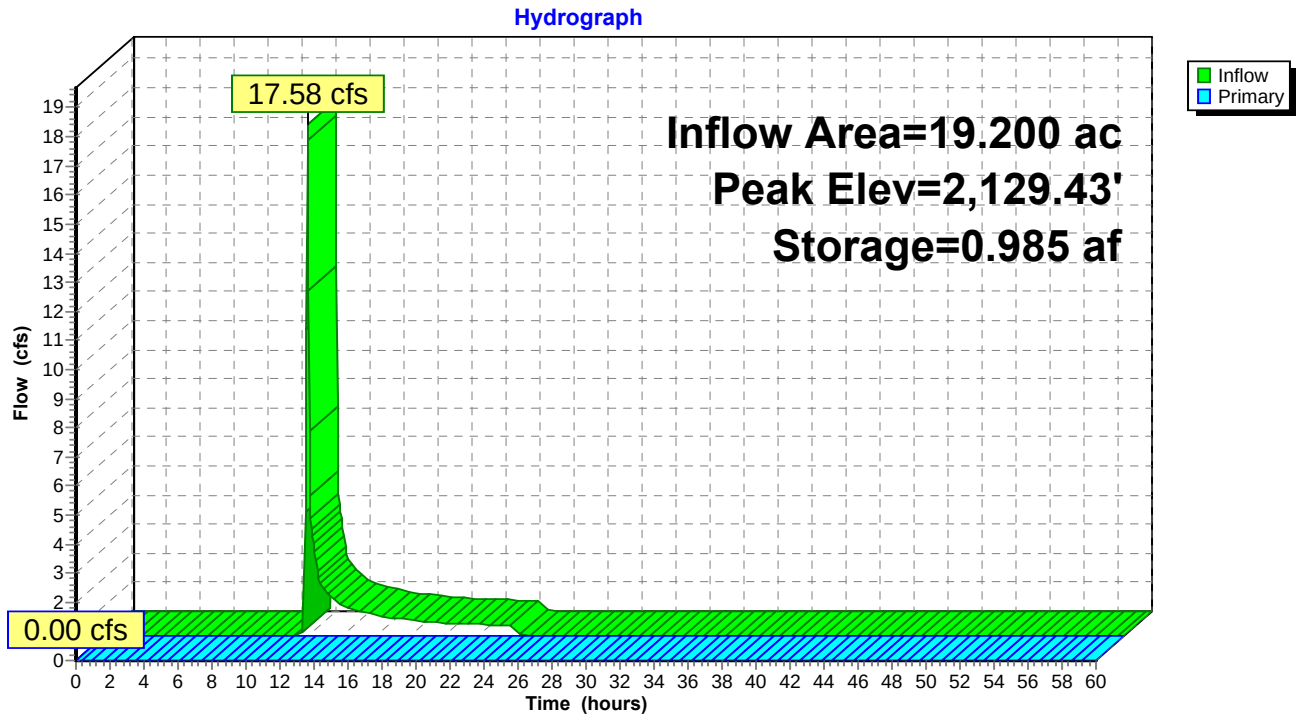
Volume	Invert	Avail.Storage	Storage Description
#1	2,125.00'	2.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
2,125.00	0.000
2,134.00	2.000

Device	Routing	Invert	Outlet Devices
#1	Primary	2,125.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,125.00' / 2,124.00' S= 0.0111 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	2,132.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,125.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: Proposed DA-3 Basin



Summary for Pond 4P: Proposed Basin DA-4

Inflow Area = 21.400 ac, 0.00% Impervious, Inflow Depth = 0.65" for 10-Yr Proj event
Inflow = 16.01 cfs @ 12.05 hrs, Volume= 1.166 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 008A : SPDES Outfall 008A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,235.56' @ 46.24 hrs Storage= 1.166 af

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

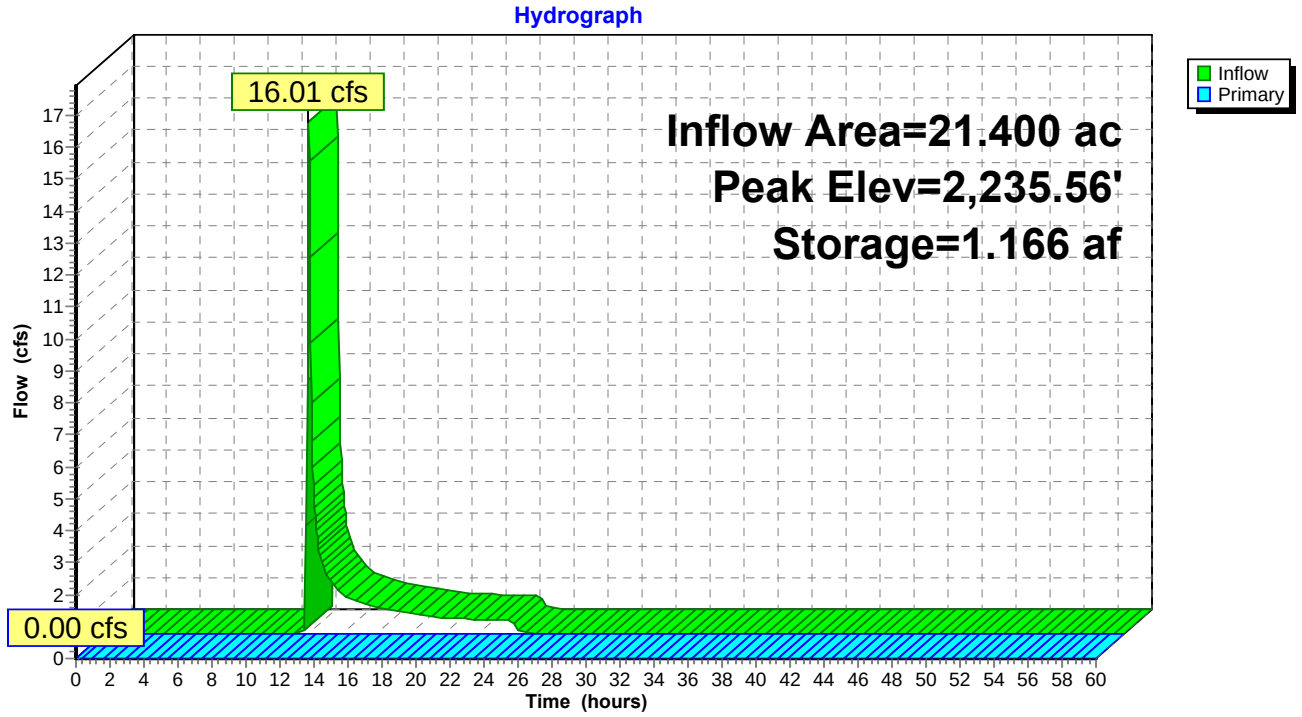
Volume	Invert	Avail.Storage	Storage Description
#1	2,231.00'	2.300 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
2,231.00	0.000
2,240.00	2.300

Device	Routing	Invert	Outlet Devices
#1	Primary	2,231.00'	**18.0" Round Culvert** L= 180.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,231.00' / 2,230.00' S= 0.0056 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Device 1	2,238.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,231.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: Proposed Basin DA-4



Summary for Pond 5P: Frog Pond

Inflow Area = 11.246 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-Yr Proj event
Inflow = 31.78 cfs @ 12.03 hrs, Volume= 1.849 af
Outflow = 11.31 cfs @ 12.22 hrs, Volume= 1.700 af, Atten= 64%, Lag= 11.2 min
Primary = 11.31 cfs @ 12.22 hrs, Volume= 1.700 af
Routed to Link 001A : SPDES Outfall 001A
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,890.15' @ 12.22 hrs Surf.Area= 8,287 sf Storage= 34,309 cf

Plug-Flow detention time= 465.1 min calculated for 1.699 af (92% of inflow)
Center-of-Mass det. time= 423.1 min (1,262.7 - 839.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,882.00'	51,821 cf	**Custom Stage Data (Irregular)** Listed below

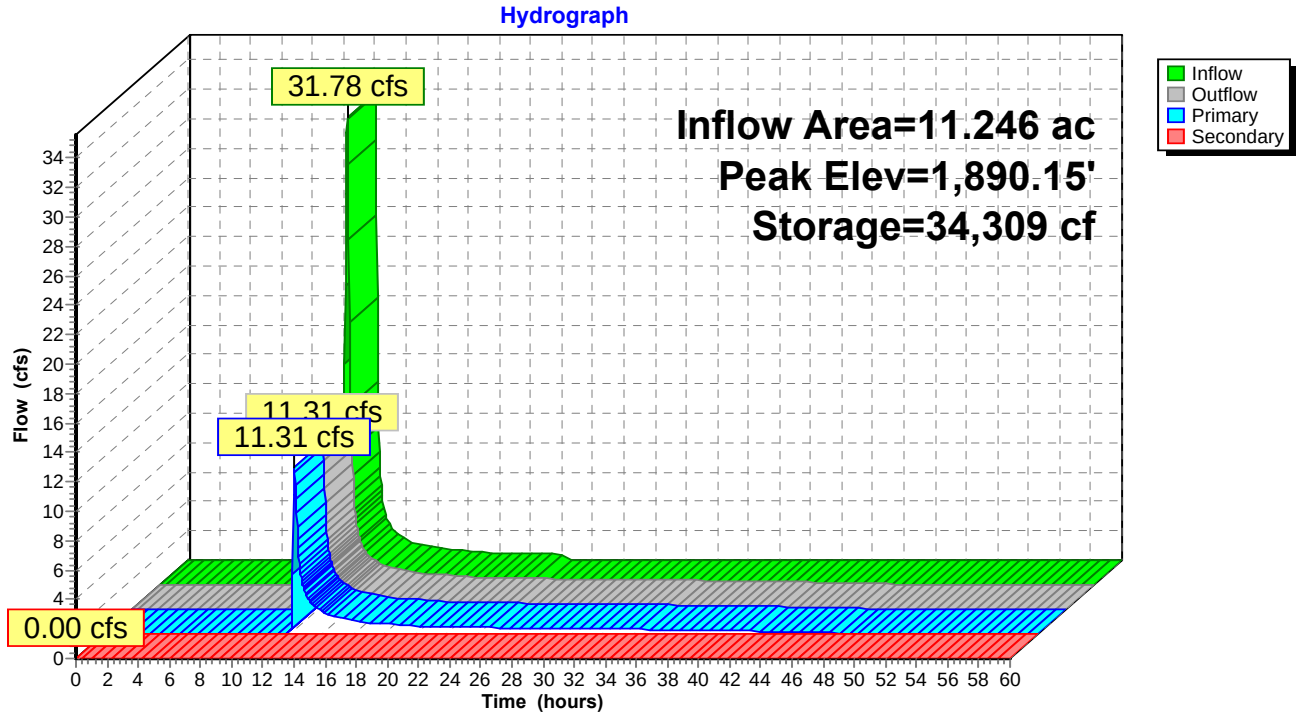
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,882.00	1,214	162.0	0	0	1,214
1,884.00	2,272	224.0	3,431	3,431	3,157
1,886.00	3,880	332.0	6,081	9,512	7,968
1,888.00	5,766	367.0	9,584	19,096	10,036
1,890.00	8,066	425.0	13,768	32,864	13,777
1,892.00	10,965	475.0	18,957	51,821	17,469

Device	Routing	Invert	Outlet Devices
#1	Primary	1,882.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,882.00' / 1,881.00' S= 0.0167 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,885.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 6.0" cc spacing C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,889.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,890.50'	**15.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=11.06 cfs @ 12.22 hrs HW=1,890.14' (Free Discharge)
└**1=Culvert** (Passes 11.06 cfs of 16.06 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.46 cfs @ 10.60 fps)
└**3=Orifice/Grate** (Weir Controls 10.59 cfs @ 2.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,882.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: Frog Pond



Summary for Pond 6P: Guppy Pond P2

Inflow Area = 0.343 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-Yr Proj event
Inflow = 1.33 cfs @ 12.00 hrs, Volume= 0.070 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : Frog Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,954.53' @ 24.52 hrs Surf.Area= 1,756 sf Storage= 3,040 cf

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

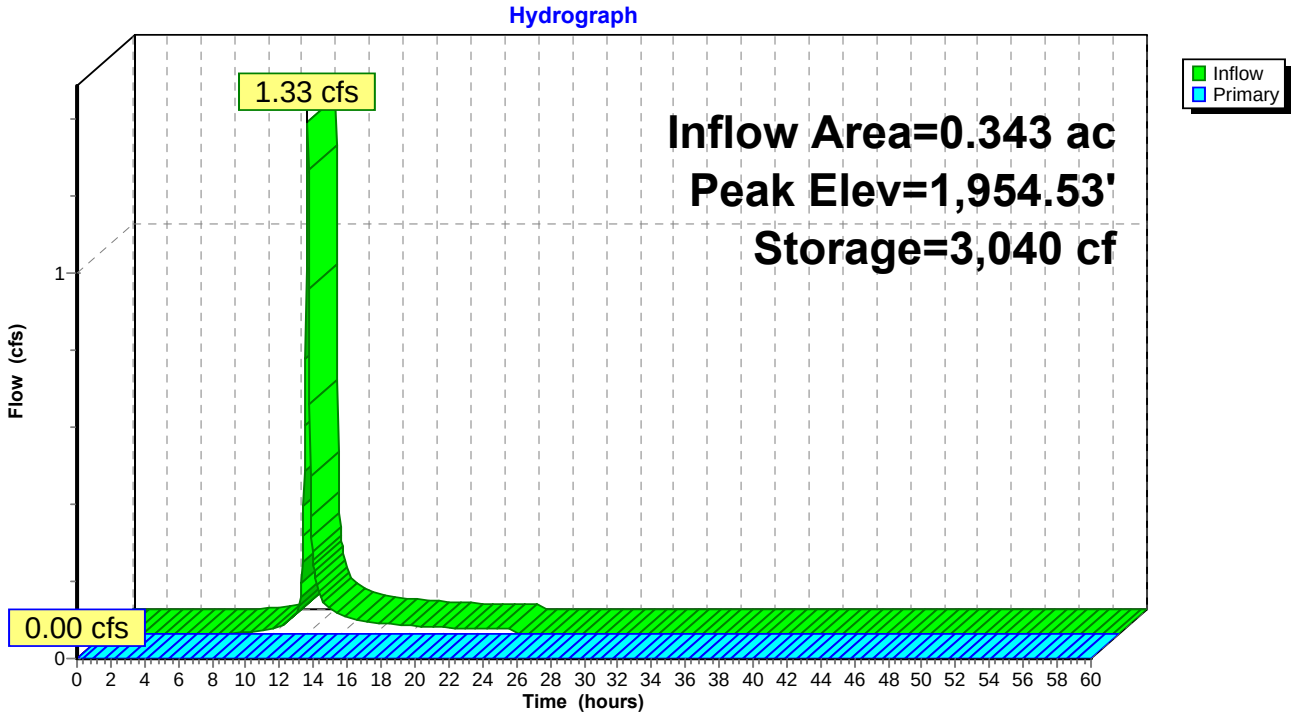
Volume	Invert	Avail.Storage	Storage Description
#1	1,950.60'	5,246 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,950.60	70	50.0	0	0	70
1,952.60	730	150.0	684	684	1,674
1,954.60	1,795	200.0	2,446	3,131	3,110
1,955.60	2,454	230.0	2,116	5,246	4,159

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.60'	**5.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	1,955.00'	**15.0' long + 2.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,950.60' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Guppy Pond P2



Summary for Pond 7P: Unnanmed Pond

Inflow Area = 5.117 ac, 0.00% Impervious, Inflow Depth = 2.11" for 10-Yr Proj event
Inflow = 16.88 cfs @ 12.01 hrs, Volume= 0.899 af
Outflow = 14.32 cfs @ 12.06 hrs, Volume= 0.871 af, Atten= 15%, Lag= 3.1 min
Primary = 14.32 cfs @ 12.06 hrs, Volume= 0.871 af
Routed to Pond 5P : Frog Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,926.44' @ 12.06 hrs Surf.Area= 1,712 sf Storage= 4,239 cf

Plug-Flow detention time= 32.6 min calculated for 0.870 af (97% of inflow)
Center-of-Mass det. time= 14.7 min (845.5 - 830.8)

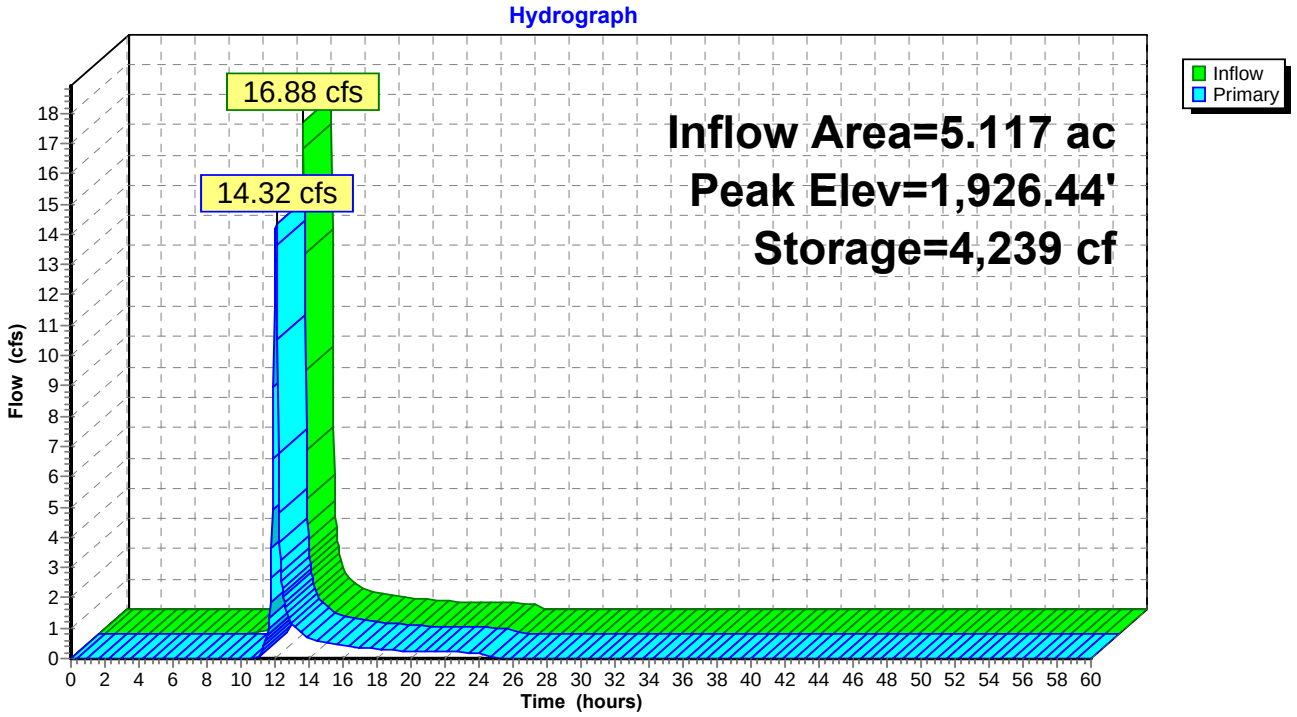
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	7,376 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,922.00	490	95.0	0	0	490
1,924.00	730	122.0	1,212	1,212	1,004
1,926.00	1,465	150.0	2,153	3,365	1,669
1,928.00	2,600	202.0	4,011	7,376	3,167

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,924.00' / 1,921.00' S= 0.0750 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,927.00'	**20.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=14.17 cfs @ 12.06 hrs HW=1,926.41' (Free Discharge)
1=Culvert (Inlet Controls 14.17 cfs @ 4.51 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 7P: Unnanmed Pond

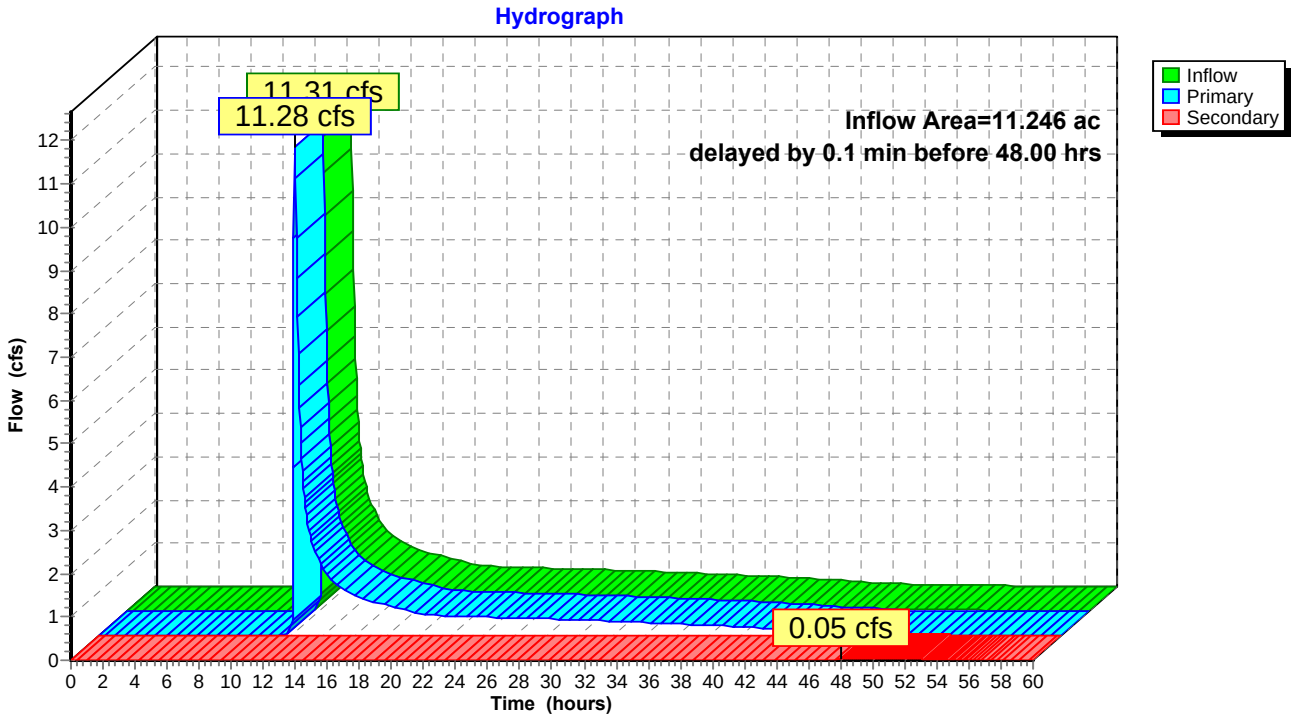


Summary for Link 001A: SPDES Outfall 001A

Inflow Area = 11.246 ac, 0.00% Impervious, Inflow Depth > 1.81" for 10-Yr Proj event
Inflow = 11.31 cfs @ 12.22 hrs, Volume= 1.700 af
Primary = 11.28 cfs @ 12.22 hrs, Volume= 1.680 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.05 cfs @ 48.00 hrs, Volume= 0.020 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 001A: SPDES Outfall 001A

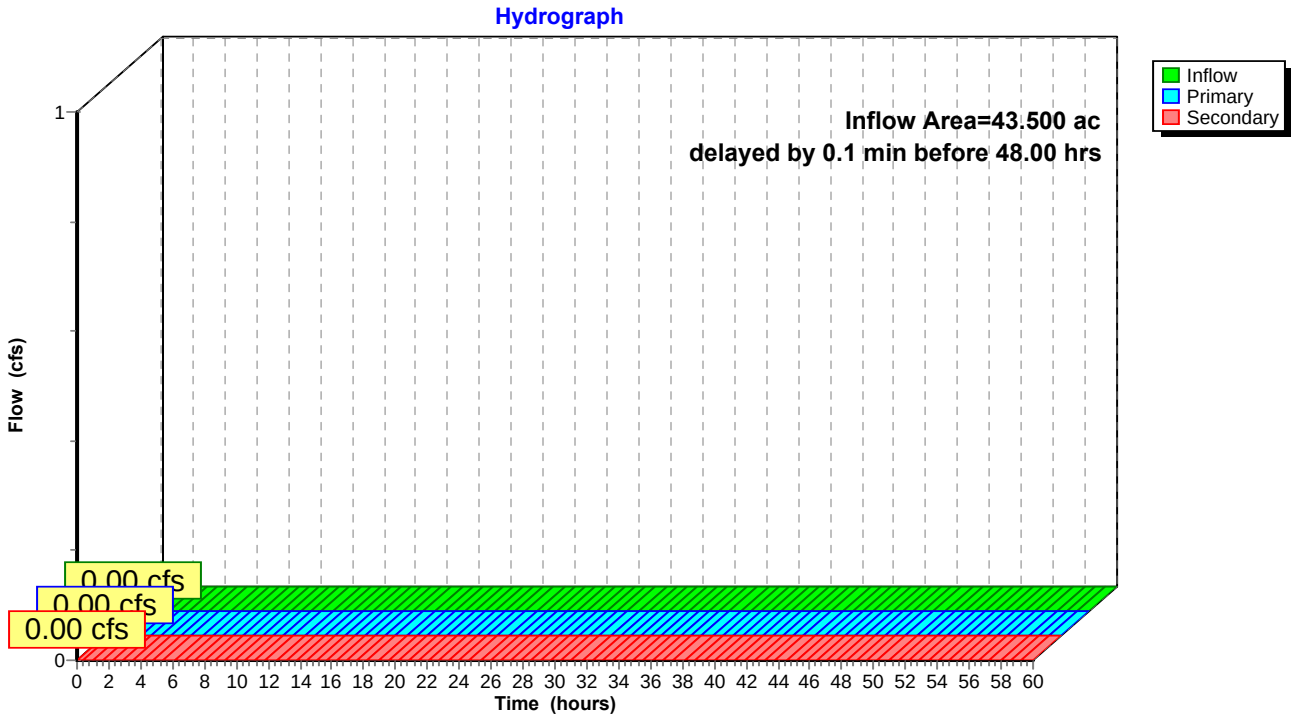


Summary for Link 006A: SPDES Outfall 006A

Inflow Area = 43.500 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Proj event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 006A: SPDES Outfall 006A

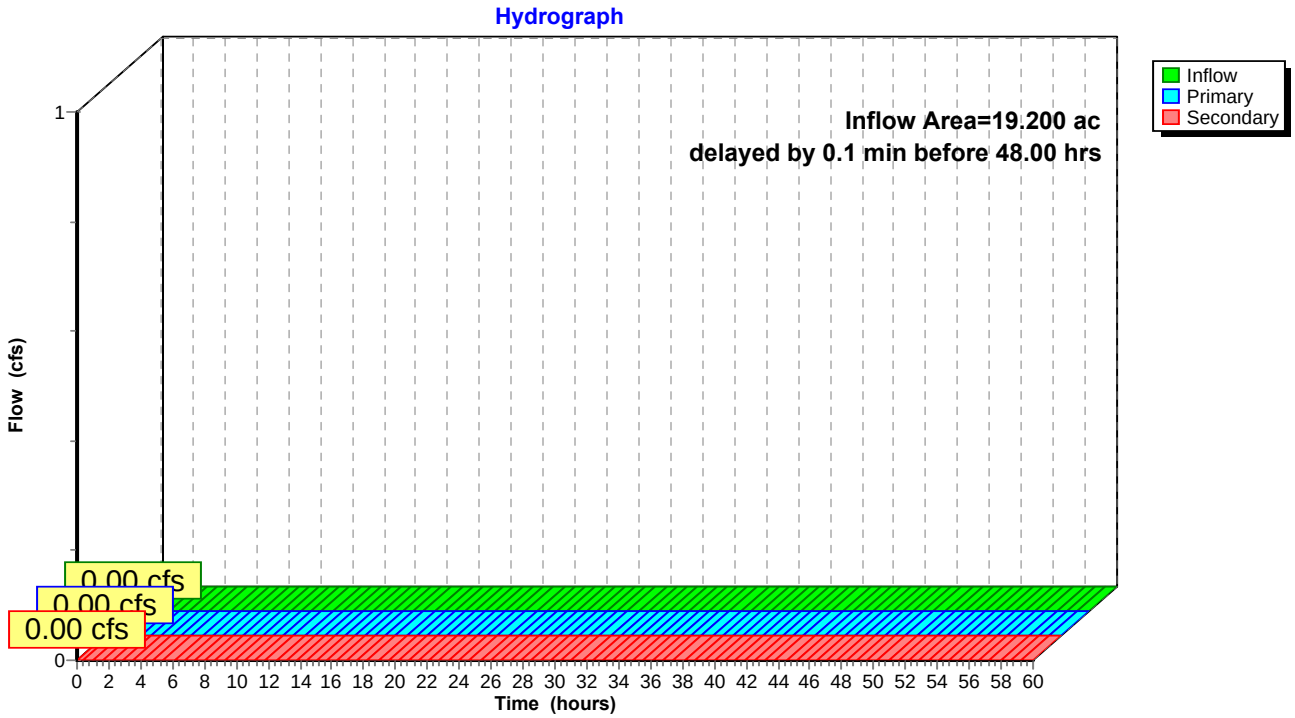


Summary for Link 007A: SPDES Outfall 007A

Inflow Area = 19.200 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Proj event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 007A: SPDES Outfall 007A

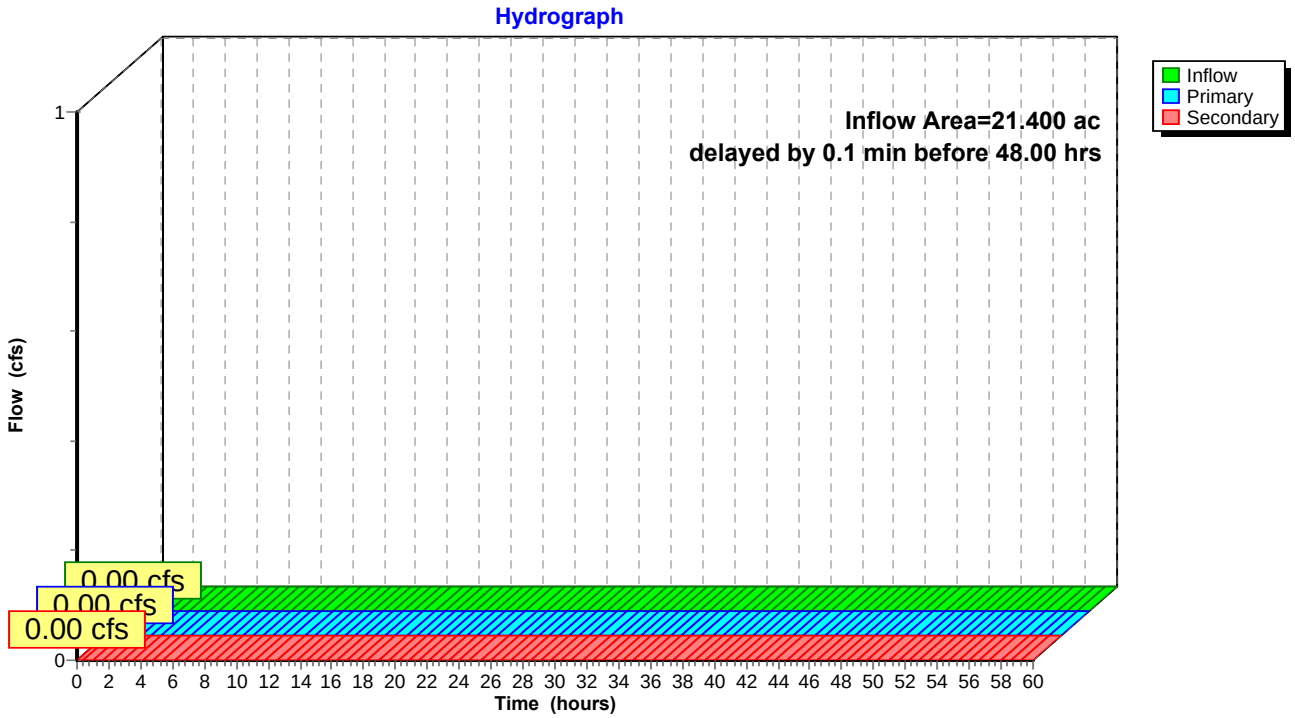


Summary for Link 008A: SPDES Outfall 008A

Inflow Area = 21.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Proj event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 008A: SPDES Outfall 008A

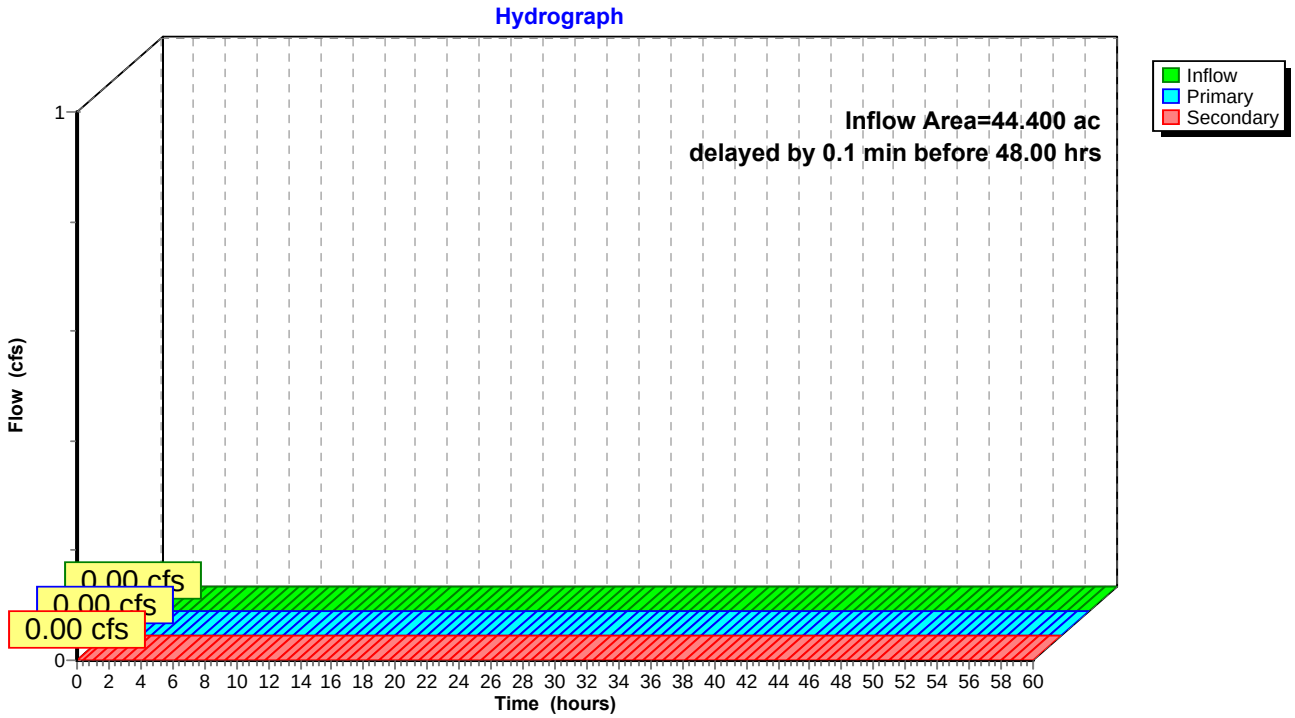


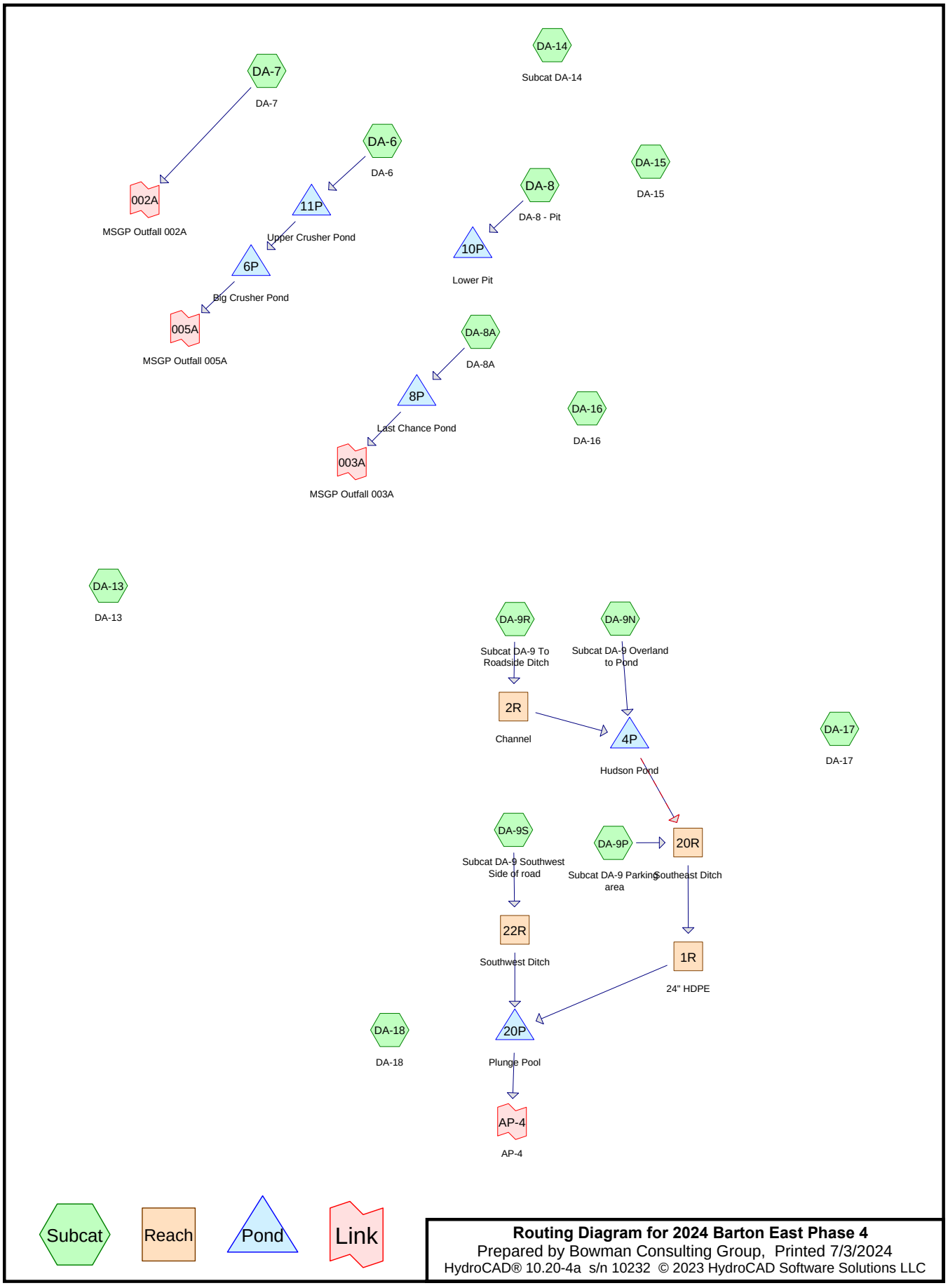
Summary for Link 009A: SPDES Outfall 009A

Inflow Area = 44.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Proj event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 009A: SPDES Outfall 009A





Routing Diagram for 2024 Barton East Phase 4
Prepared by Bowman Consulting Group, Printed 7/3/2024
HydroCAD® 10.20-4a s/n 10232 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.066	39	>75% Grass cover, Good, HSG A (DA-13, DA-7)
2.177	61	>75% Grass cover, Good, HSG B (DA-13)
1.132	74	>75% Grass cover, Good, HSG C (DA-17, DA-6, DA-9P, DA-9S)
0.452	80	>75% Grass cover, Good, HSG D (DA-17)
0.210	72	Dirt roads, HSG A (DA-7)
2.239	82	Dirt roads, HSG B (DA-13)
1.068	87	Dirt roads, HSG C (DA-9R)
0.142	96	Gravel surface, HSG A (DA-8A)
7.506	96	Gravel surface, HSG C (DA-6, DA-9P, DA-9R)
68.165	77	Newly graded area, HSG A (DA-8, DA-8A)
1.380	98	Paved parking, HSG B (DA-13)
0.154	98	Paved parking, HSG C (DA-9P, DA-9S)
0.053	98	Water Surface, HSG A (DA-8A)
5.037	36	Woods, Fair, HSG A (DA-13, DA-17, DA-6, DA-7, DA-8A)
16.580	60	Woods, Fair, HSG B (DA-13)
12.783	73	Woods, Fair, HSG C (DA-14, DA-15, DA-17, DA-6, DA-7, DA-9N, DA-9R)
18.925	79	Woods, Fair, HSG D (DA-14, DA-15, DA-16, DA-17, DA-9N, DA-9R)
0.418	43	Woods/grass comb., Fair, HSG A (DA-18)
139.488	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
75.090	HSG A	DA-13, DA-17, DA-18, DA-6, DA-7, DA-8, DA-8A
22.376	HSG B	DA-13
22.644	HSG C	DA-14, DA-15, DA-17, DA-6, DA-7, DA-9N, DA-9P, DA-9R, DA-9S
19.377	HSG D	DA-14, DA-15, DA-16, DA-17, DA-9N, DA-9R
0.000	Other	
139.488		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.066	2.177	1.132	0.452	0.000	4.827	>75% Grass cover, Good	DA-13, DA-17, DA-6, DA-7, DA-9P, DA-9S
0.210	2.239	1.068	0.000	0.000	3.517	Dirt roads	DA-13, DA-7, DA-9R
0.142	0.000	7.506	0.000	0.000	7.649	Gravel surface	DA-6, DA-8A, DA-9P, DA-9R
68.165	0.000	0.000	0.000	0.000	68.165	Newly graded area	DA-8, DA-8A
0.000	1.380	0.154	0.000	0.000	1.535	Paved parking	DA-13, DA-9P, DA-9S
0.053	0.000	0.000	0.000	0.000	0.053	Water Surface	DA-8A
5.037	16.580	12.783	18.925	0.000	53.326	Woods, Fair	DA-13, DA-14, DA-15, DA-16, DA-17, DA-6, DA-7, DA-8A, DA-9N, DA-9R
0.418	0.000	0.000	0.000	0.000	0.418	Woods/grass comb., Fair	DA-18
75.090	**22.376**	**22.644**	**19.377**	**0.000**	**139.488**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1R	1,618.00	1,612.00	65.0	0.0923	0.013	0.0	24.0	0.0	
2	4P	1,632.00	1,630.50	65.0	0.0231	0.025	0.0	18.0	0.0	
3	11P	1,893.00	1,891.00	75.0	0.0267	0.013	0.0	21.0	0.0	
4	20P	1,608.00	1,606.00	45.0	0.0444	0.013	0.0	20.0	0.0	

Time span=0.00-60.00 hrs, dt=0.04 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA-13: DA-13 Runoff Area=1,122,333 sf 5.36% Impervious Runoff Depth=0.85"
Flow Length=2,100' Tc=2.7 min CN=61 Runoff=40.73 cfs 1.832 af

Subcatchment DA-14: Subcat DA-14 Runoff Area=211,658 sf 0.00% Impervious Runoff Depth=1.73"
Flow Length=944' Tc=25.5 min CN=75 Runoff=7.90 cfs 0.699 af

Subcatchment DA-15: DA-15 Runoff Area=66,156 sf 0.00% Impervious Runoff Depth=1.73"
Flow Length=789' Tc=14.8 min CN=75 Runoff=3.38 cfs 0.219 af

Subcatchment DA-16: DA-16 Runoff Area=561,386 sf 0.00% Impervious Runoff Depth=2.03"
Flow Length=686' Tc=32.3 min CN=79 Runoff=21.42 cfs 2.179 af

Subcatchment DA-17: DA-17 Runoff Area=199,793 sf 0.00% Impervious Runoff Depth=1.38"
Flow Length=1,066' Tc=12.4 min CN=70 Runoff=8.70 cfs 0.529 af

Subcatchment DA-18: DA-18 Runoff Area=18,196 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=212' Tc=13.3 min CN=43 Runoff=0.01 cfs 0.005 af

Subcatchment DA-6: DA-6 Runoff Area=7.470 ac 0.00% Impervious Runoff Depth=3.30"
Flow Length=824' Tc=7.6 min CN=93 Runoff=37.98 cfs 2.053 af

Subcatchment DA-7: DA-7 Runoff Area=7.256 ac 0.00% Impervious Runoff Depth=1.08"
Flow Length=523' Tc=17.6 min CN=65 Runoff=8.44 cfs 0.650 af

Subcatchment DA-8: DA-8 - Pit Runoff Area=2,958,604 sf 0.00% Impervious Runoff Depth=1.87"
Flow Length=1,885' Tc=10.0 min CN=77 Runoff=194.18 cfs 10.611 af

Subcatchment DA-8A: DA-8A Runoff Area=28,424 sf 8.08% Impervious Runoff Depth=1.32"
Flow Length=137' Tc=1.1 min CN=69 Runoff=1.78 cfs 0.072 af

Subcatchment DA-9N: Subcat DA-9 Runoff Area=88,956 sf 0.00% Impervious Runoff Depth=1.66"
Flow Length=464' Tc=14.0 min CN=74 Runoff=4.45 cfs 0.282 af

Subcatchment DA-9P: Subcat DA-9 Runoff Area=10,890 sf 25.77% Impervious Runoff Depth=2.62"
Flow Length=1,938' Tc=6.9 min CN=86 Runoff=1.09 cfs 0.055 af

Subcatchment DA-9R: Subcat DA-9 To Runoff Area=161,286 sf 0.00% Impervious Runoff Depth=2.53"
Flow Length=1,938' Tc=6.9 min CN=85 Runoff=15.70 cfs 0.780 af

Subcatchment DA-9S: Subcat DA-9 Runoff Area=6,969 sf 56.25% Impervious Runoff Depth=2.71"
Flow Length=1,938' Tc=6.9 min CN=87 Runoff=0.72 cfs 0.036 af

Reach 1R: 24" HDPE Avg. Flow Depth=0.30' Max Vel=11.41 fps Inflow=3.44 cfs 1.044 af
24.0" Round Pipe n=0.013 L=65.0' S=0.0923 '/' Capacity=68.73 cfs Outflow=3.45 cfs 1.044 af

Reach 2R: Channel Avg. Flow Depth=0.61' Max Vel=10.13 fps Inflow=15.70 cfs 0.780 af
n=0.025 L=1,418.0' S=0.0994 '/' Capacity=91.93 cfs Outflow=14.91 cfs 0.780 af

Reach 20R: Southeast Ditch Avg. Flow Depth=0.46' Max Vel=3.12 fps Inflow=3.44 cfs 1.044 af
n=0.069 L=100.0' S=0.1000 '/' Capacity=40.35 cfs Outflow=3.44 cfs 1.044 af

Reach 22R: Southwest Ditch Avg. Flow Depth=0.21' Max Vel=2.23 fps Inflow=0.72 cfs 0.036 af
n=0.069 L=314.0' S=0.1274 '/' Capacity=15.45 cfs Outflow=0.68 cfs 0.036 af

Pond 4P: Hudson Pond Peak Elev=1,637.28' Storage=0.531 af Inflow=18.81 cfs 1.062 af
Primary=3.32 cfs 0.989 af Secondary=0.00 cfs 0.000 af Outflow=3.32 cfs 0.989 af

Pond 6P: Big Crusher Pond Peak Elev=1,885.60' Storage=7,625 cf Inflow=18.98 cfs 1.826 af
Outflow=20.38 cfs 1.689 af

Pond 8P: Last Chance Pond Peak Elev=1,800.67' Storage=3,124 cf Inflow=1.78 cfs 0.072 af
Outflow=0.00 cfs 0.000 af

Pond 10P: Lower Pit Peak Elev=1,723.52' Storage=462,204 cf Inflow=194.18 cfs 10.611 af
Outflow=0.00 cfs 0.000 af

Pond 11P: Upper Crusher Pond Peak Elev=1,899.65' Storage=41,590 cf Inflow=37.98 cfs 2.053 af
Outflow=18.98 cfs 1.826 af

Pond 20P: Plunge Pool Peak Elev=1,608.98' Storage=0.002 af Inflow=3.54 cfs 1.080 af
Outflow=3.56 cfs 1.080 af

Link 002A: MSGP Outfall 002A delayed by 0.1 min before 48.00 hrs Inflow=8.44 cfs 0.650 af
Primary=8.42 cfs 0.650 af Secondary=0.00 cfs 0.000 af

Link 003A: MSGP Outfall 003A delayed by 0.1 min before 48.00 hrs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link 005A: MSGP Outfall 005A delayed by 0.1 min before 48.00 hrs Inflow=20.38 cfs 1.689 af
Primary=20.21 cfs 1.647 af Secondary=0.07 cfs 0.042 af

Link AP-4: AP-4 delayed by 0.1 min before 48.00 hrs Inflow=3.56 cfs 1.080 af
Primary=3.55 cfs 0.986 af Secondary=0.12 cfs 0.094 af

Total Runoff Area = 139.488 ac Runoff Volume = 20.001 af Average Runoff Depth = 1.72"
98.86% Pervious = 137.901 ac 1.14% Impervious = 1.587 ac

Summary for Subcatchment DA-13: DA-13

[49] Hint: Tc<2dt may require smaller dt

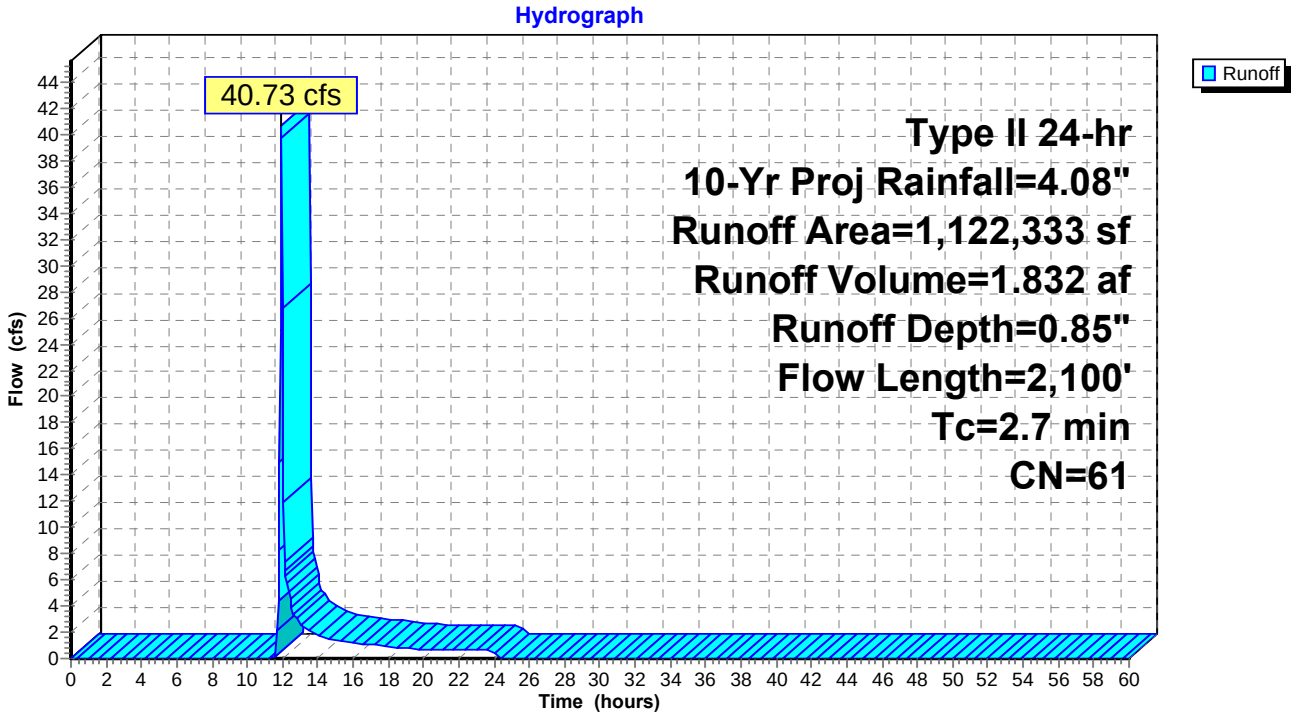
Runoff = 40.73 cfs @ 11.95 hrs, Volume= 1.832 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
60,127	98	Paved parking, HSG B
97,529	82	Dirt roads, HSG B
722,246	60	Woods, Fair, HSG B
94,817	61	>75% Grass cover, Good, HSG B
30,178	39	>75% Grass cover, Good, HSG A
117,436	36	Woods, Fair, HSG A
1,122,333	61	Weighted Average
1,062,206		94.64% Pervious Area
60,127		5.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0600	1.93		**Sheet Flow, sheet flow** Smooth surfaces n= 0.011 P2= 2.62"
1.8	2,000	0.0910	18.52	255.59	**Channel Flow,** Area= 13.8 sf Perim= 10.0' r= 1.38' n= 0.030 Earth, grassed & winding
2.7	2,100	Total			

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: Subcat DA-14

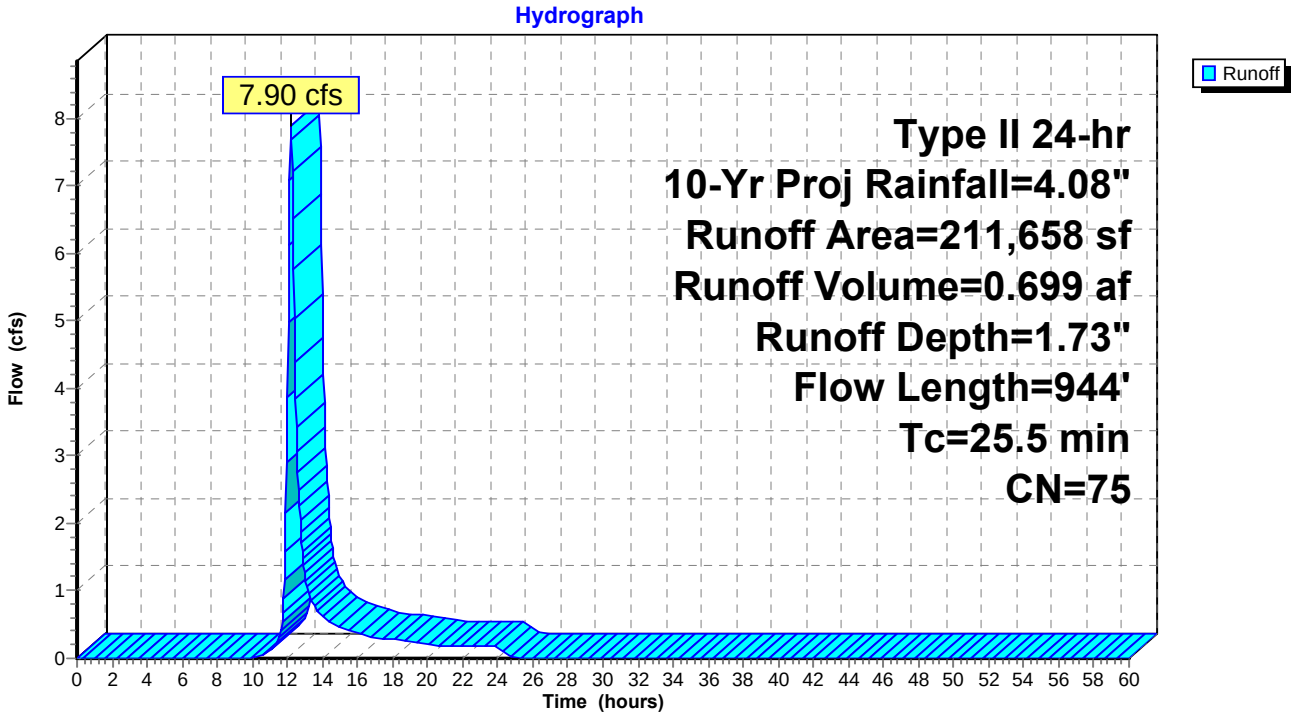
Runoff = 7.90 cfs @ 12.20 hrs, Volume= 0.699 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
127,421	73	Woods, Fair, HSG C
84,237	79	Woods, Fair, HSG D
211,658	75	Weighted Average
211,658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	100	0.1200	0.08		**Sheet Flow, sheet flow** Woods: Dense underbrush n= 0.800 P2= 2.62"
5.3	844	0.2840	2.66		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
25.5	944	Total			

Subcatchment DA-14: Subcat DA-14



Summary for Subcatchment DA-15: DA-15

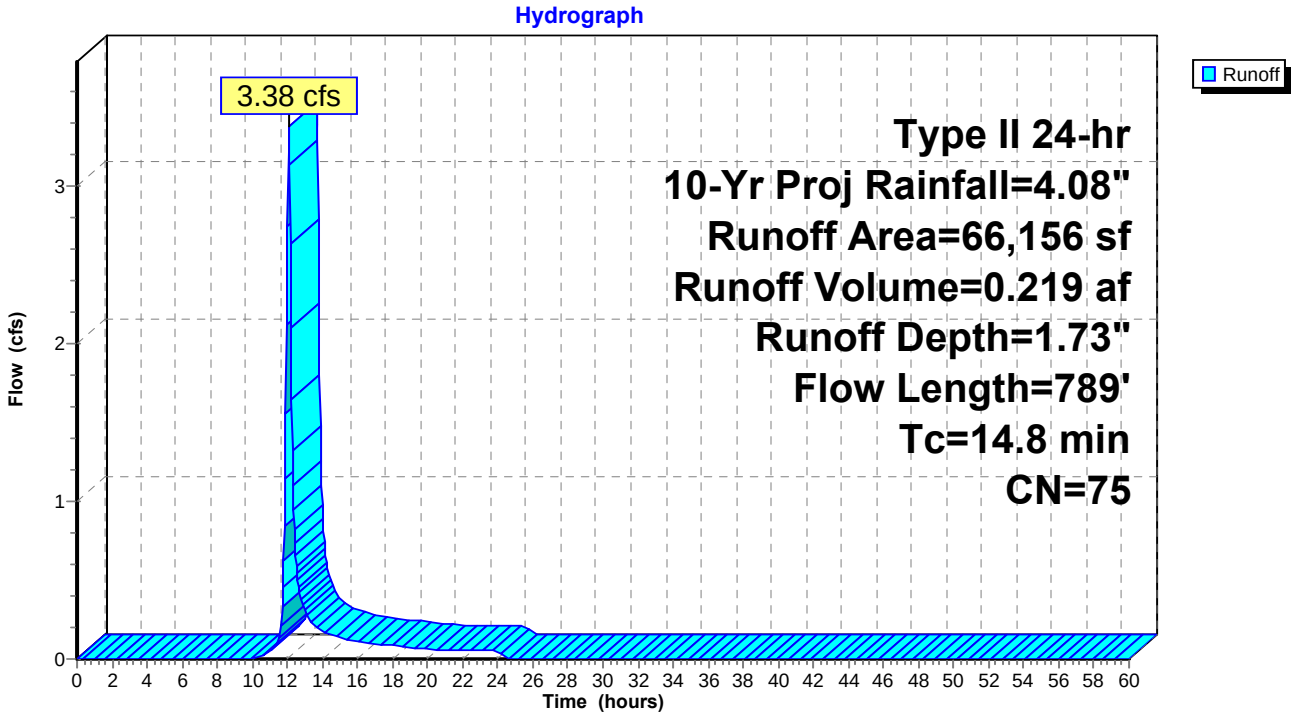
Runoff = 3.38 cfs @ 12.07 hrs, Volume= 0.219 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
41,592	73	Woods, Fair, HSG C
24,564	79	Woods, Fair, HSG D
66,156	75	Weighted Average
66,156		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.1300	0.15		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
0.3	50	0.3000	2.74		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
2.8	579	0.1140	3.45	6.22	**Channel Flow,** Area= 1.8 sf Perim= 5.5' r= 0.33' n= 0.069 Riprap, 6-inch
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	789	Total			

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

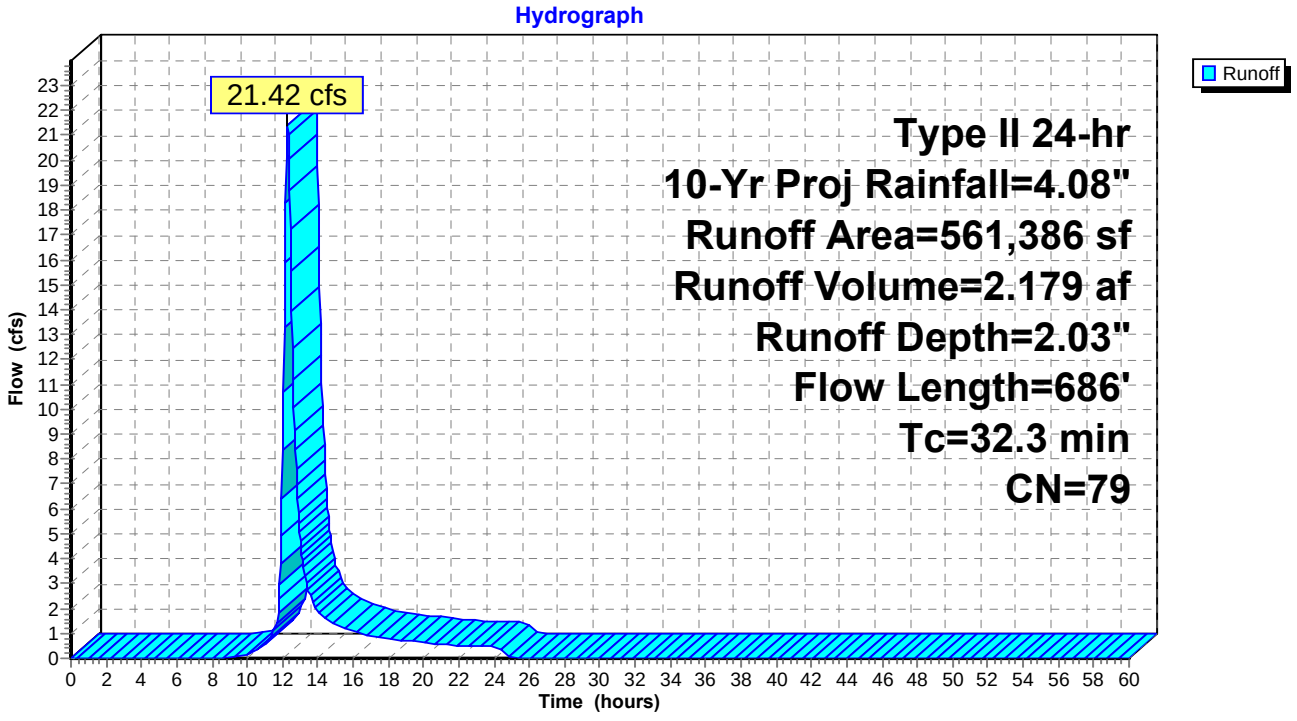
Runoff = 21.42 cfs @ 12.28 hrs, Volume= 2.179 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
561,386	79	Woods, Fair, HSG D
561,386		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	100	0.0500	0.06		**Sheet Flow, sheet flow** Woods: Dense underbrush n= 0.800 P2= 2.62"
3.7	586	0.2780	2.64		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
32.3	686	Total			

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

Good morning
Halftime

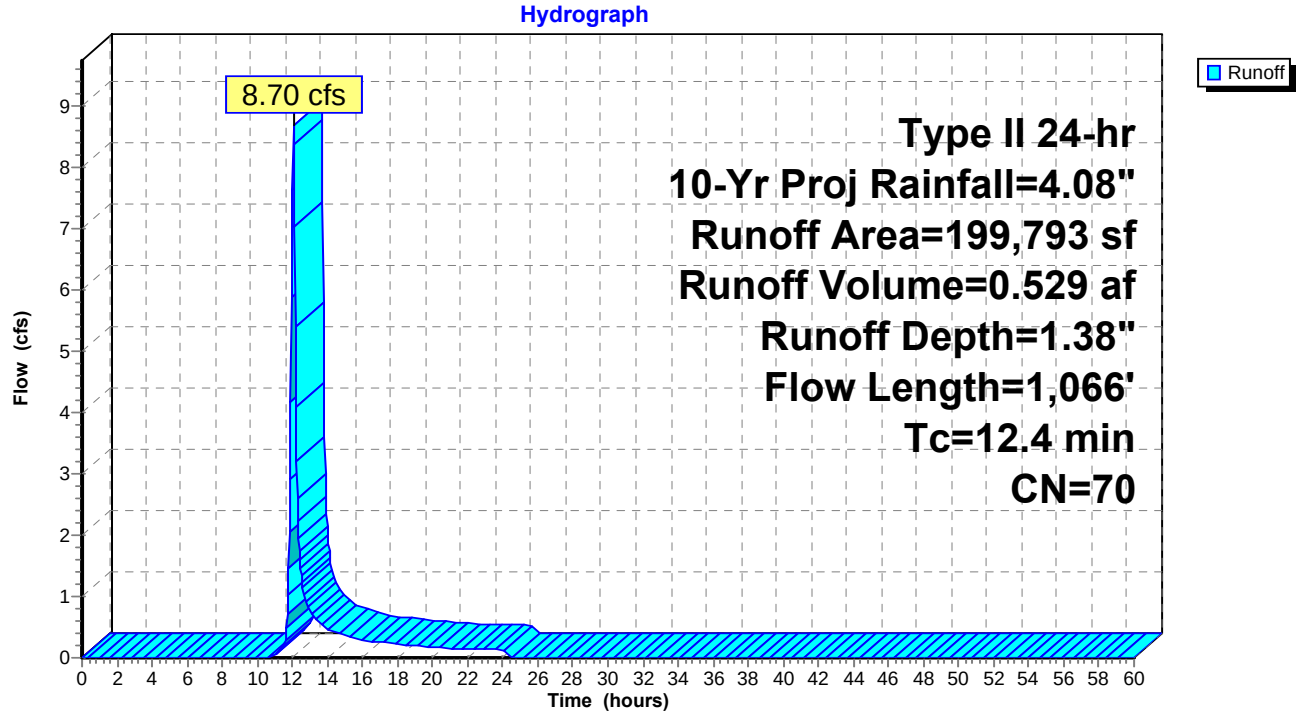
Runoff = 8.70 cfs @ 12.05 hrs, Volume= 0.529 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
34,115	36	Woods, Fair, HSG A
58,252	73	Woods, Fair, HSG C
70,641	79	Woods, Fair, HSG D
17,084	74	>75% Grass cover, Good, HSG C
19,701	80	>75% Grass cover, Good, HSG D
199,793	70	Weighted Average
199,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.2300	0.41		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 2.62"
8.3	966	0.1500	1.94		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
12.4	1,066	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

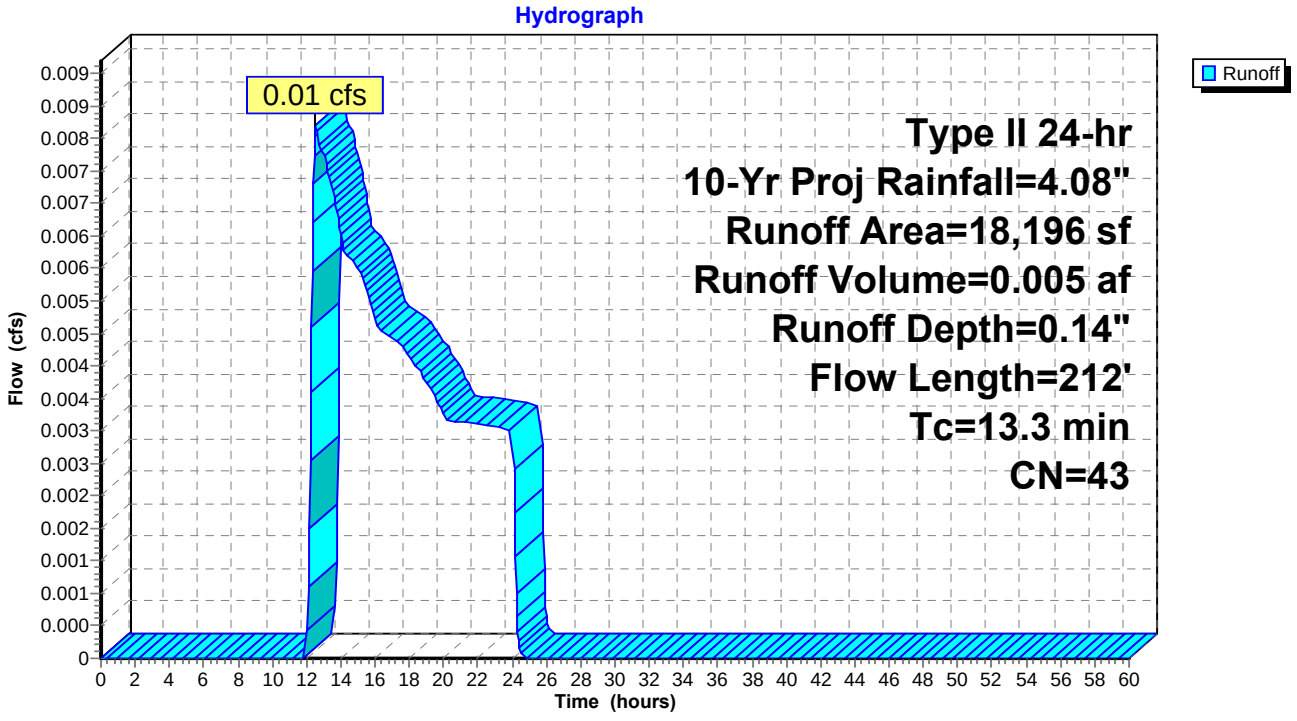
Runoff = 0.01 cfs @ 12.55 hrs, Volume= 0.005 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
18,196	43	Woods/grass comb., Fair, HSG A
18,196		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.1000	0.13		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
0.8	112	0.2200	2.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	212	Total			

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-6: DA-6

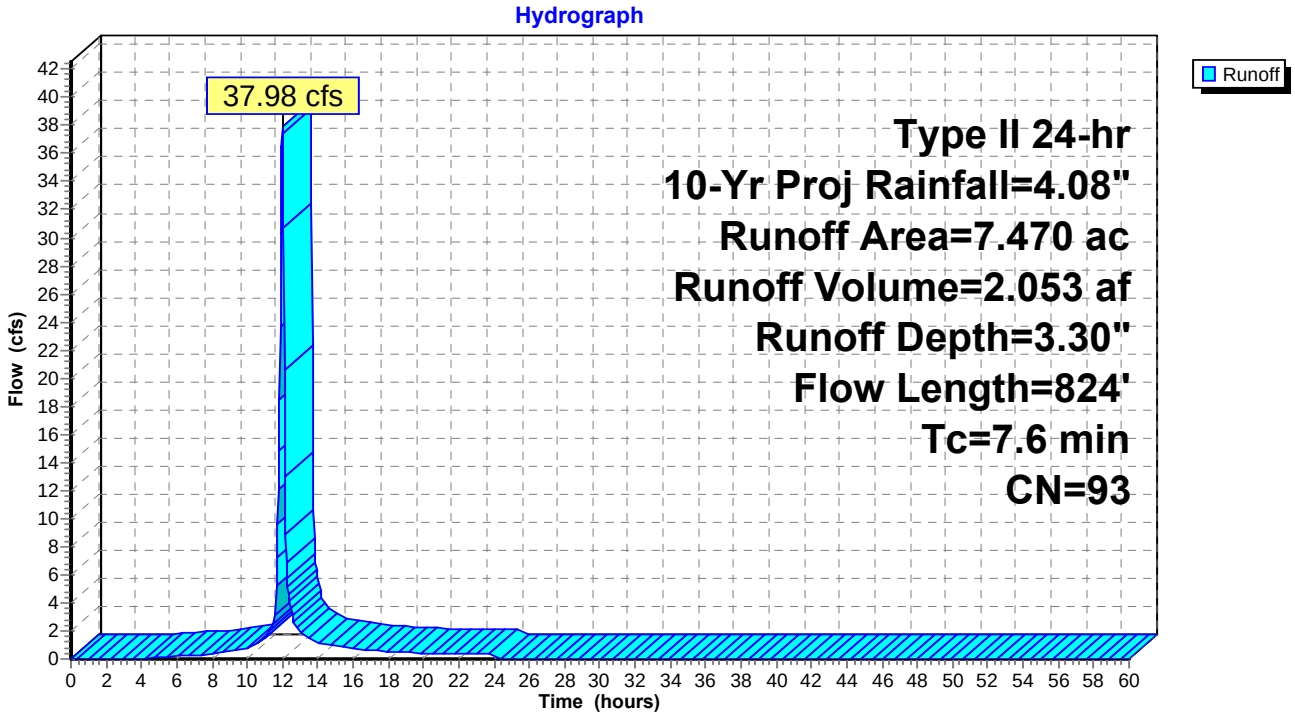
Runoff = 37.98 cfs @ 11.99 hrs, Volume= 2.053 af, Depth= 3.30"
Routed to Pond 11P : Upper Crusher Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
6.600	96	Gravel surface, HSG C
0.150	36	Woods, Fair, HSG A
0.170	73	Woods, Fair, HSG C
0.550	74	>75% Grass cover, Good, HSG C
7.470	93	Weighted Average
7.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0150	0.33		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
1.7	388	0.0570	3.84		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
0.9	336	0.1667	6.57		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.6	824	Total			

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

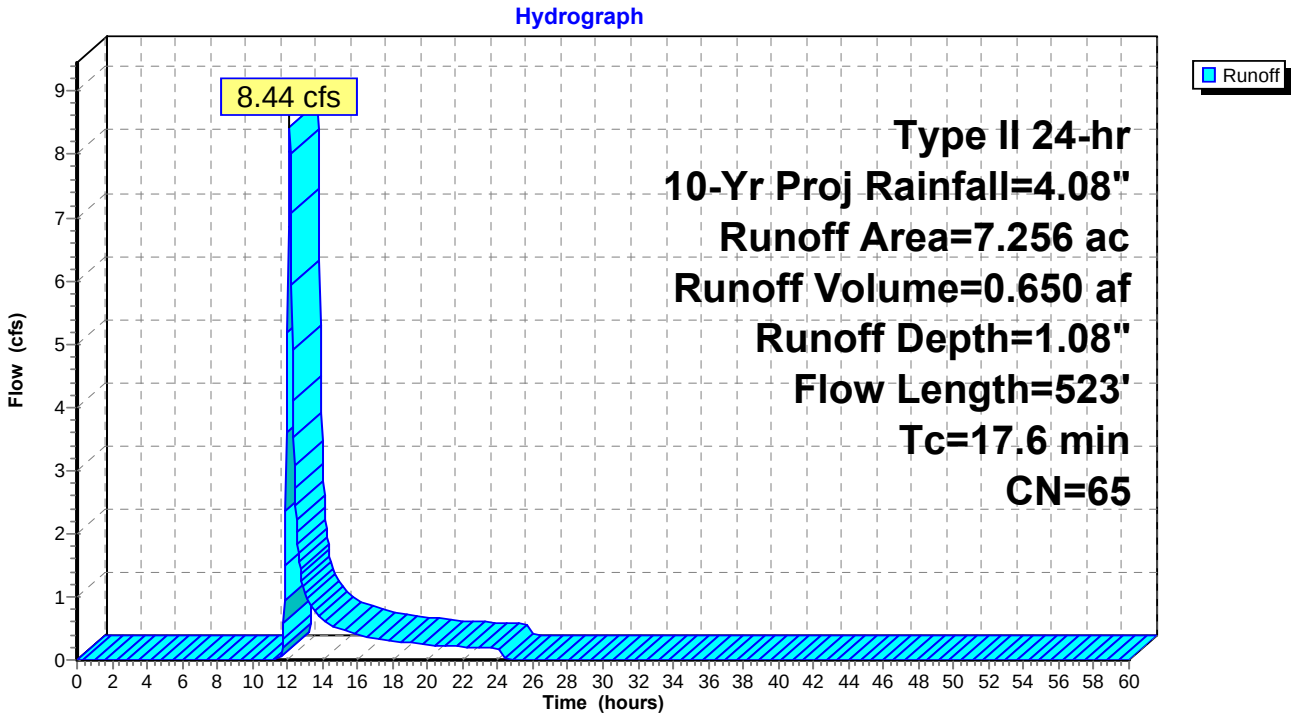
Runoff = 8.44 cfs @ 12.12 hrs, Volume= 0.650 af, Depth= 1.08"
Routed to Link 002A : MSGP Outfall 002A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (ac)	CN	Description
0.210	72	Dirt roads, HSG A
1.195	36	Woods, Fair, HSG A
5.478	73	Woods, Fair, HSG C
0.373	39	>75% Grass cover, Good, HSG A
7.256	65	Weighted Average
7.256		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0900	0.13		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
4.6	423	0.0940	1.53		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
17.6	523	Total			

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8 - Pit

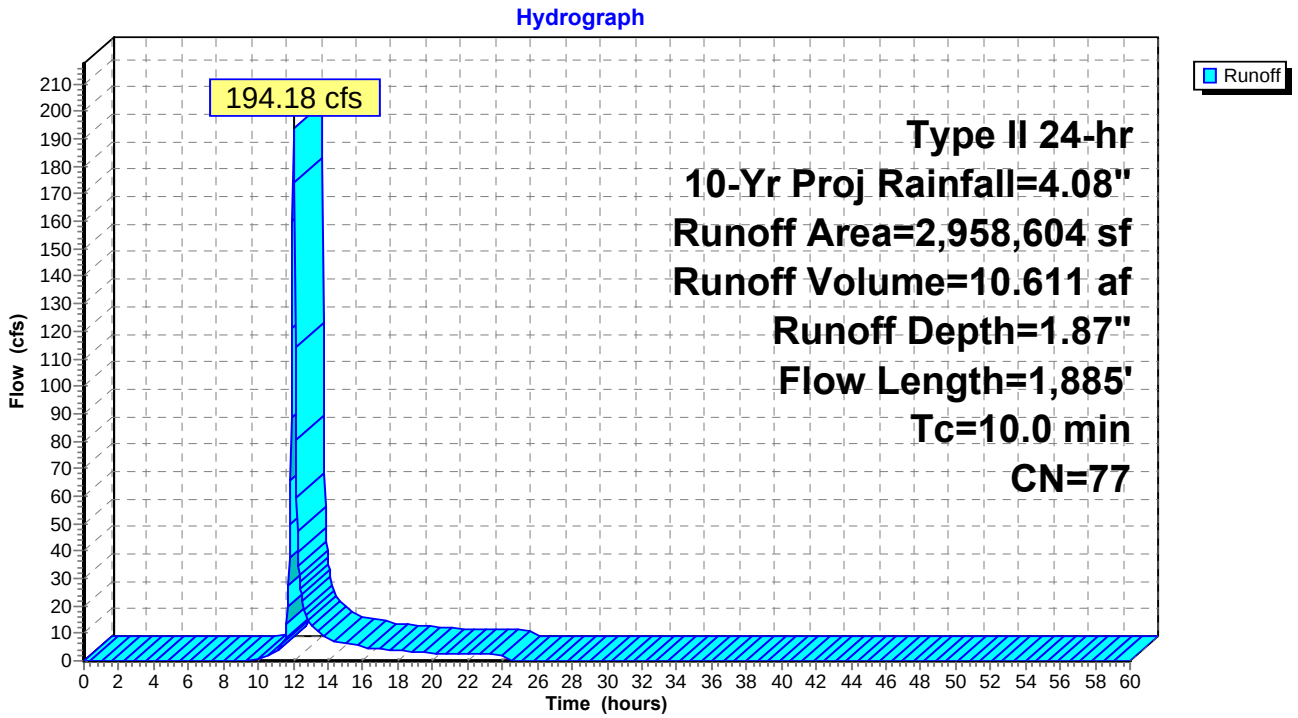
Runoff = 194.18 cfs @ 12.02 hrs, Volume= 10.611 af, Depth= 1.87"
Routed to Pond 10P : Lower Pit

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
2,958,604	77	Newly graded area, HSG A
2,958,604		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0150	0.33		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
5.0	1,785	0.1356	5.93		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
10.0	1,885	Total			

Subcatchment DA-8: DA-8 - Pit



Summary for Subcatchment DA-8A: DA-8A

[49] Hint: Tc<2dt may require smaller dt

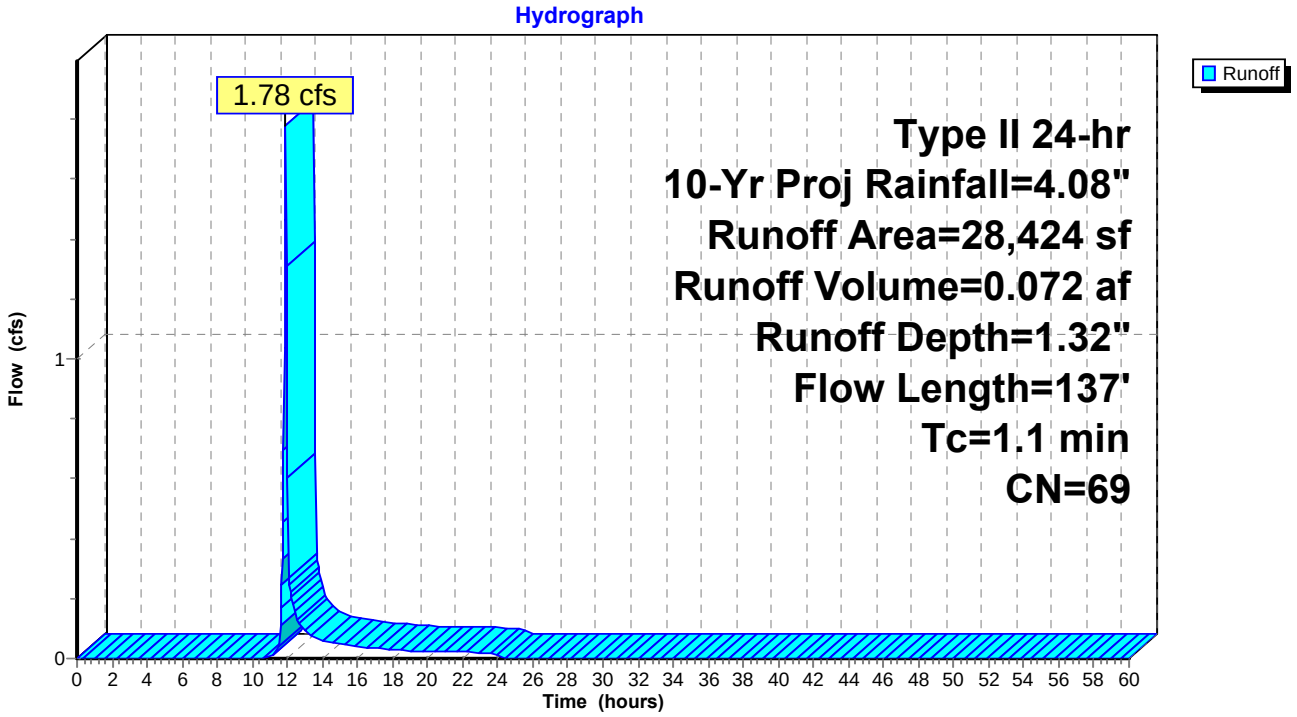
Runoff = 1.78 cfs @ 11.92 hrs, Volume= 0.072 af, Depth= 1.32"
Routed to Pond 8P : Last Chance Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
9,281	36	Woods, Fair, HSG A
6,194	96	Gravel surface, HSG A
2,297	98	Water Surface, HSG A
10,652	77	Newly graded area, HSG A
28,424	69	Weighted Average
26,127		91.92% Pervious Area
2,297		8.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.3200	0.98		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.2	87	0.0460	5.93	23.73	**Channel Flow,** Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.041 Riprap, 2-inch
1.1	137	Total			

Subcatchment DA-8A: DA-8A



Summary for Subcatchment DA-9N: Subcat DA-9 Overland to Pond

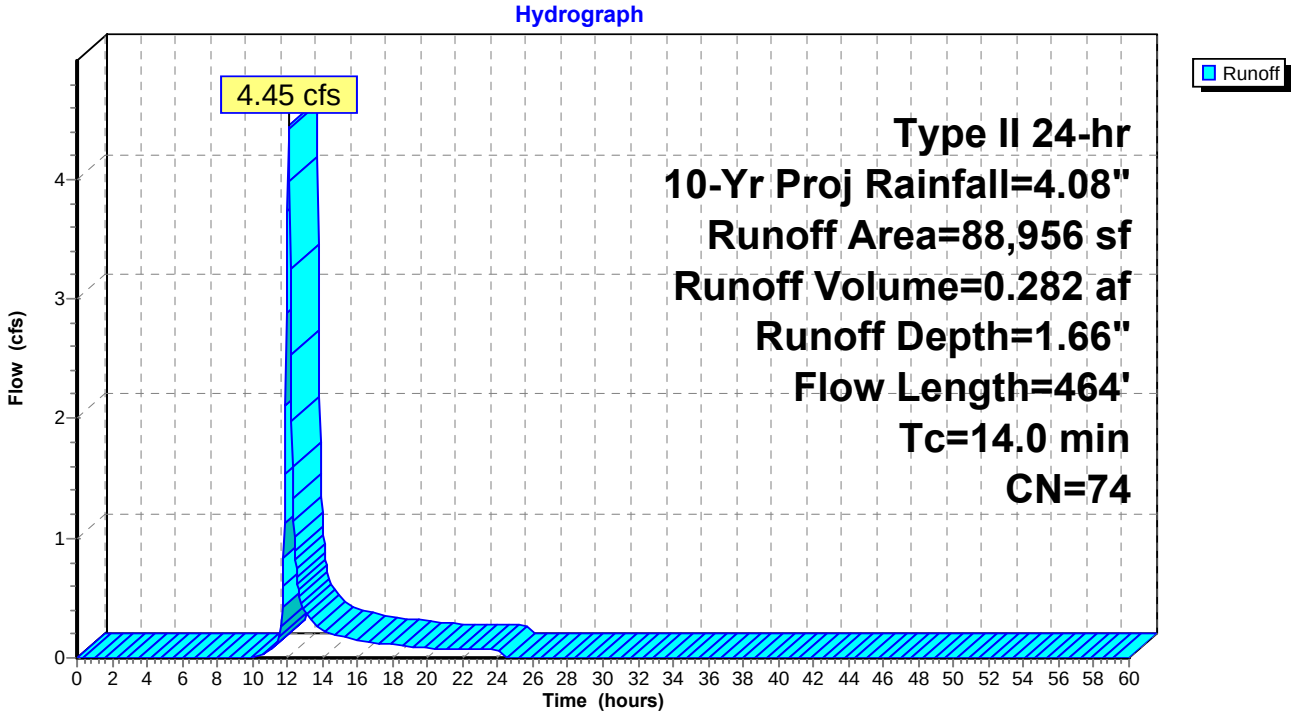
Runoff = 4.45 cfs @ 12.07 hrs, Volume= 0.282 af, Depth= 1.66"
Routed to Pond 4P : Hudson Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
67,945	73	Woods, Fair, HSG C
21,011	79	Woods, Fair, HSG D
88,956	74	Weighted Average
88,956		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.1200	0.14		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
2.4	364	0.2600	2.55		**Shallow Concentrated Flow, shallow conc. flow** Woodland Kv= 5.0 fps
14.0	464	Total			

Subcatchment DA-9N: Subcat DA-9 Overland to Pond



Summary for Subcatchment DA-9P: Subcat DA-9 Parking area

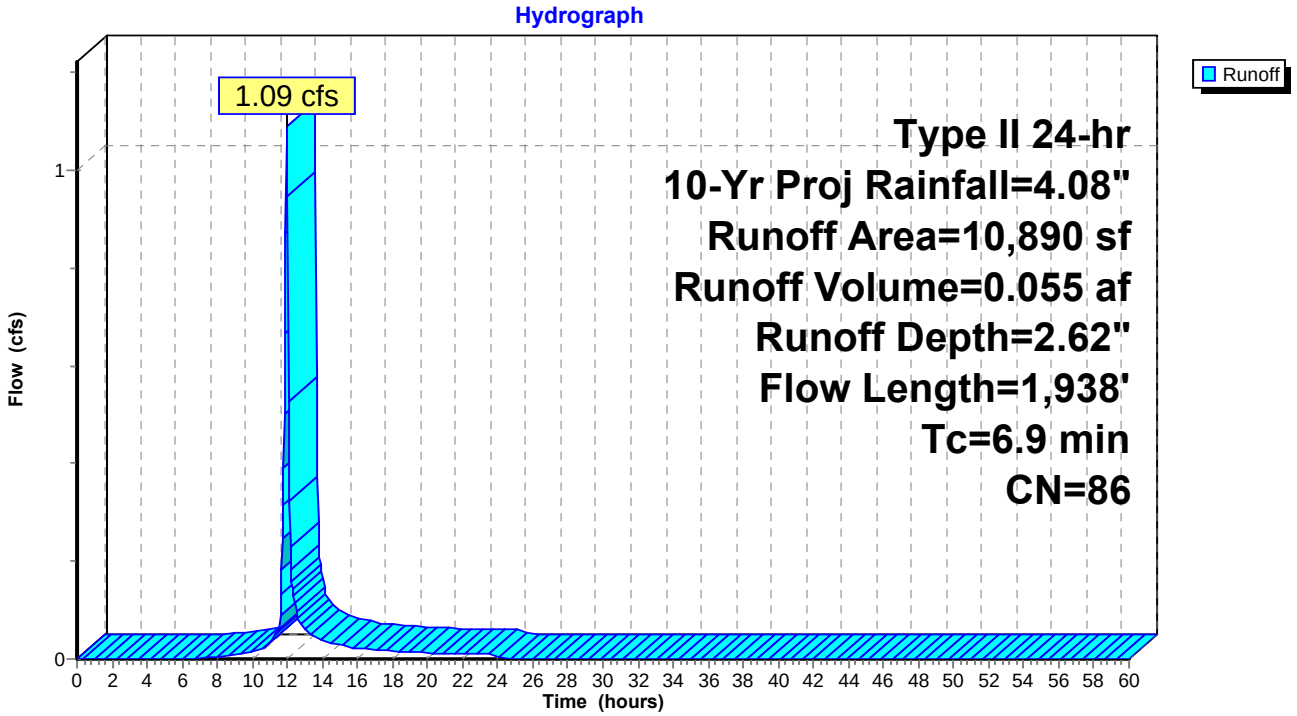
Runoff = 1.09 cfs @ 11.98 hrs, Volume= 0.055 af, Depth= 2.62"
Routed to Reach 20R : Southeast Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
5,227	74	>75% Grass cover, Good, HSG C
2,857	96	Gravel surface, HSG C
2,806	98	Paved parking, HSG C
10,890	86	Weighted Average
8,084		74.23% Pervious Area
2,806		25.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9P: Subcat DA-9 Parking area



Summary for Subcatchment DA-9R: Subcat DA-9 To Roadside Ditch

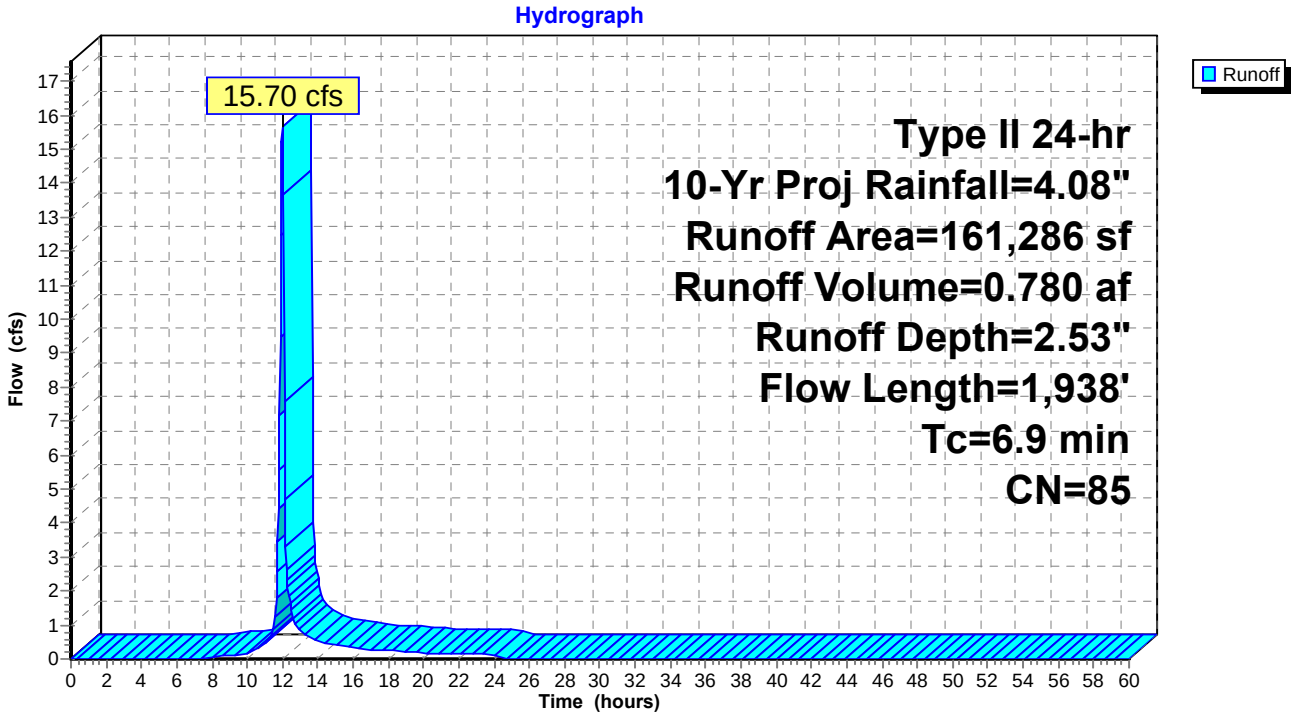
Runoff = 15.70 cfs @ 11.98 hrs, Volume= 0.780 af, Depth= 2.53"
Routed to Reach 2R : Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
15,603	73	Woods, Fair, HSG C
62,537	79	Woods, Fair, HSG D
36,629	96	Gravel surface, HSG C
46,517	87	Dirt roads, HSG C
161,286	85	Weighted Average
161,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9R: Subcat DA-9 To Roadside Ditch



Summary for Subcatchment DA-9S: Subcat DA-9 Southwest Side of road

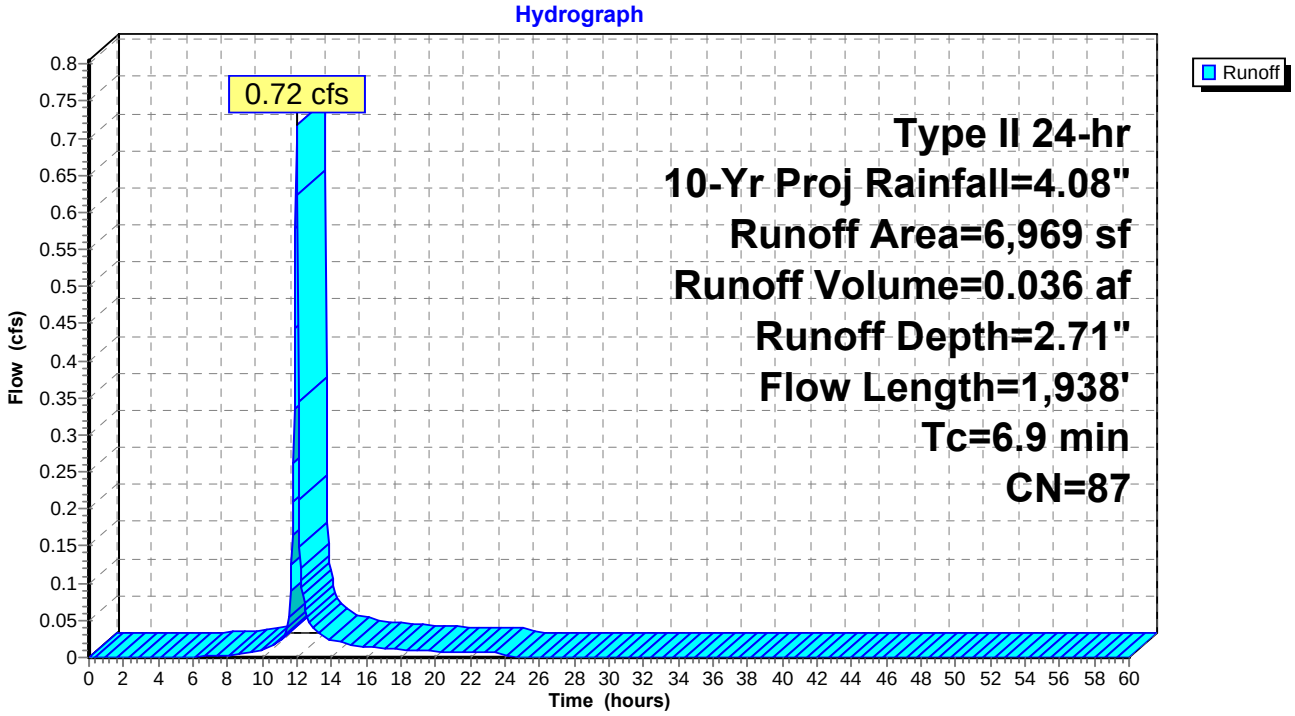
Runoff = 0.72 cfs @ 11.98 hrs, Volume= 0.036 af, Depth= 2.71"
Routed to Reach 22R : Southwest Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Yr Proj Rainfall=4.08"

Area (sf)	CN	Description
3,049	74	>75% Grass cover, Good, HSG C
3,920	98	Paved parking, HSG C
6,969	87	Weighted Average
3,049		43.75% Pervious Area
3,920		56.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9S: Subcat DA-9 Southwest Side of road



Summary for Reach 1R: 24" HDPE

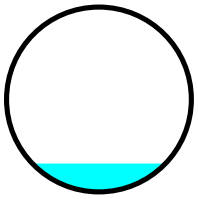
[52] Hint: Inlet/Outlet conditions not evaluated
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 5.995 ac, 1.07% Impervious, Inflow Depth > 2.09" for 10-Yr Proj event
Inflow = 3.44 cfs @ 12.34 hrs, Volume= 1.044 af
Outflow = 3.45 cfs @ 12.35 hrs, Volume= 1.044 af, Atten= 0%, Lag= 0.2 min
Routed to Pond 20P : Plunge Pool

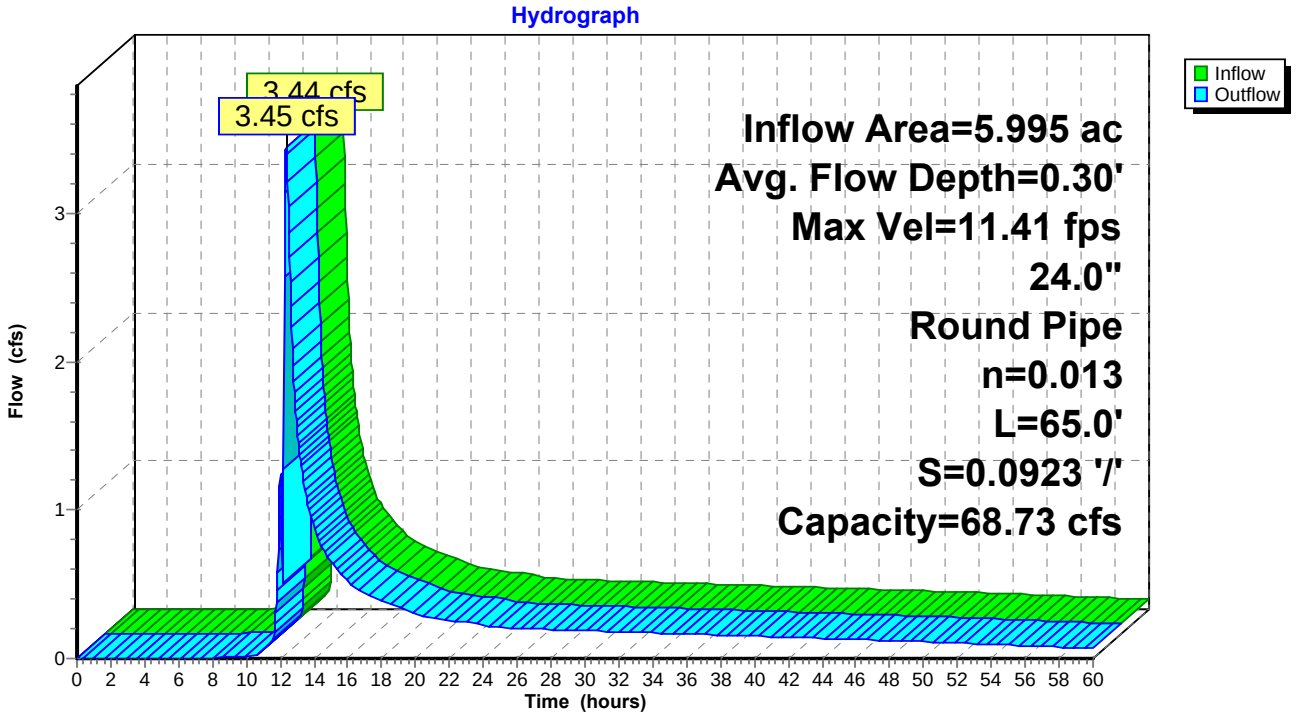
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 11.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 0.2 min

Peak Storage= 20 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 1.44'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 68.73 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 65.0' Slope= 0.0923 '/'
Inlet Invert= 1,618.00', Outlet Invert= 1,612.00'



Reach 1R: 24" HDPE



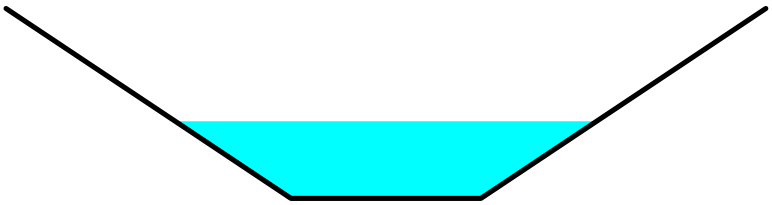
Summary for Reach 2R: Channel

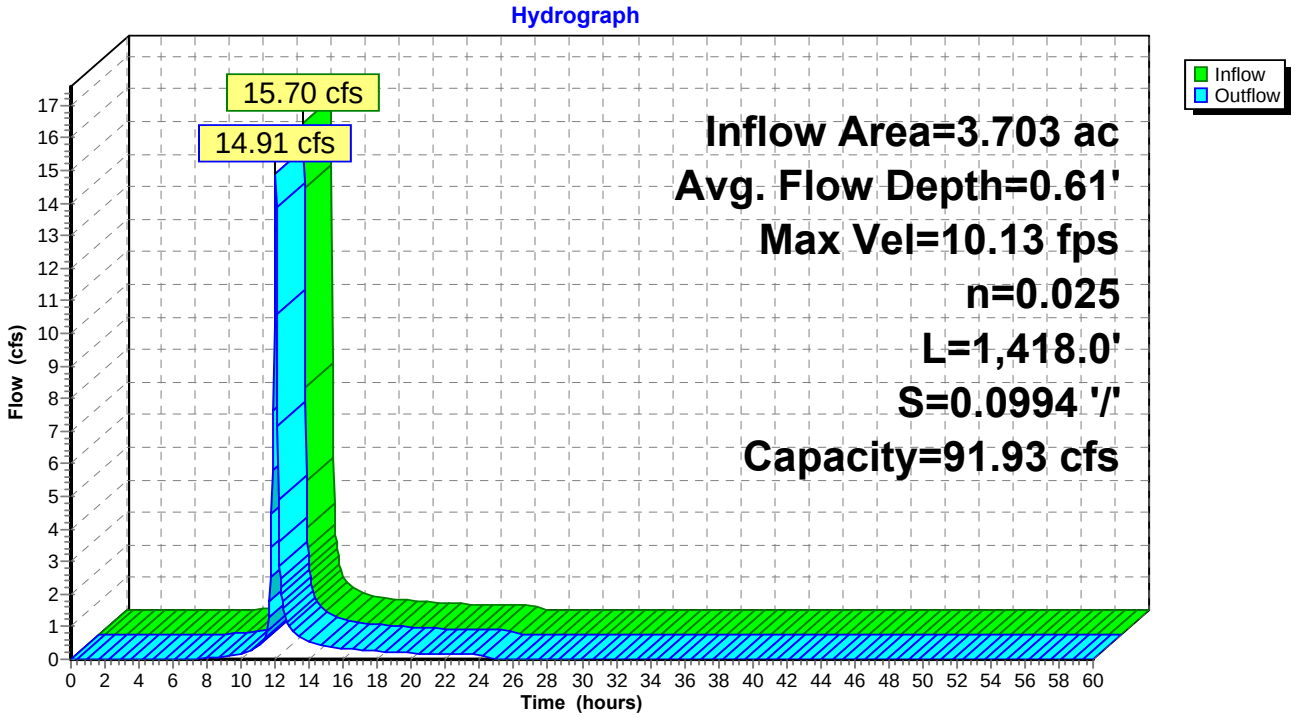
Inflow Area = 3.703 ac, 0.00% Impervious, Inflow Depth = 2.53" for 10-Yr Proj event
Inflow = 15.70 cfs @ 11.98 hrs, Volume= 0.780 af
Outflow = 14.91 cfs @ 12.01 hrs, Volume= 0.780 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 4P : Hudson Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 10.13 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 9.0 min

Peak Storage= 2,085 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 3.33'
Bank-Full Depth= 1.50' Flow Area= 5.6 sf, Capacity= 91.93 cfs

1.50' x 1.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.5 '/' Top Width= 6.00'
Length= 1,418.0' Slope= 0.0994 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,659.00'





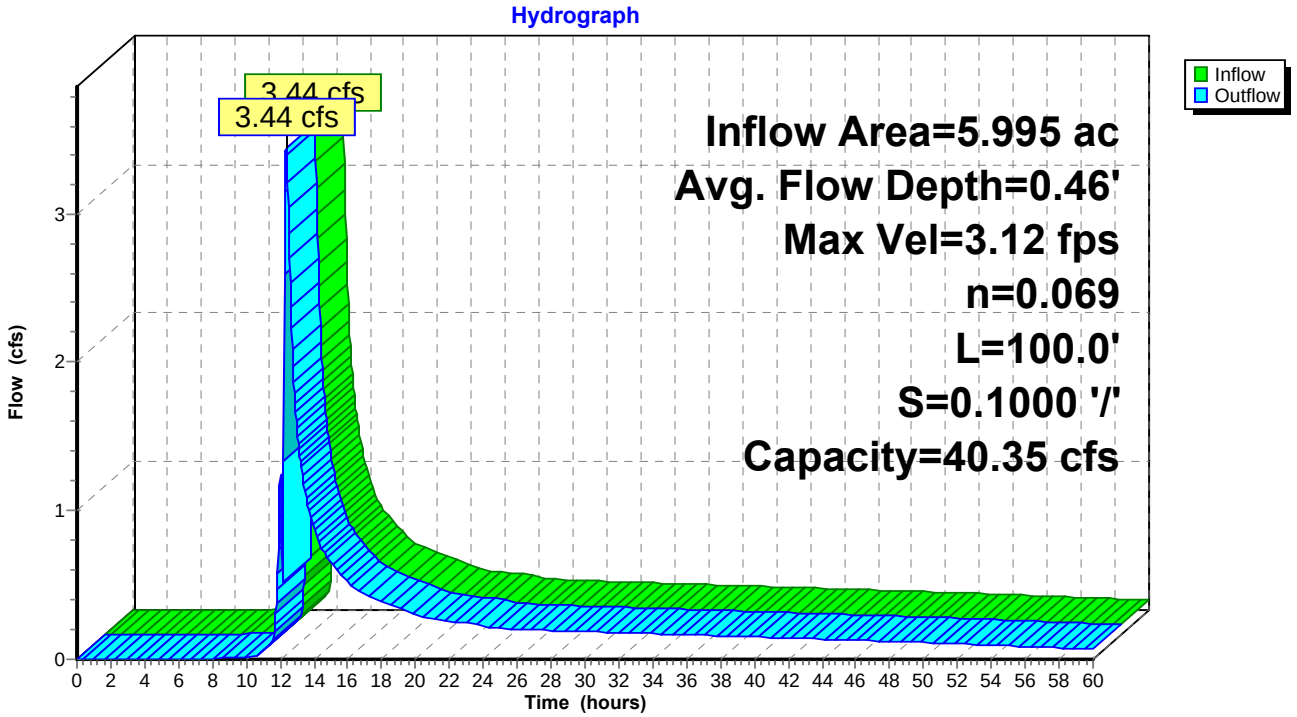
Summary for Reach 20R: Southeast Ditch

Inflow Area = 5.995 ac, 1.07% Impervious, Inflow Depth > 2.09" for 10-Yr Proj event
Inflow = 3.44 cfs @ 12.34 hrs, Volume= 1.044 af
Outflow = 3.44 cfs @ 12.34 hrs, Volume= 1.044 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 1R : 24" HDPE

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 1.4 min

Peak Storage= 110 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 3.33'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 40.35 cfs

1.50' x 1.50' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 100.0' Slope= 0.1000 '/'
Inlet Invert= 1,629.00', Outlet Invert= 1,619.00'



Summary for Reach 22R: Southwest Ditch

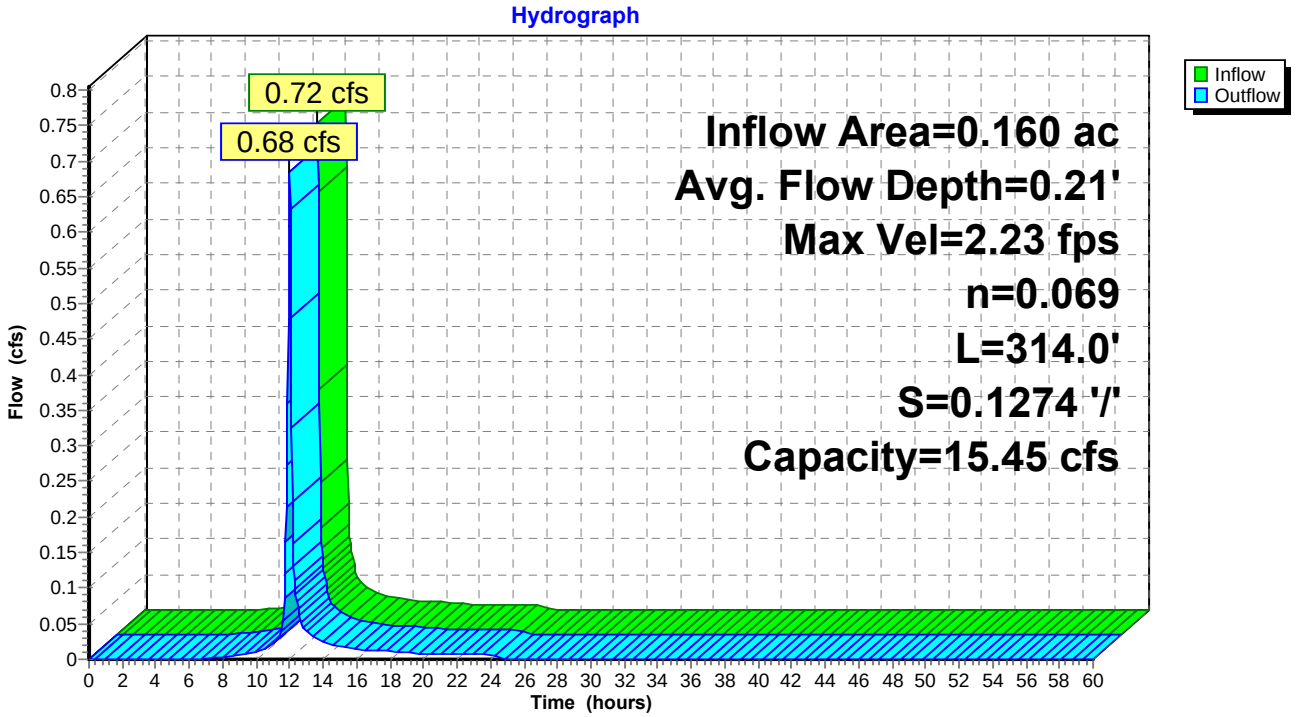
Inflow Area = 0.160 ac, 56.25% Impervious, Inflow Depth = 2.71" for 10-Yr Proj event
Inflow = 0.72 cfs @ 11.98 hrs, Volume= 0.036 af
Outflow = 0.68 cfs @ 12.00 hrs, Volume= 0.036 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 20P : Plunge Pool

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 9.1 min

Peak Storage= 96 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 1.86'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 15.45 cfs

1.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 5.00'
Length= 314.0' Slope= 0.1274 '/'
Inlet Invert= 1,652.00', Outlet Invert= 1,612.00'

Reach 22R: Southwest Ditch



Summary for Pond 4P: Hudson Pond

Inflow Area = 5.745 ac, 0.00% Impervious, Inflow Depth = 2.22" for 10-Yr Proj event
Inflow = 18.81 cfs @ 12.01 hrs, Volume= 1.062 af
Outflow = 3.32 cfs @ 12.34 hrs, Volume= 0.989 af, Atten= 82%, Lag= 19.8 min
Primary = 3.32 cfs @ 12.34 hrs, Volume= 0.989 af
Routed to Reach 20R : Southeast Ditch
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 20R : Southeast Ditch

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,637.28' @ 12.34 hrs Surf.Area= 0.148 ac Storage= 0.531 af

Plug-Flow detention time= 744.3 min calculated for 0.989 af (93% of inflow)
Center-of-Mass det. time= 706.6 min (1,534.2 - 827.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,632.00'	0.808 af	**Custom Stage Data (Prismatic)**Listed below

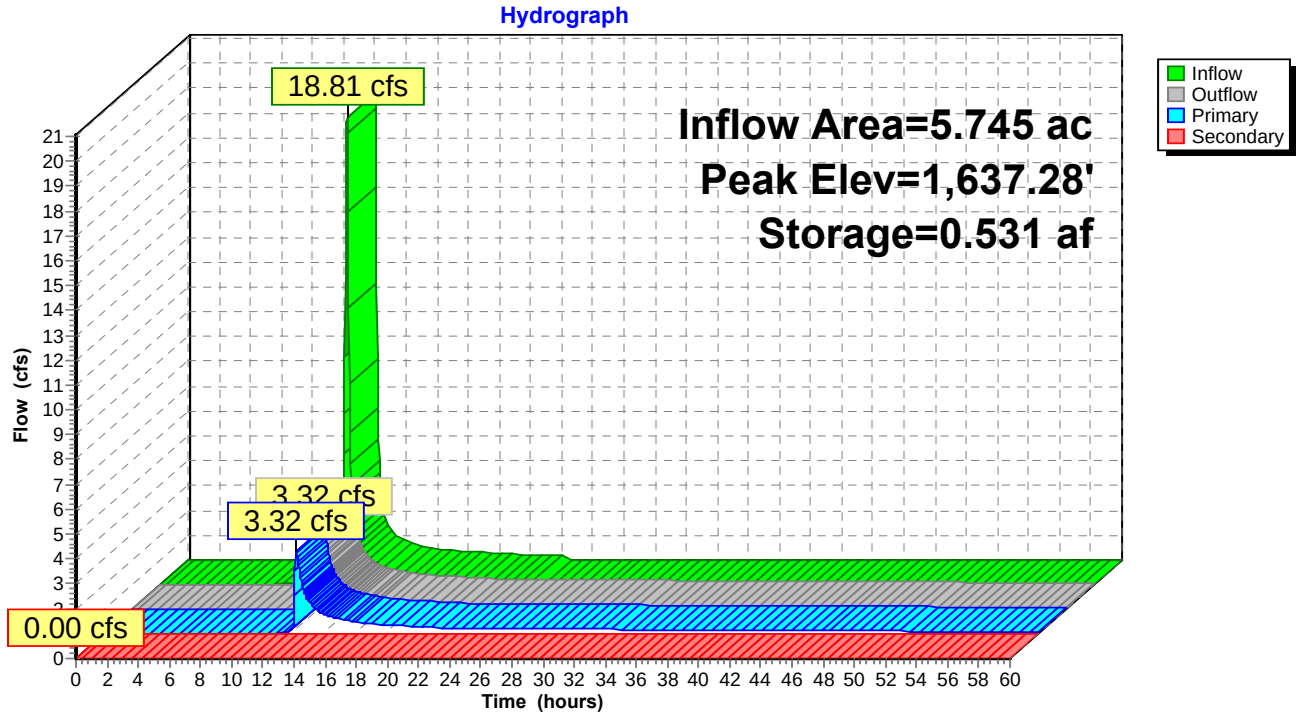
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,632.00	0.029	0.000	0.000
1,632.99	0.037	0.033	0.033
1,633.00	0.085	0.001	0.033
1,634.00	0.099	0.092	0.125
1,637.00	0.143	0.363	0.488
1,638.00	0.160	0.151	0.640
1,639.00	0.176	0.168	0.808

Device	Routing	Invert	Outlet Devices
#1	Primary	1,632.00'	**18.0" Round Culvert** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,632.00' / 1,630.50' S= 0.0231 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,633.00'	**1.0" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,637.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,638.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.29 cfs @ 12.34 hrs HW=1,637.28' (Free Discharge)
└**1=Culvert** (Passes 3.29 cfs of 13.42 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 9.91 fps)
└**3=Orifice/Grate** (Weir Controls 3.07 cfs @ 1.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,632.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Hudson Pond



Summary for Pond 6P: Big Crusher Pond

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth > 2.93" for 10-Yr Proj event
Inflow = 18.98 cfs @ 12.09 hrs, Volume= 1.826 af
Outflow = 20.38 cfs @ 12.13 hrs, Volume= 1.689 af, Atten= 0%, Lag= 2.6 min
Primary = 20.38 cfs @ 12.13 hrs, Volume= 1.689 af
Routed to Link 005A : MSGP Outfall 005A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,885.60' @ 12.12 hrs Surf.Area= 3,094 sf Storage= 7,625 cf

Plug-Flow detention time= 168.4 min calculated for 1.688 af (92% of inflow)
Center-of-Mass det. time= 42.7 min (1,239.6 - 1,196.9)

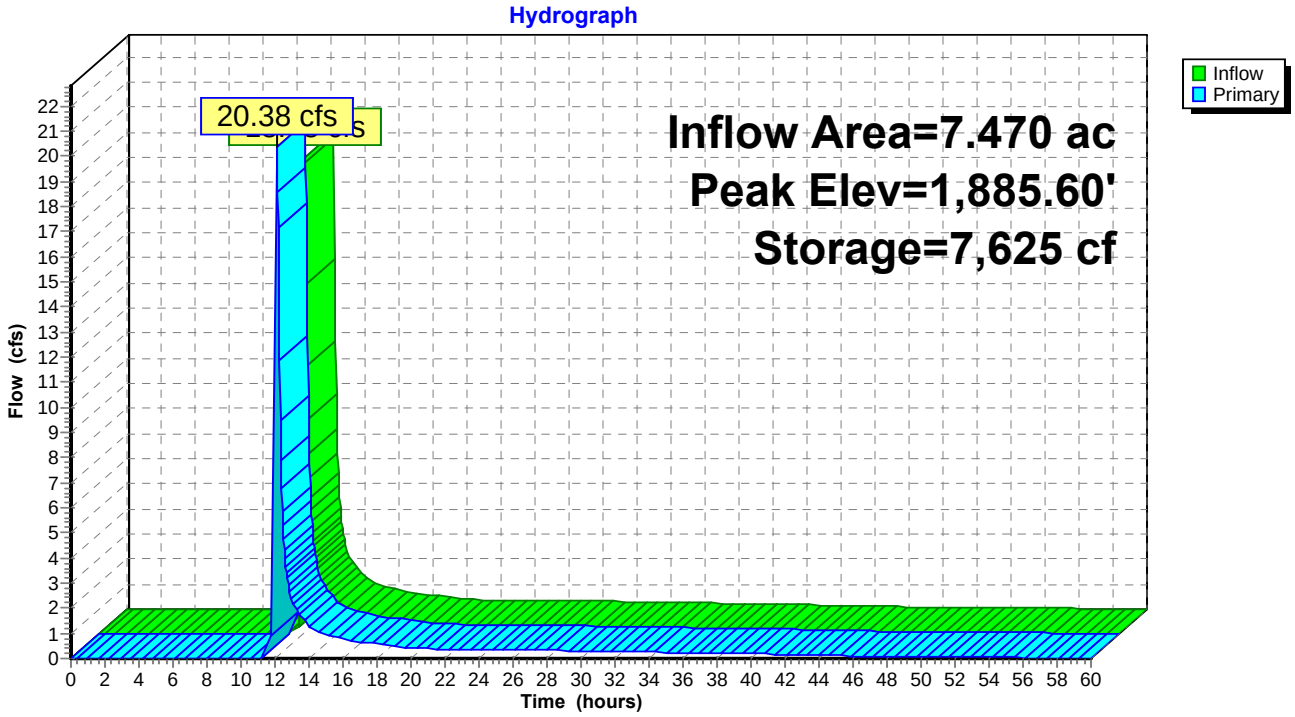
Volume	Invert	Avail.Storage	Storage Description
#1	1,882.00'	12,393 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,882.00	991	185.0	0	0	991
1,884.00	2,286	243.0	3,188	3,188	3,012
1,886.00	3,298	269.0	5,553	8,741	4,189
1,887.00	4,017	308.0	3,652	12,393	6,003

Device	Routing	Invert	Outlet Devices
#1	Primary	1,885.00'	**15.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=19.44 cfs @ 12.13 hrs HW=1,885.59' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 19.44 cfs @ 2.04 fps)

Pond 6P: Big Crusher Pond



Summary for Pond 8P: Last Chance Pond

Inflow Area = 0.653 ac, 8.08% Impervious, Inflow Depth = 1.32" for 10-Yr Proj event
Inflow = 1.78 cfs @ 11.92 hrs, Volume= 0.072 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 003A : MSGP Outfall 003A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,800.67' @ 24.12 hrs Surf.Area= 1,839 sf Storage= 3,124 cf

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

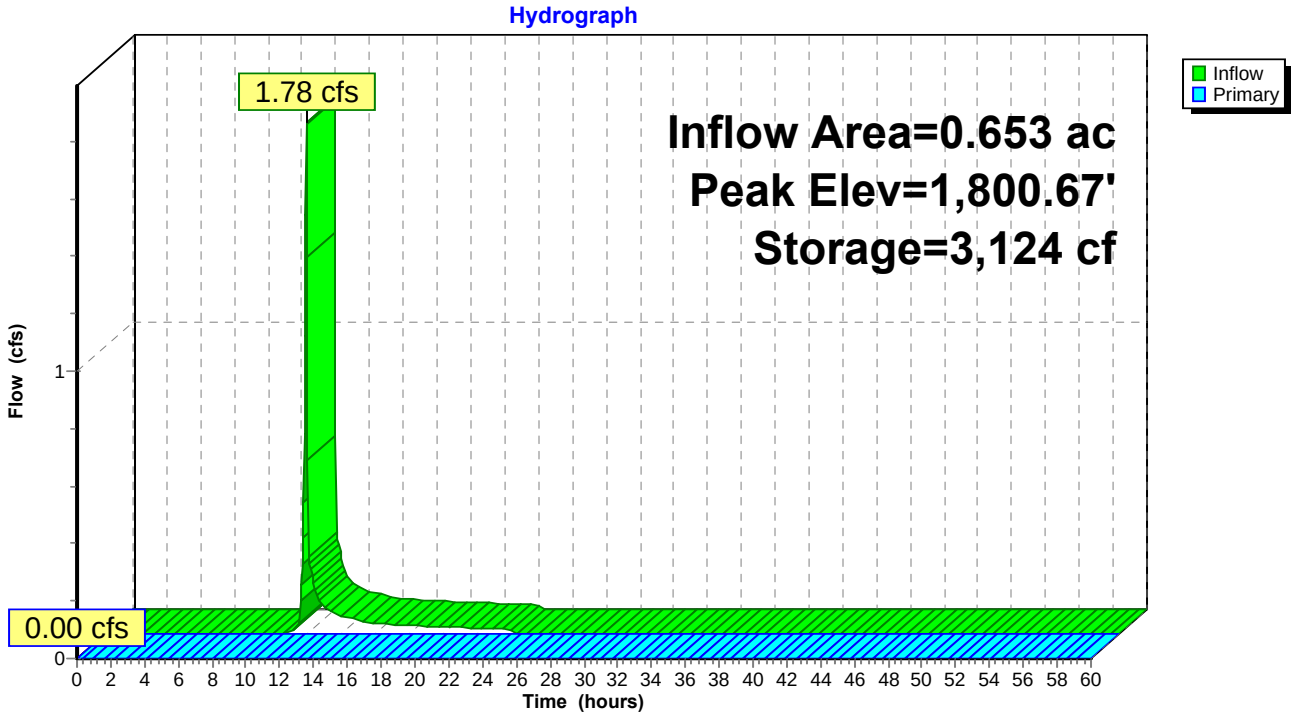
Volume	Invert	Avail.Storage	Storage Description
#1	1,798.00'	12,518 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,798.00	443	139.0	0	0	443
1,800.00	1,426	186.0	1,776	1,776	1,701
1,802.00	2,658	224.0	4,021	5,796	3,007
1,804.00	4,117	261.0	6,722	12,518	4,515

Device	Routing	Invert	Outlet Devices
#1	Primary	1,802.50'	**30.0' long + 2.0 '/' SideZ x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,798.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 8P: Last Chance Pond



Summary for Pond 10P: Lower Pit

Inflow Area = 67.920 ac, 0.00% Impervious, Inflow Depth = 1.87" for 10-Yr Proj event
Inflow = 194.18 cfs @ 12.02 hrs, Volume= 10.611 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

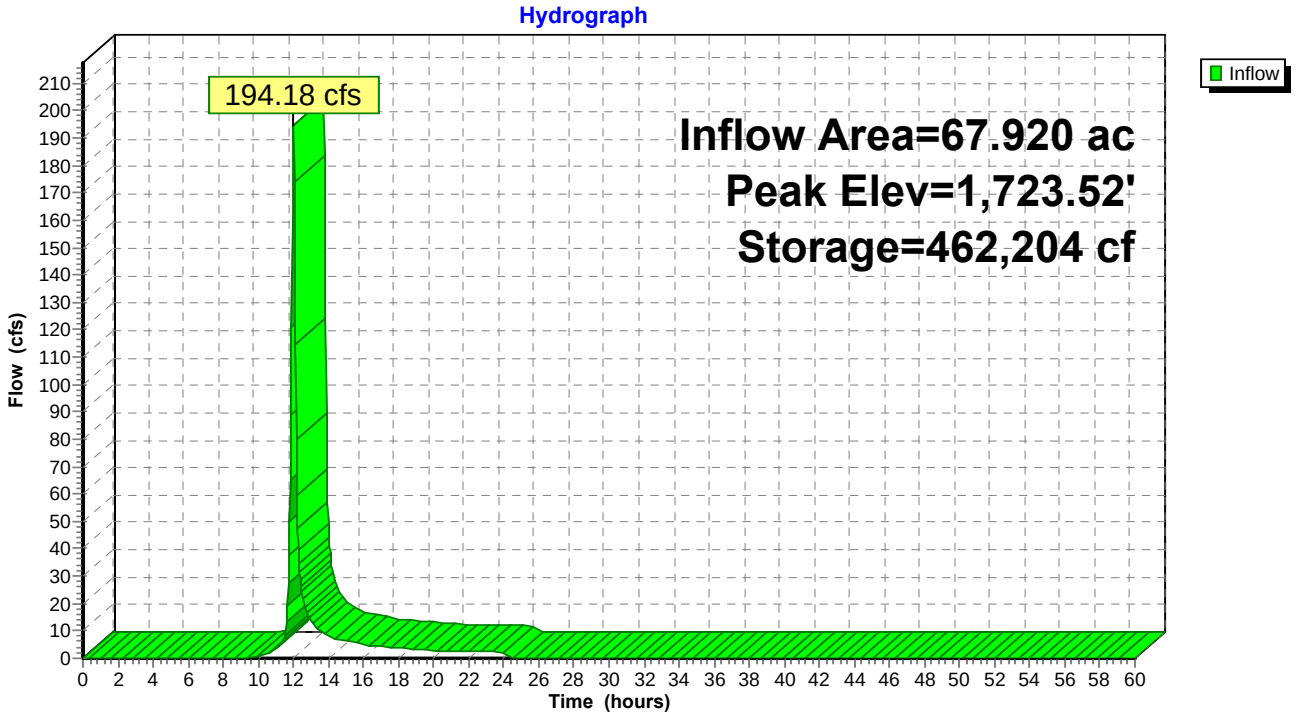
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,723.52' @ 24.60 hrs Surf.Area= 93,903 sf Storage= 462,204 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	1,720.00'	6,558,311 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,720.00	87,331	1,502.0	0	0	87,331
1,770.00	180,586	1,711.9	6,558,311	6,558,311	183,962

Pond 10P: Lower Pit



Summary for Pond 11P: Upper Crusher Pond

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth = 3.30" for 10-Yr Proj event
Inflow = 37.98 cfs @ 11.99 hrs, Volume= 2.053 af
Outflow = 18.98 cfs @ 12.09 hrs, Volume= 1.826 af, Atten= 50%, Lag= 6.3 min
Primary = 18.98 cfs @ 12.09 hrs, Volume= 1.826 af
Routed to Pond 6P : Big Crusher Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,899.65' @ 12.09 hrs Surf.Area= 9,793 sf Storage= 41,590 cf

Plug-Flow detention time= 467.7 min calculated for 1.825 af (89% of inflow)
Center-of-Mass det. time= 414.1 min (1,196.9 - 782.8)

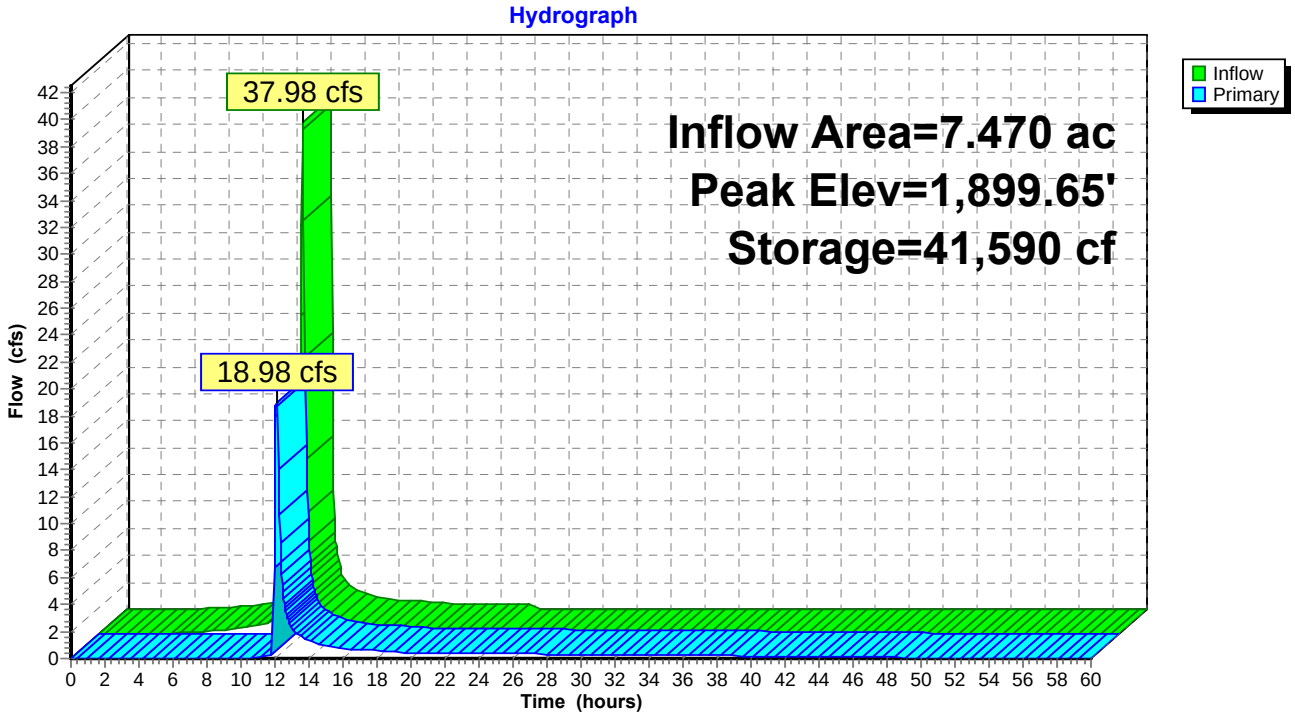
Volume	Invert	Avail.Storage	Storage Description
#1	1,893.00'	67,663 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,893.00	3,101	264.0	0	0	3,101
1,894.00	3,926	284.0	3,505	3,505	4,015
1,896.00	5,770	328.0	9,637	13,142	6,244
1,898.00	7,867	369.0	13,583	26,725	8,622
1,900.00	10,201	408.0	18,018	44,743	11,156
1,902.00	12,767	446.0	22,920	67,663	13,876

Device	Routing	Invert	Outlet Devices
#1	Primary	1,893.00'	**21.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,893.00' / 1,891.00' S= 0.0267 '/' Cc= 0.600 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	1,895.25'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 6.0" cc spacing C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,898.50'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.96 cfs @ 12.09 hrs HW=1,899.64' (Free Discharge)
1=Culvert (Inlet Controls 18.53 cfs @ 7.70 fps)
3=Orifice/Grate (Passes 18.53 cfs of 25.20 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.42 cfs @ 9.74 fps)

Pond 11P: Upper Crusher Pond



Summary for Pond 20P: Plunge Pool

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 6.155 ac, 2.51% Impervious, Inflow Depth > 2.11" for 10-Yr Proj event
Inflow = 3.54 cfs @ 12.35 hrs, Volume= 1.080 af
Outflow = 3.56 cfs @ 12.36 hrs, Volume= 1.080 af, Atten= 0%, Lag= 0.7 min
Primary = 3.56 cfs @ 12.36 hrs, Volume= 1.080 af
Routed to Link AP-4 : AP-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,608.98' @ 12.36 hrs Surf.Area= 0.002 ac Storage= 0.002 af

Plug-Flow detention time= 0.7 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (1,474.8 - 1,474.3)

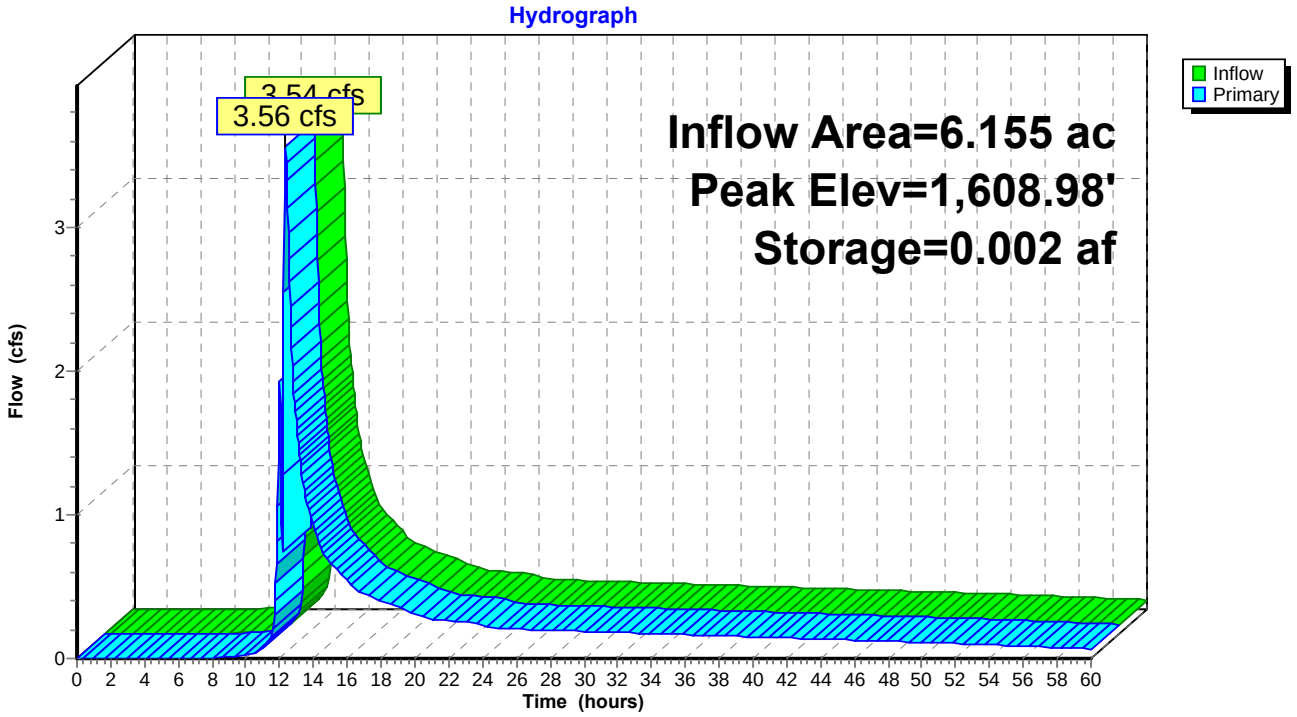
Volume	Invert	Avail.Storage	Storage Description
#1	1,608.00'	0.016 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,608.00	0.001	0.000	0.000
1,610.00	0.004	0.005	0.005
1,612.00	0.007	0.011	0.016

Device	Routing	Invert	Outlet Devices
#1	Primary	1,608.00'	**20.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,608.00' / 1,606.00' S= 0.0444 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.18 sf
#2	Primary	1,611.00'	**10.0' long + 2.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.55 cfs @ 12.36 hrs HW=1,608.98' (Free Discharge)
1=Culvert (Inlet Controls 3.55 cfs @ 2.66 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 20P: Plunge Pool

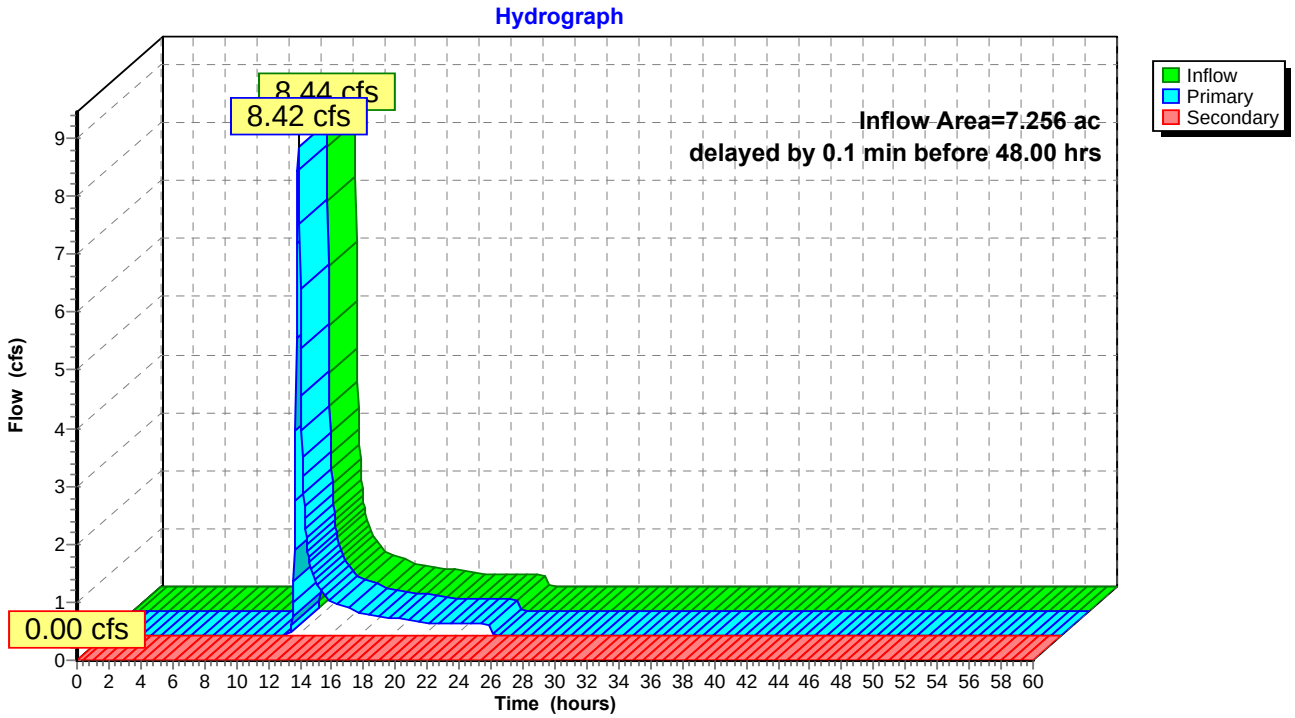


Summary for Link 002A: MSGP Outfall 002A

Inflow Area = 7.256 ac, 0.00% Impervious, Inflow Depth = 1.08" for 10-Yr Proj event
Inflow = 8.44 cfs @ 12.12 hrs, Volume= 0.650 af
Primary = 8.42 cfs @ 12.12 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 002A: MSGP Outfall 002A

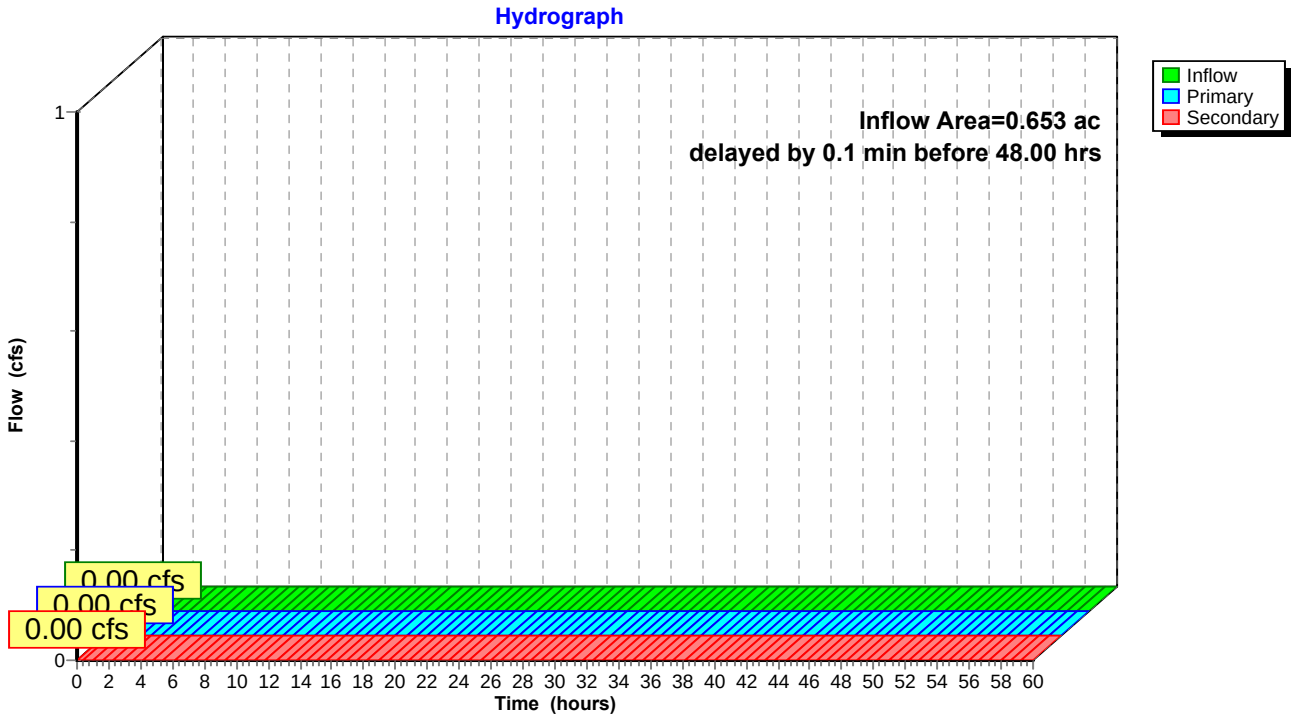


Summary for Link 003A: MSGP Outfall 003A

Inflow Area = 0.653 ac, 8.08% Impervious, Inflow Depth = 0.00" for 10-Yr Proj event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 003A: MSGP Outfall 003A

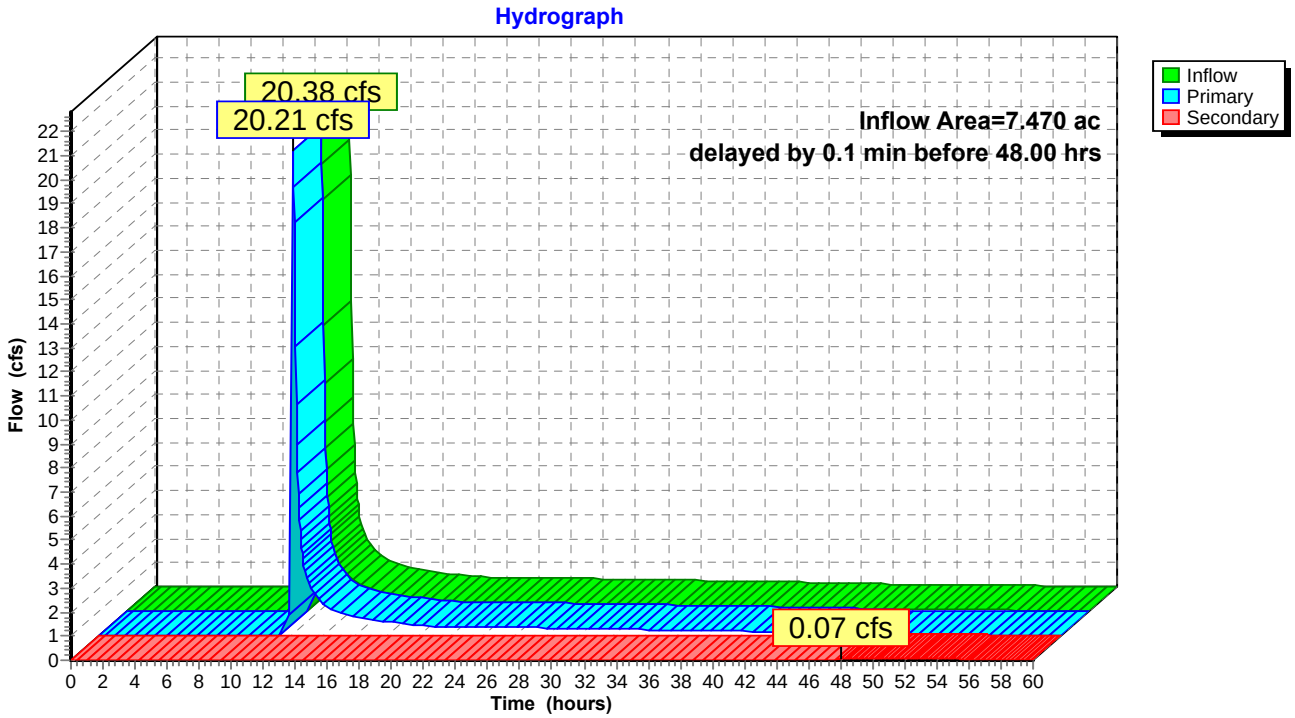


Summary for Link 005A: MSGP Outfall 005A

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth > 2.71" for 10-Yr Proj event
Inflow = 20.38 cfs @ 12.13 hrs, Volume= 1.689 af
Primary = 20.21 cfs @ 12.14 hrs, Volume= 1.647 af, Atten= 1%, Lag= 0.1 min
Secondary = 0.07 cfs @ 48.00 hrs, Volume= 0.042 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 005A: MSGP Outfall 005A

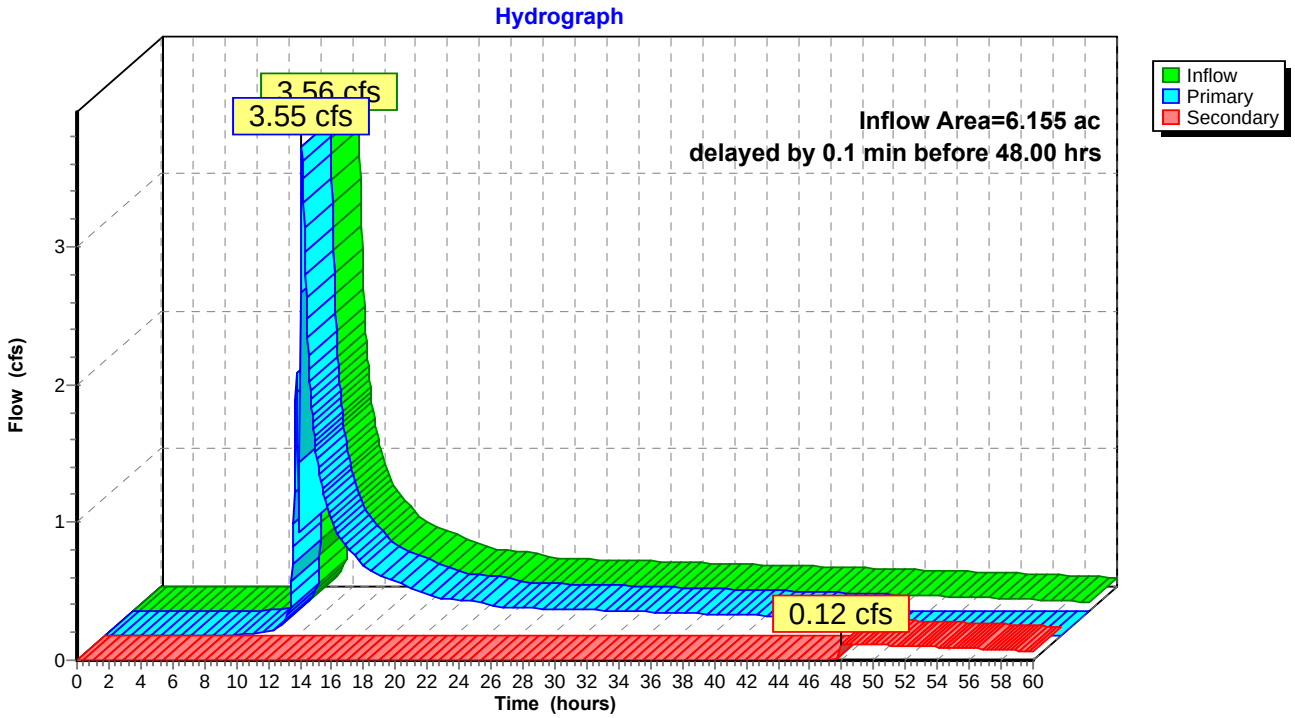


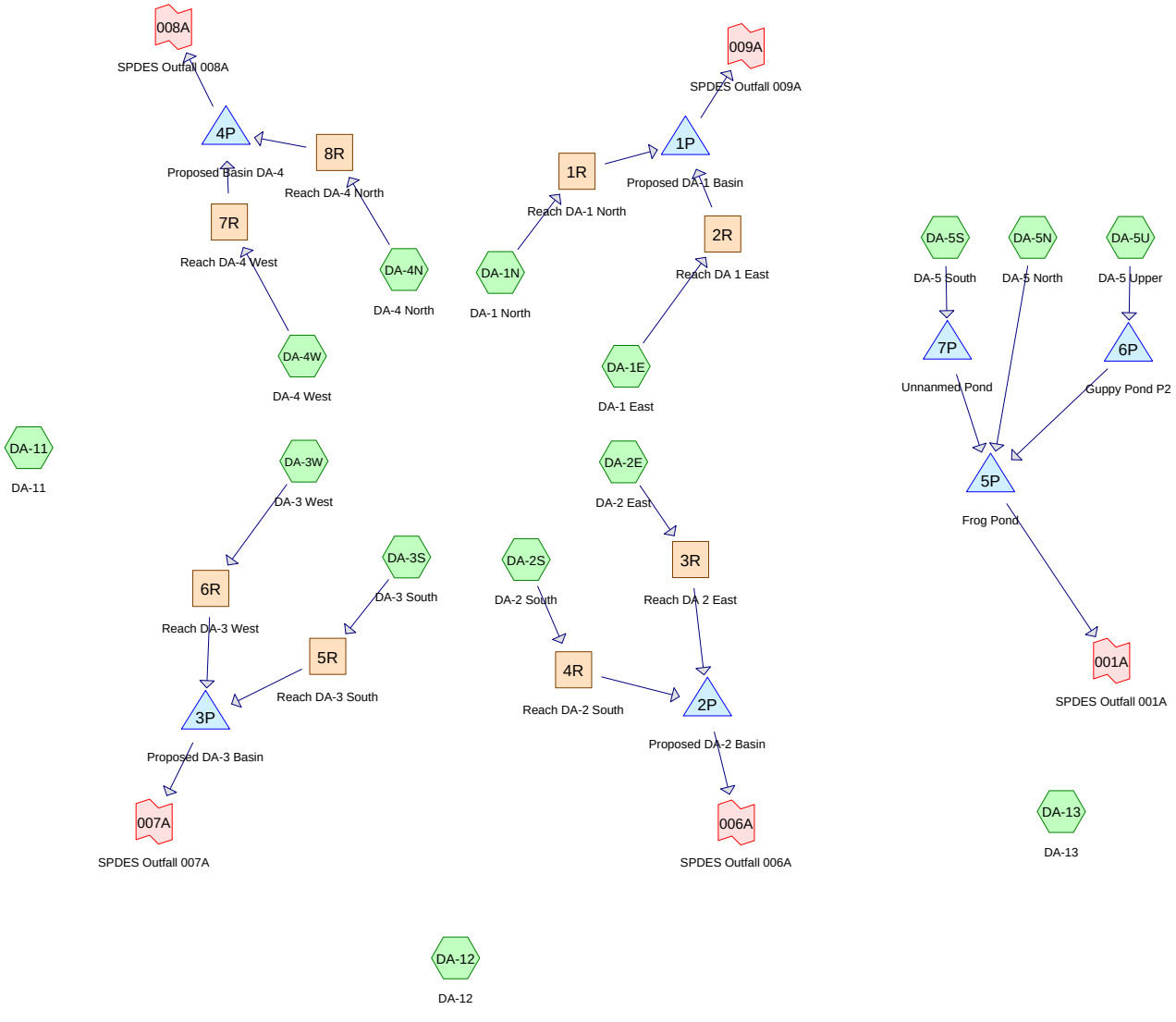
Summary for Link AP-4: AP-4

Inflow Area = 6.155 ac, 2.51% Impervious, Inflow Depth > 2.11" for 10-Yr Proj event
Inflow = 3.56 cfs @ 12.36 hrs, Volume= 1.080 af
Primary = 3.55 cfs @ 12.36 hrs, Volume= 0.986 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.12 cfs @ 48.00 hrs, Volume= 0.094 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link AP-4: AP-4





Routing Diagram for 2024 Barton West Phase 4

Prepared by Bowman Consulting Group, Printed 7/3/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
61.850	55	<50% Grass cover, Poor, HSG A (DA-2E, DA-2S, DA-4N, DA-4W)
18.300	55	<50% Grass cover, Poor, HSG B (DA-3S, DA-3W)
2.503	74	>75% Grass cover, Good, HSG C (DA-13)
0.230	72	Dirt roads, HSG A (DA-13)
7.332	87	Dirt roads, HSG C (DA-13, DA-5N, DA-5S, DA-5U)
5.900	85	Gravel roads, HSG B (DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W)
42.450	55	Loose Sand (DA-1E, DA-1N)
1.206	98	Paved parking, HSG B (DA-13)
4.597	36	Woods, Fair, HSG A (DA-12, DA-13)
30.906	73	Woods, Fair, HSG C (DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U)
175.274	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
66.677	HSG A	DA-12, DA-13, DA-2E, DA-2S, DA-4N, DA-4W
25.406	HSG B	DA-13, DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
40.741	HSG C	DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U
0.000	HSG D	
42.450	Other	DA-1E, DA-1N
175.274		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
61.850	18.300	0.000	0.000	0.000	80.150	<50% Grass cover, Poor	DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
0.000	0.000	2.503	0.000	0.000	2.503	>75% Grass cover, Good	DA-13
0.230	0.000	7.332	0.000	0.000	7.562	Dirt roads	DA-13, DA-5N, DA-5S, DA-5U
0.000	5.900	0.000	0.000	0.000	5.900	Gravel roads	DA-1E, DA-1N, DA-2E, DA-2S, DA-3S, DA-3W, DA-4N, DA-4W
0.000	0.000	0.000	0.000	42.450	42.450	Loose Sand	DA-1E, DA-1N
0.000	1.206	0.000	0.000	0.000	1.206	Paved parking	DA-13
4.597	0.000	30.906	0.000	0.000	35.503	Woods, Fair	DA-11, DA-12, DA-13, DA-5N, DA-5S, DA-5U
66.677	**25.406**	**40.741**	**0.000**	**42.450**	**175.274**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	1,959.00	1,956.00	90.0	0.0333	0.025	0.0	18.0	0.0	
2	2P	1,997.00	1,994.00	90.0	0.0333	0.025	0.0	18.0	0.0	
3	3P	2,125.00	2,124.00	90.0	0.0111	0.025	0.0	18.0	0.0	
4	4P	2,231.00	2,230.00	180.0	0.0056	0.012	0.0	18.0	0.0	
5	5P	1,882.00	1,881.00	60.0	0.0167	0.025	0.0	18.0	0.0	
6	7P	1,924.00	1,921.00	40.0	0.0750	0.013	0.0	24.0	0.0	

Time span=0.00-60.00 hrs, dt=0.04 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA-11: DA-11 Runoff Area=5.525 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=1,939' Tc=33.3 min CN=73 Runoff=16.49 cfs 1.701 af

Subcatchment DA-12: DA-12 Runoff Area=4.245 ac 0.00% Impervious Runoff Depth=2.41"
Flow Length=646' Tc=26.9 min CN=60 Runoff=9.05 cfs 0.852 af

Subcatchment DA-13: DA-13 Runoff Area=1,122,015 sf 4.68% Impervious Runoff Depth=3.49"
Flow Length=2,100' Tc=2.7 min CN=71 Runoff=173.74 cfs 7.489 af

Subcatchment DA-1E: DA-1 East Runoff Area=19.000 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=2,250' Tc=5.9 min CN=56 Runoff=67.06 cfs 3.227 af

Subcatchment DA-1N: DA-1 North Runoff Area=25.400 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=2,350' Tc=6.3 min CN=56 Runoff=88.76 cfs 4.314 af

Subcatchment DA-2E: DA-2 East Runoff Area=13.700 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=2,117' Tc=7.1 min CN=56 Runoff=46.52 cfs 2.327 af

Subcatchment DA-2S: DA-2 South Runoff Area=29.800 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=2,117' Tc=7.1 min CN=56 Runoff=101.19 cfs 5.061 af

Subcatchment DA-3S: DA-3 South Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=2.13"
Flow Length=1,142' Tc=2.9 min CN=57 Runoff=14.45 cfs 0.621 af

Subcatchment DA-3W: DA-3 West Runoff Area=15.700 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=1,142' Tc=2.9 min CN=56 Runoff=61.88 cfs 2.667 af

Subcatchment DA-4N: DA-4 North Runoff Area=6.000 ac 0.00% Impervious Runoff Depth=2.13"
Flow Length=1,610' Tc=6.7 min CN=57 Runoff=21.69 cfs 1.065 af

Subcatchment DA-4W: DA-4 West Runoff Area=15.400 ac 0.00% Impervious Runoff Depth=2.13"
Flow Length=1,610' Tc=6.7 min CN=57 Runoff=55.68 cfs 2.732 af

Subcatchment DA-5N: DA-5 North Runoff Area=5.786 ac 0.00% Impervious Runoff Depth=4.33"
Flow Length=320' Tc=10.0 min CN=79 Runoff=37.58 cfs 2.087 af

Subcatchment DA-5S: DA-5 South Runoff Area=5.117 ac 0.00% Impervious Runoff Depth=4.44"
Flow Length=296' Tc=9.3 min CN=80 Runoff=34.81 cfs 1.892 af

Subcatchment DA-5U: DA-5 Upper Runoff Area=0.343 ac 0.00% Impervious Runoff Depth=4.87"
Flow Length=548' Tc=8.7 min CN=84 Runoff=2.57 cfs 0.139 af

Reach 1R: Reach DA-1 North Avg. Flow Depth=1.51' Max Vel=10.44 fps Inflow=88.76 cfs 4.314 af
n=0.050 L=2,000.0' S=0.1510 '/' Capacity=147.36 cfs Outflow=79.59 cfs 4.314 af

Reach 2R: Reach DA 1 East Avg. Flow Depth=1.64' Max Vel=7.05 fps Inflow=67.06 cfs 3.227 af
n=0.050 L=1,275.0' S=0.0627 '/' Capacity=94.99 cfs Outflow=60.93 cfs 3.227 af

Reach 3R: Reach DA 2 East Avg. Flow Depth=1.42' Max Vel=6.43 fps Inflow=46.52 cfs 2.327 af
n=0.050 L=750.0' S=0.0613 '/' Capacity=49.97 cfs Outflow=44.17 cfs 2.327 af

Reach 4R: Reach DA-2 South Avg. Flow Depth=1.83' Max Vel=8.79 fps Inflow=101.19 cfs 5.061 af
n=0.050 L=1,700.0' S=0.0859 '/' Capacity=111.13 cfs Outflow=90.90 cfs 5.061 af

Reach 5R: Reach DA-3 South Avg. Flow Depth=0.87' Max Vel=4.28 fps Inflow=14.45 cfs 0.621 af
n=0.050 L=350.0' S=0.0457 '/' Capacity=18.44 cfs Outflow=14.00 cfs 0.621 af

Reach 6R: Reach DA-3 West Avg. Flow Depth=1.24' Max Vel=10.59 fps Inflow=61.88 cfs 2.667 af
n=0.050 L=1,050.0' S=0.1905 '/' Capacity=88.06 cfs Outflow=59.05 cfs 2.667 af

Reach 7R: Reach DA-4 West Avg. Flow Depth=1.51' Max Vel=6.44 fps Inflow=55.68 cfs 2.732 af
n=0.050 L=1,400.0' S=0.0571 '/' Capacity=48.23 cfs Outflow=49.05 cfs 2.732 af

Reach 8R: Reach DA-4 North Avg. Flow Depth=1.00' Max Vel=5.26 fps Inflow=21.69 cfs 1.065 af
n=0.050 L=485.0' S=0.0598 '/' Capacity=49.34 cfs Outflow=21.00 cfs 1.065 af

Pond 1P: Proposed DA-1 Basin Peak Elev=1,966.58' Storage=3.959 af Inflow=140.41 cfs 7.541 af
Outflow=9.10 cfs 3.886 af

Pond 2P: Proposed DA-2 Basin Peak Elev=2,004.62' Storage=3.724 af Inflow=134.68 cfs 7.388 af
Outflow=9.97 cfs 3.966 af

Pond 3P: Proposed DA-3 Basin Peak Elev=2,132.38' Storage=1.641 af Inflow=73.04 cfs 3.288 af
Outflow=4.88 cfs 1.732 af

Pond 4P: Proposed Basin DA-4 Peak Elev=2,238.42' Storage=1.897 af Inflow=69.52 cfs 3.797 af
Outflow=5.68 cfs 2.008 af

Pond 5P: Frog Pond Peak Elev=1,891.53' Storage=47,344 cf Inflow=73.52 cfs 4.019 af
Primary=17.46 cfs 3.121 af Secondary=46.42 cfs 0.749 af Outflow=63.87 cfs 3.869 af

Pond 6P: Guppy Pond P2 Peak Elev=1,954.72' Storage=3,386 cf Inflow=2.57 cfs 0.139 af
Outflow=0.52 cfs 0.067 af

Pond 7P: Unnanmed Pond Peak Elev=1,927.47' Storage=6,318 cf Inflow=34.81 cfs 1.892 af
Outflow=35.94 cfs 1.864 af

Link 001A: SPDES Outfall 001A delayed by 0.1 min before 48.00 hrs Inflow=17.46 cfs 3.121 af
Primary=17.45 cfs 3.099 af Secondary=0.05 cfs 0.021 af

Link 006A: SPDES Outfall 006A delayed by 0.1 min before 48.00 hrs Inflow=9.97 cfs 3.966 af
Primary=9.97 cfs 3.966 af Secondary=0.00 cfs 0.000 af

Link 007A: SPDES Outfall 007A delayed by 0.1 min before 48.00 hrs Inflow=4.88 cfs 1.732 af
Primary=4.88 cfs 1.732 af Secondary=0.00 cfs 0.000 af

Link 008A: SPDES Outfall 008A delayed by 0.1 min before 48.00 hrs Inflow=5.68 cfs 2.008 af
Primary=5.68 cfs 2.008 af Secondary=0.00 cfs 0.000 af

Link 009A: SPDES Outfall 009A delayed by 0.1 min before 48.00 hrs Inflow=9.10 cfs 3.886 af
Primary=9.10 cfs 3.886 af Secondary=0.00 cfs 0.000 af

Total Runoff Area = 175.274 ac Runoff Volume = 36.174 af Average Runoff Depth = 2.48"
99.31% Pervious = 174.068 ac 0.69% Impervious = 1.206 ac

Summary for Subcatchment DA-11: DA-11

[47] Hint: Peak is 121% of capacity of segment #3

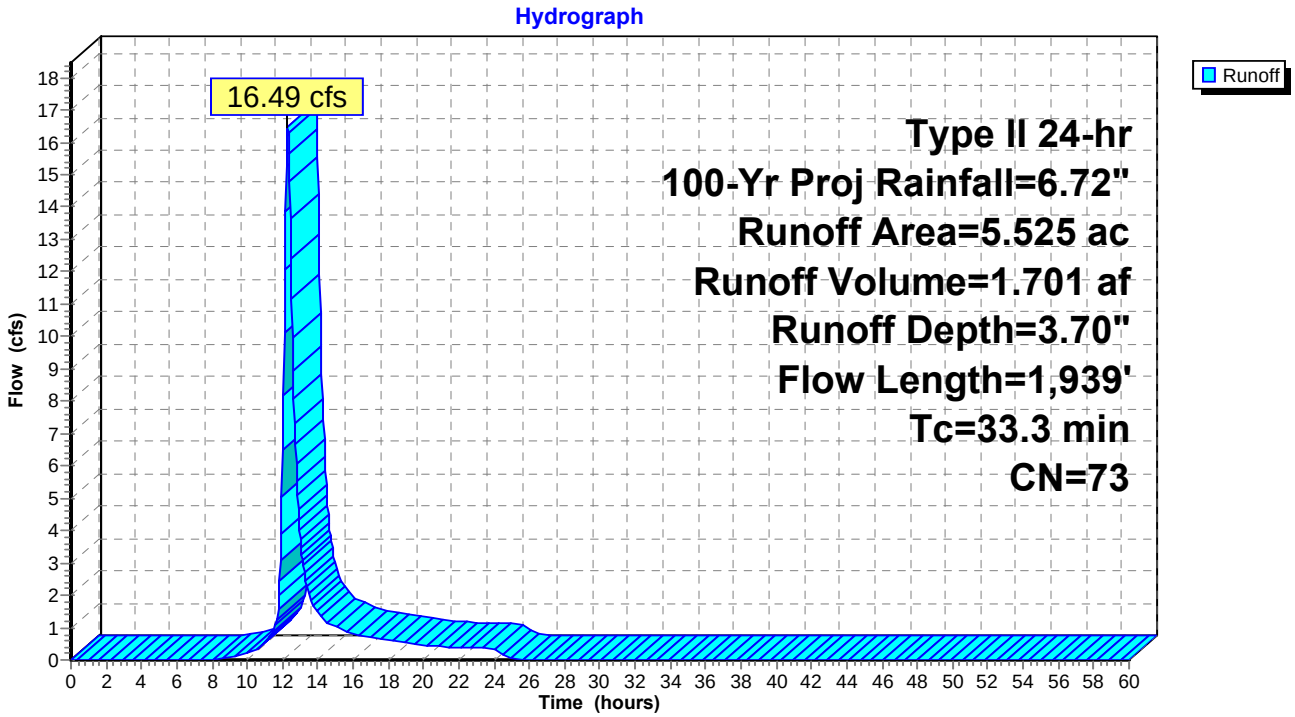
Runoff = 16.49 cfs @ 12.28 hrs, Volume= 1.701 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
5.525	73	Woods, Fair, HSG C
5.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.1100	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.62"
8.9	1,129	0.1770	2.10		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
3.5	710	0.0110	3.40	13.59	**Channel Flow,** Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.035 Earth, dense weeds
33.3	1,939	Total			

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

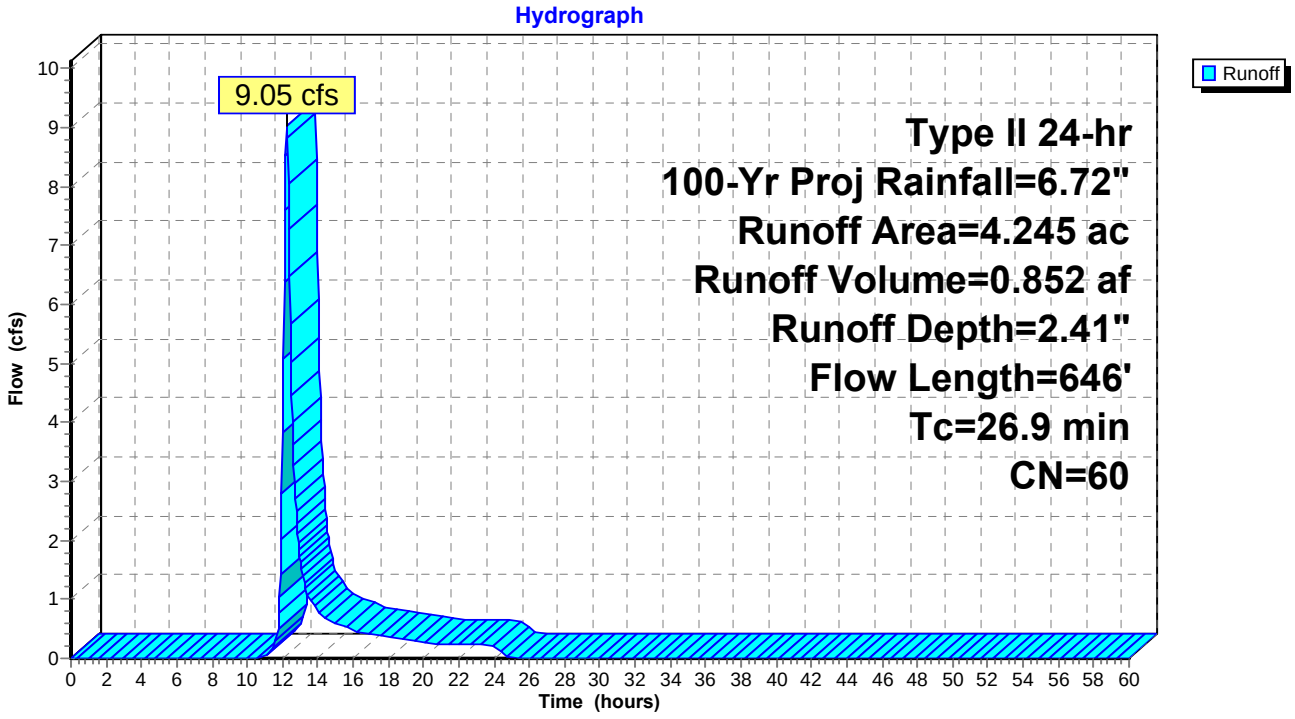
Runoff = 9.05 cfs @ 12.22 hrs, Volume= 0.852 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
1.528	36	Woods, Fair, HSG A
2.717	73	Woods, Fair, HSG C
4.245	60	Weighted Average
4.245		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	108	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
3.8	538	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.9	646	Total			

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

[49] Hint: Tc<2dt may require smaller dt

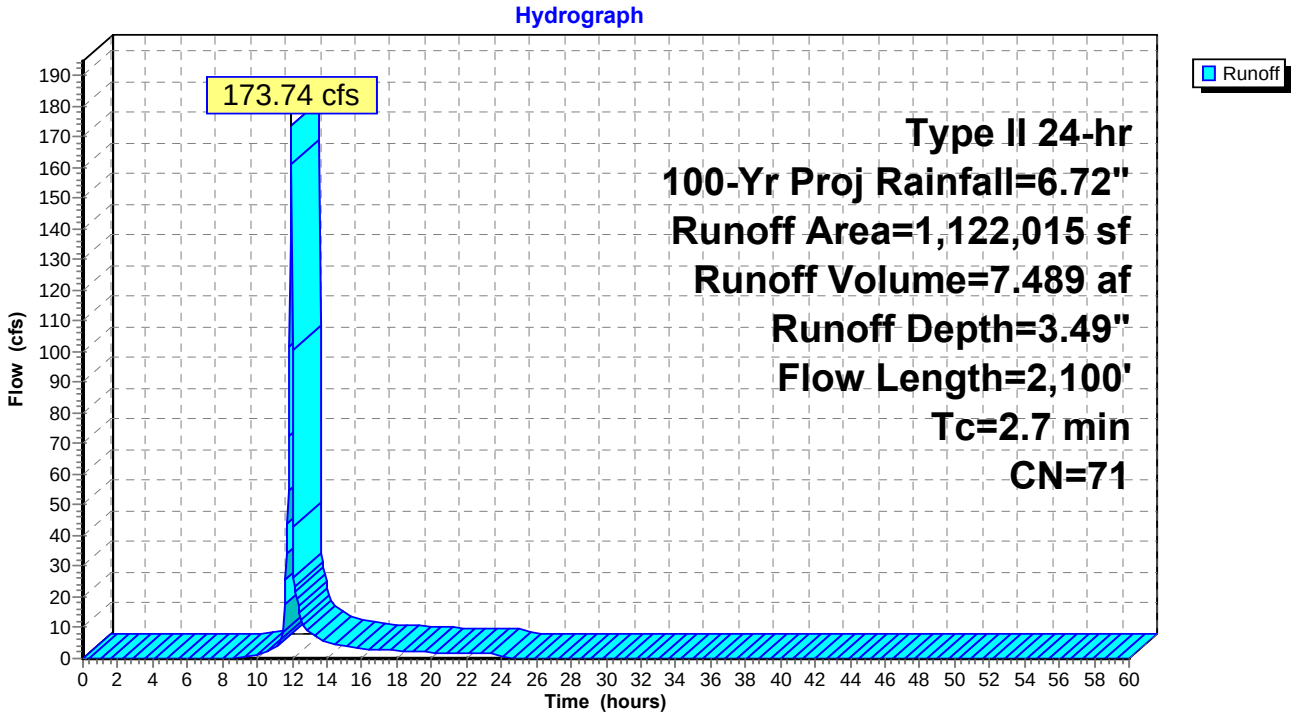
Runoff = 173.74 cfs @ 11.93 hrs, Volume= 7.489 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
52,533	98	Paved parking, HSG B
10,019	72	Dirt roads, HSG A
89,777	87	Dirt roads, HSG C
133,686	36	Woods, Fair, HSG A
726,969	73	Woods, Fair, HSG C
109,031	74	>75% Grass cover, Good, HSG C
1,122,015	71	Weighted Average
1,069,482		95.32% Pervious Area
52,533		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0600	1.93		**Sheet Flow, sheet flow** Smooth surfaces n= 0.011 P2= 2.62"
1.8	2,000	0.0910	18.52	255.59	**Channel Flow,** Area= 13.8 sf Perim= 10.0' r= 1.38' n= 0.030 Earth, grassed & winding
2.7	2,100	Total			

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-1E: DA-1 East

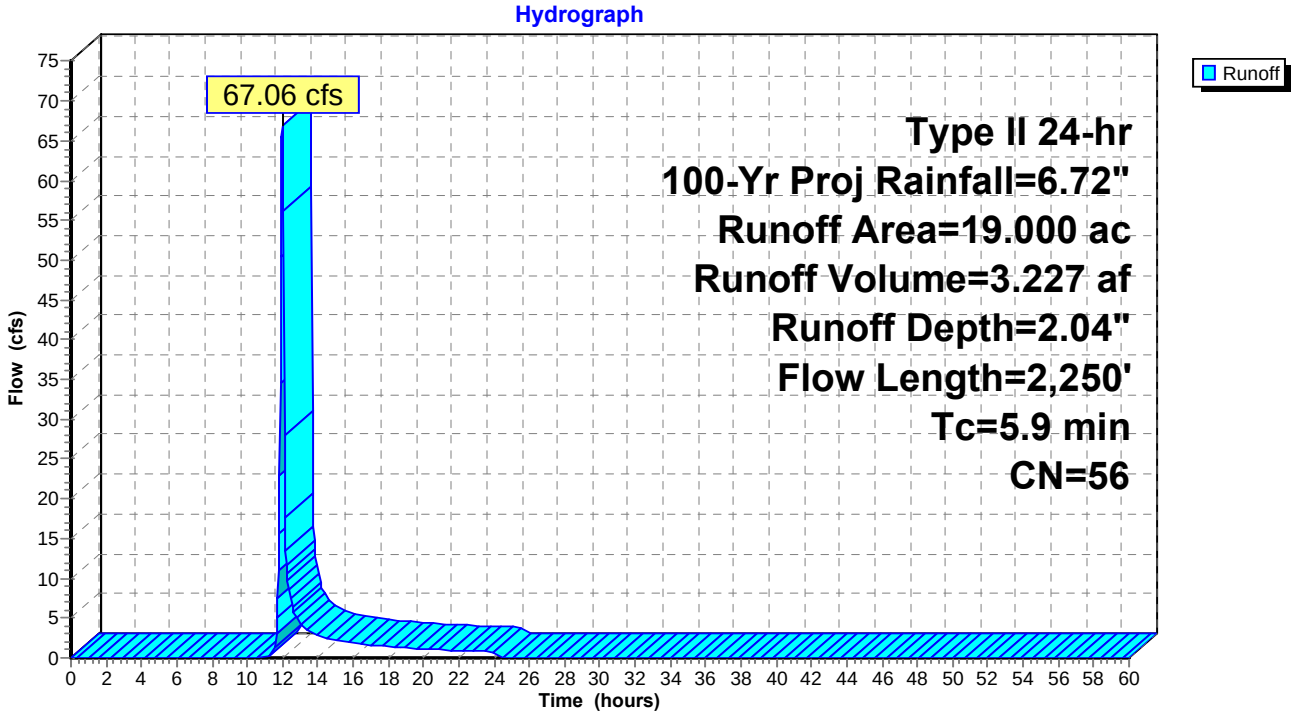
Runoff = 67.06 cfs @ 11.98 hrs, Volume= 3.227 af, Depth= 2.04"
Routed to Reach 2R : Reach DA 1 East

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	18.150	55	Loose Sand
	0.850	85	Gravel roads, HSG B
	19.000	56	Weighted Average
	19.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3733	4.35		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
5.3	2,100	0.1667	6.57		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	2,250	Total			

Subcatchment DA-1E: DA-1 East



Summary for Subcatchment DA-1N: DA-1 North

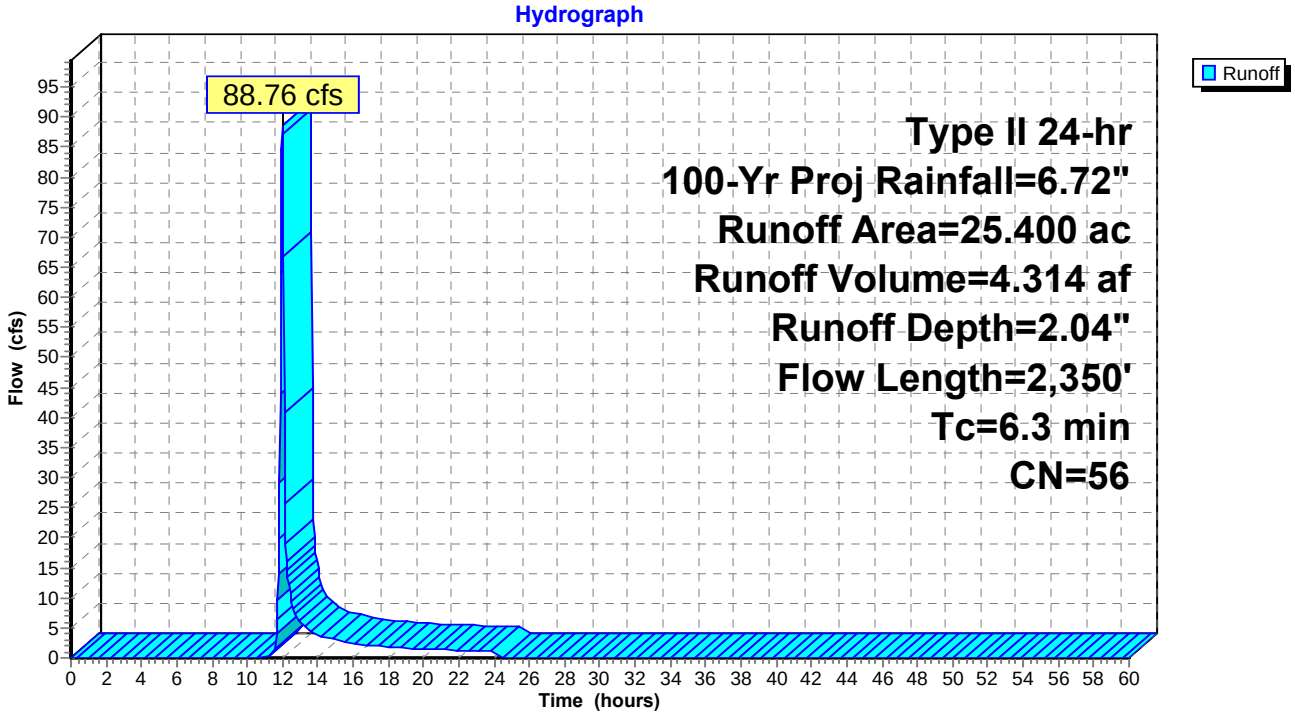
Runoff = 88.76 cfs @ 11.98 hrs, Volume= 4.314 af, Depth= 2.04"
Routed to Reach 1R : Reach DA-1 North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	24.300	55	Loose Sand
	1.100	85	Gravel roads, HSG B
	25.400	56	Weighted Average
	25.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3467	4.23		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
5.7	2,200	0.1600	6.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.3	2,350	Total			

Subcatchment DA-1N: DA-1 North



Summary for Subcatchment DA-2E: DA-2 East

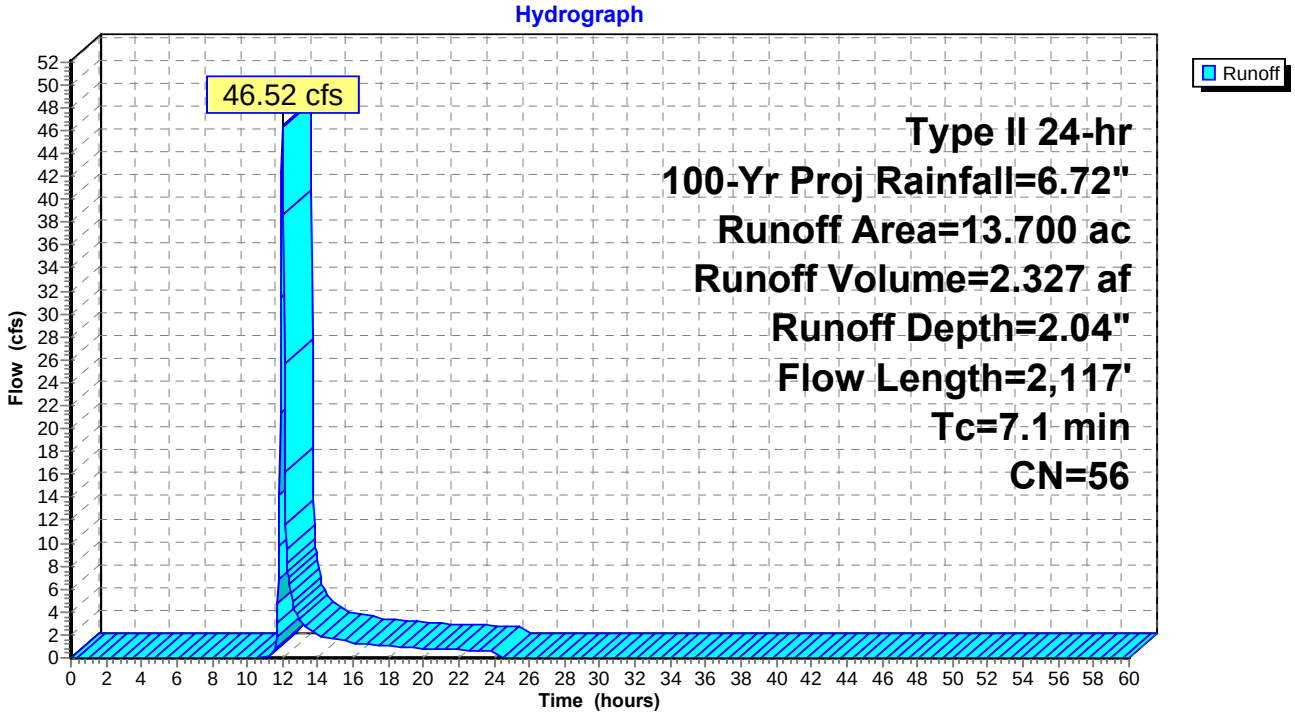
Runoff = 46.52 cfs @ 11.99 hrs, Volume= 2.327 af, Depth= 2.04"
Routed to Reach 3R : Reach DA 2 East

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	13.100	55	<50% Grass cover, Poor, HSG A
	0.600	85	Gravel roads, HSG B
	13.700	56	Weighted Average
	13.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.1330	2.88		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.2	1,967	0.1070	5.27		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
7.1	2,117	Total			

Subcatchment DA-2E: DA-2 East



Summary for Subcatchment DA-2S: DA-2 South

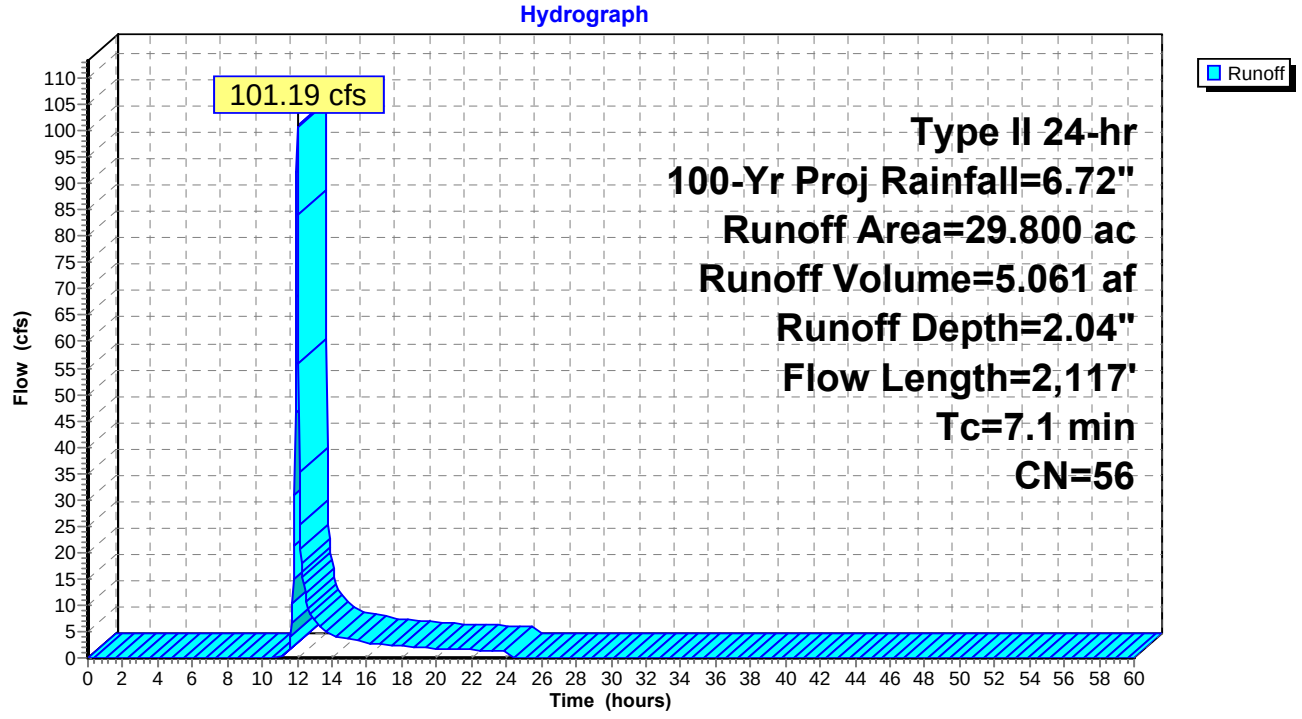
Runoff = 101.19 cfs @ 11.99 hrs, Volume= 5.061 af, Depth= 2.04"
Routed to Reach 4R : Reach DA-2 South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	28.600	55	<50% Grass cover, Poor, HSG A
	1.200	85	Gravel roads, HSG B
	29.800	56	Weighted Average
	29.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.1330	2.88		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.2	1,967	0.1070	5.27		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
7.1	2,117	Total			

Subcatchment DA-2S: DA-2 South



Summary for Subcatchment DA-3S: DA-3 South

[49] Hint: Tc<2dt may require smaller dt

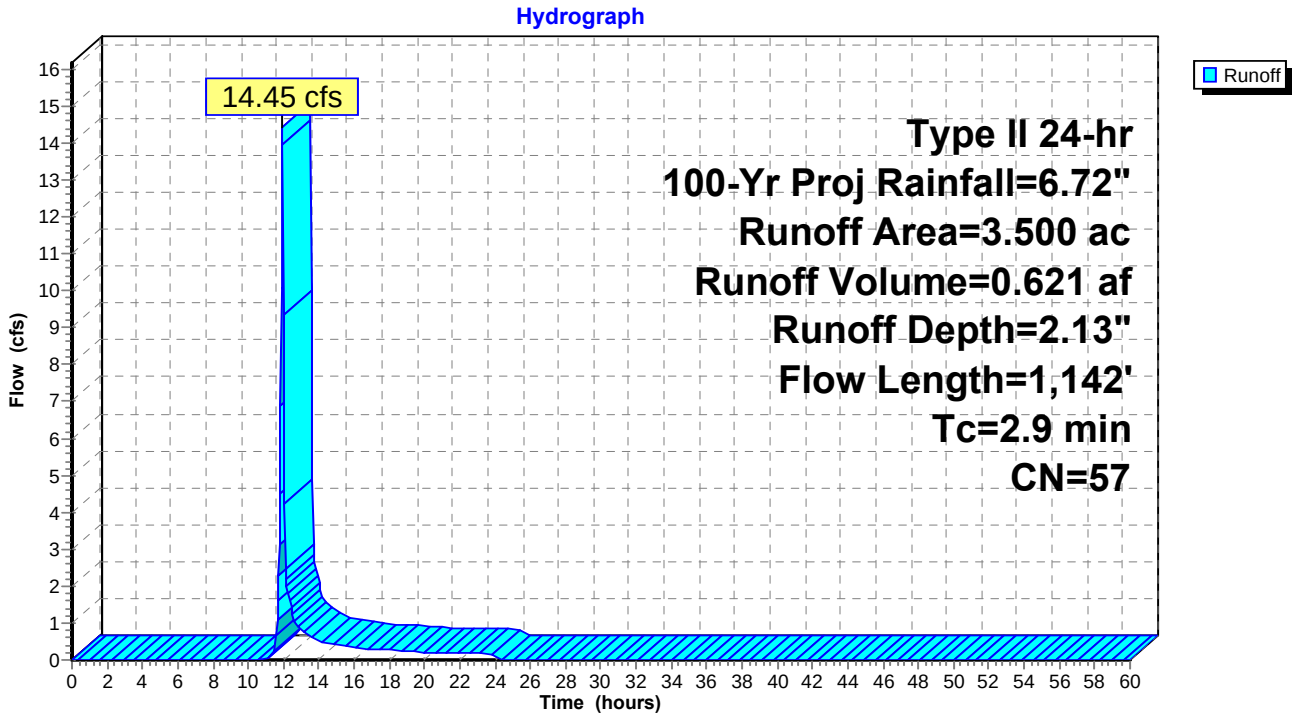
Runoff = 14.45 cfs @ 11.94 hrs, Volume= 0.621 af, Depth= 2.13"
Routed to Reach 5R : Reach DA-3 South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	3.300	55	<50% Grass cover, Poor, HSG B
	0.200	85	Gravel roads, HSG B
	3.500	57	Weighted Average
	3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.2900	3.93		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
2.3	992	0.2000	7.20		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.9	1,142	Total			

Subcatchment DA-3S: DA-3 South



Summary for Subcatchment DA-3W: DA-3 West

[49] Hint: Tc<2dt may require smaller dt

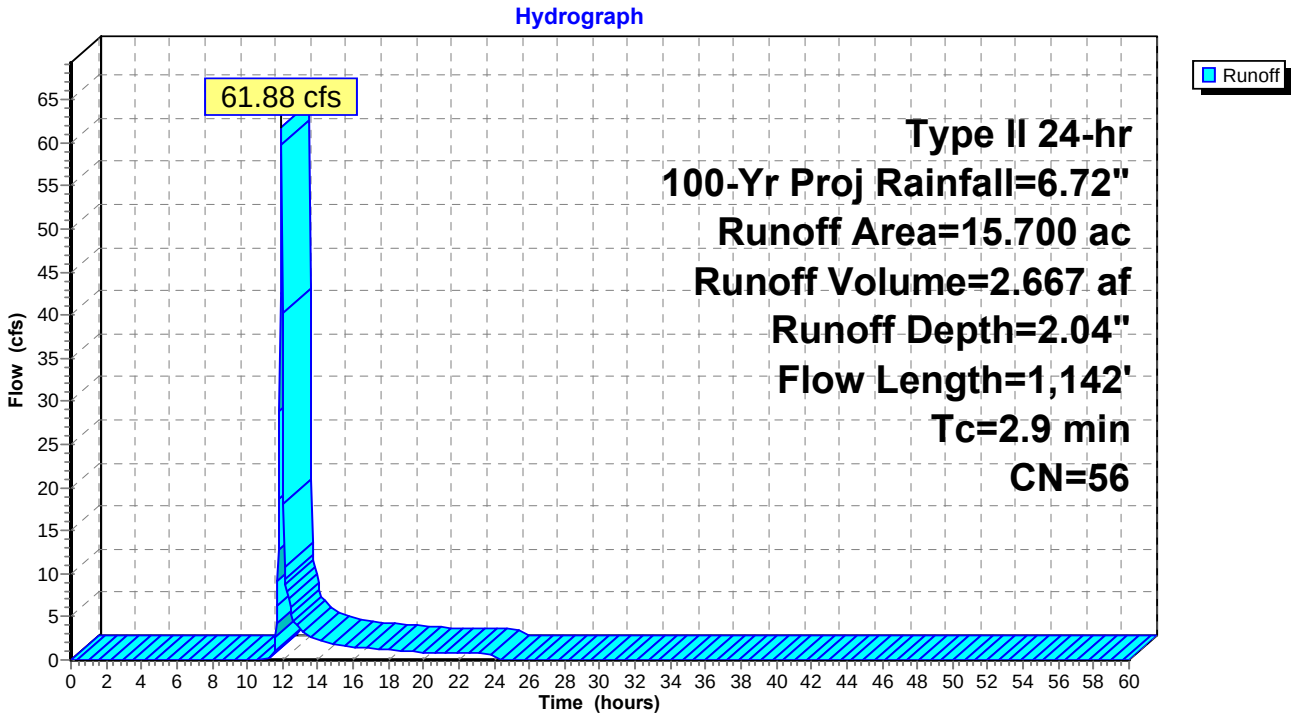
Runoff = 61.88 cfs @ 11.94 hrs, Volume= 2.667 af, Depth= 2.04"
Routed to Reach 6R : Reach DA-3 West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	15.000	55	<50% Grass cover, Poor, HSG B
	0.700	85	Gravel roads, HSG B
	15.700	56	Weighted Average
	15.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.2900	3.93		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
2.3	992	0.2000	7.20		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.9	1,142	Total			

Subcatchment DA-3W: DA-3 West



Summary for Subcatchment DA-4N: DA-4 North

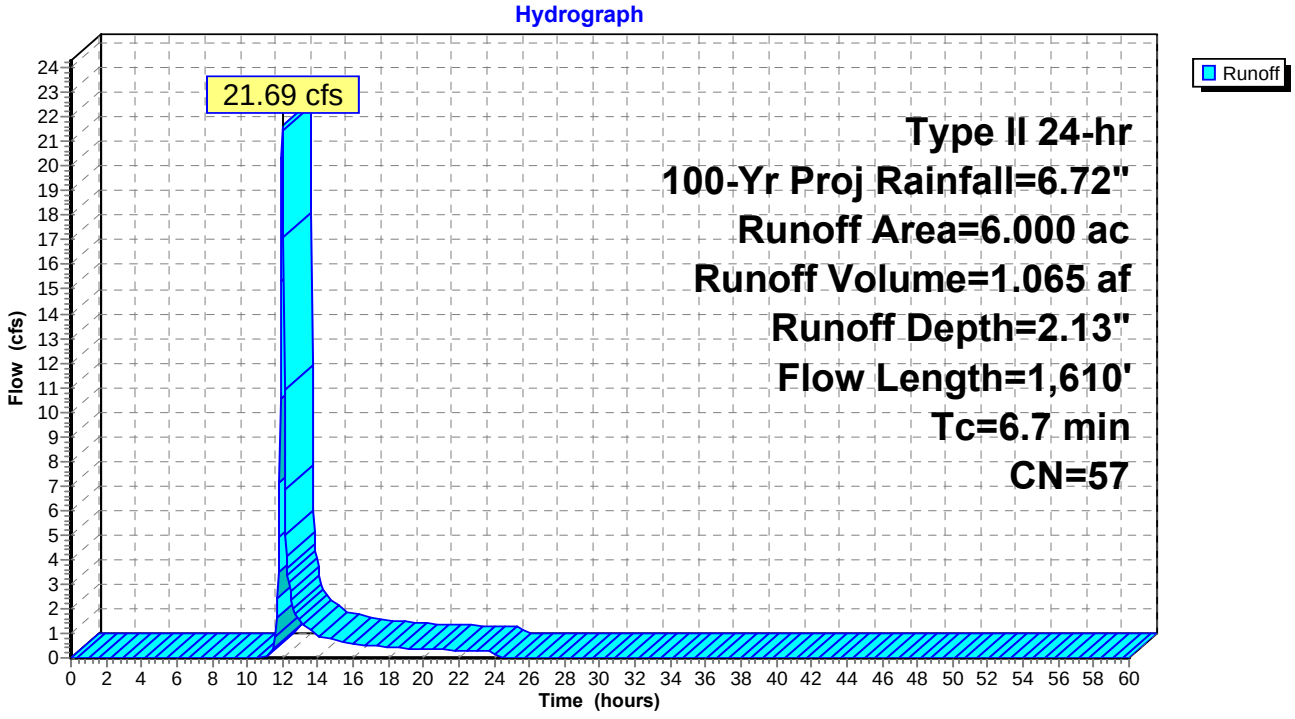
Runoff = 21.69 cfs @ 11.99 hrs, Volume= 1.065 af, Depth= 2.13"
Routed to Reach 8R : Reach DA-4 North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	5.700	55	<50% Grass cover, Poor, HSG A
	0.300	85	Gravel roads, HSG B
	6.000	57	Weighted Average
	6.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3100	4.04		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.1	1,460	0.0610	3.98		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.7	1,610	Total			

Subcatchment DA-4N: DA-4 North



Summary for Subcatchment DA-4W: DA-4 West

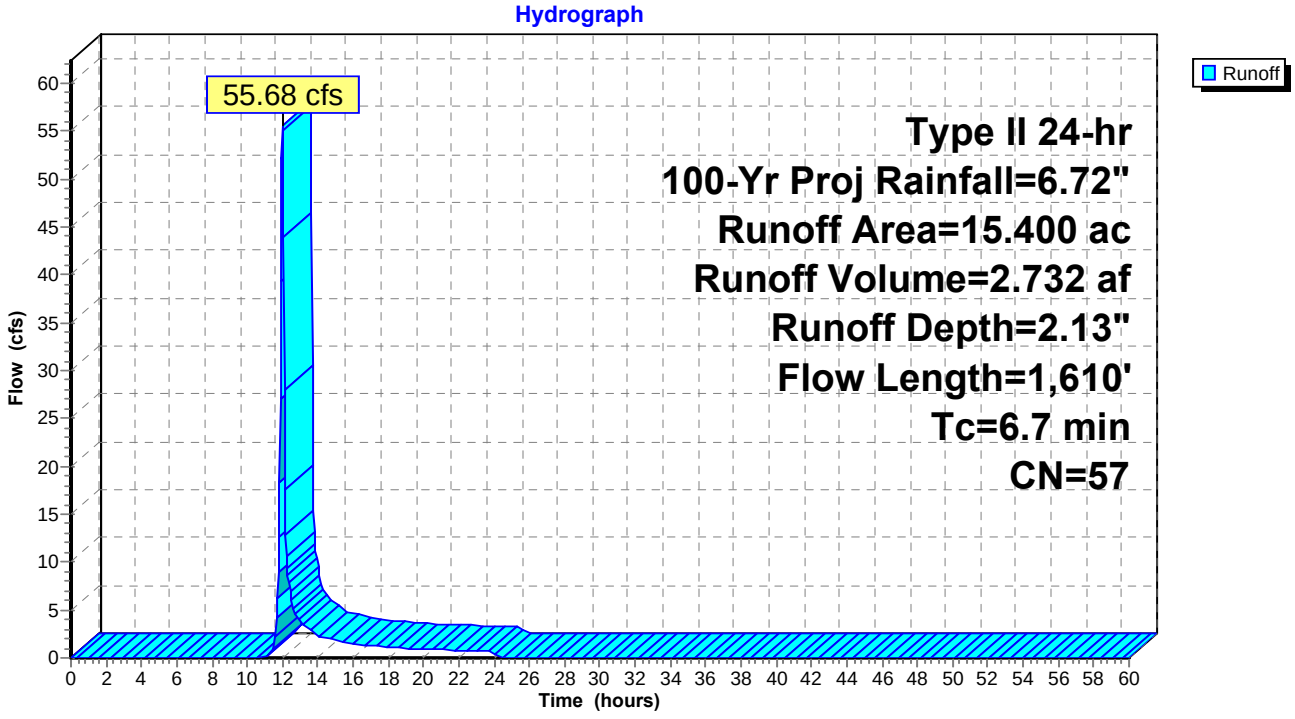
Runoff = 55.68 cfs @ 11.99 hrs, Volume= 2.732 af, Depth= 2.13"
Routed to Reach 7R : Reach DA-4 West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

	Area (ac)	CN	Description
*	14.450	55	<50% Grass cover, Poor, HSG A
	0.950	85	Gravel roads, HSG B
	15.400	57	Weighted Average
	15.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	150	0.3100	4.04		**Sheet Flow, Beginning of Flow Path** Smooth surfaces n= 0.011 P2= 2.62"
6.1	1,460	0.0610	3.98		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.7	1,610	Total			

Subcatchment DA-4W: DA-4 West



Summary for Subcatchment DA-5N: DA-5 North

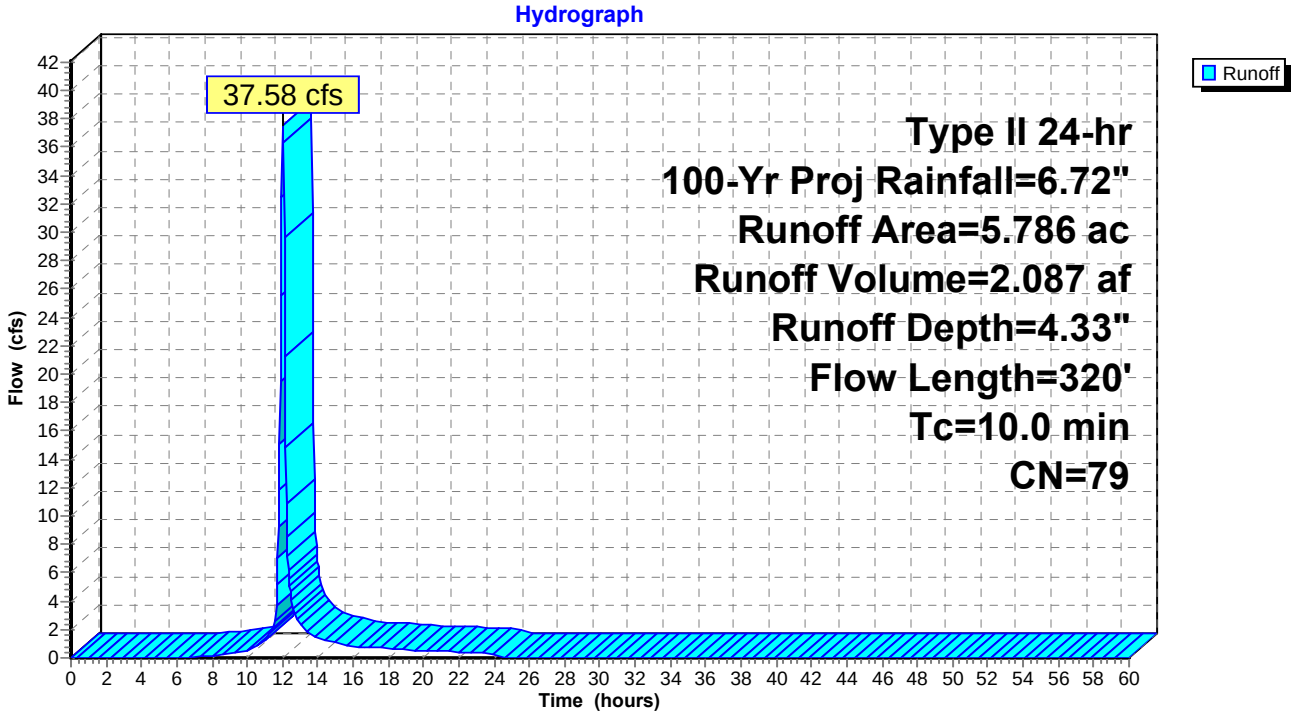
Runoff = 37.58 cfs @ 12.01 hrs, Volume= 2.087 af, Depth= 4.33"
Routed to Pond 5P : Frog Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
2.425	87	Dirt roads, HSG C
3.361	73	Woods, Fair, HSG C
5.786	79	Weighted Average
5.786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.2600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.5	220	0.2300	2.40		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
10.0	320	Total			

Subcatchment DA-5N: DA-5 North



Summary for Subcatchment DA-5S: DA-5 South

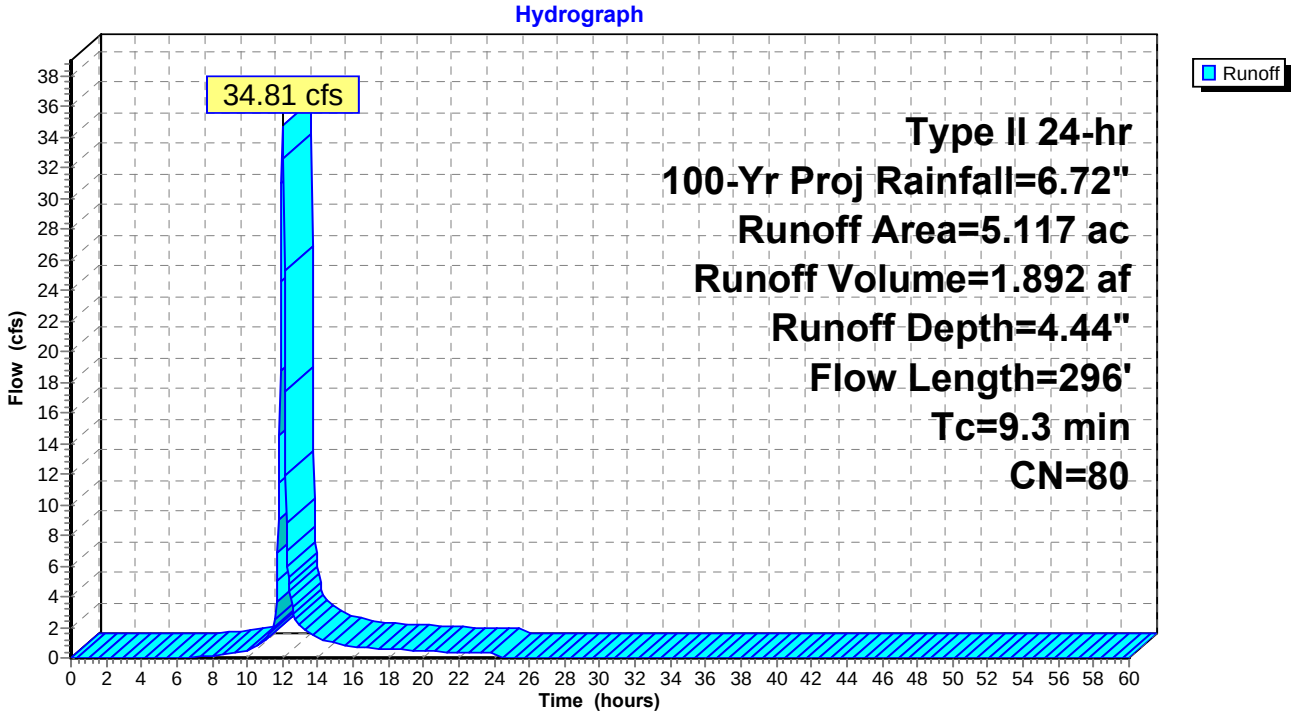
Runoff = 34.81 cfs @ 12.01 hrs, Volume= 1.892 af, Depth= 4.44"
Routed to Pond 7P : Unnamed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
2.587	87	Dirt roads, HSG C
2.530	73	Woods, Fair, HSG C
5.117	80	Weighted Average
5.117		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.3000	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.3	196	0.2550	2.52		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
9.3	296	Total			

Subcatchment DA-5S: DA-5 South



Summary for Subcatchment DA-5U: DA-5 Upper

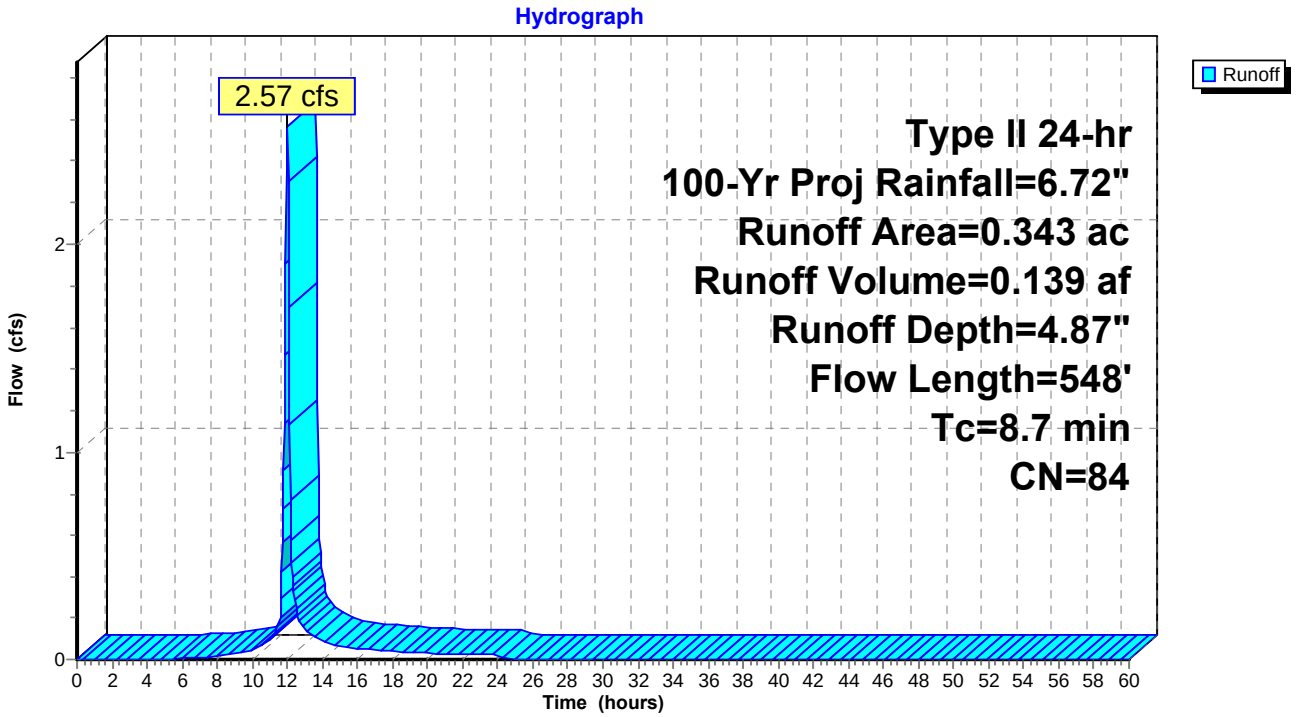
Runoff = 2.57 cfs @ 12.00 hrs, Volume= 0.139 af, Depth= 4.87"
Routed to Pond 6P : Guppy Pond P2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
0.259	87	Dirt roads, HSG C
0.084	73	Woods, Fair, HSG C
0.343	84	Weighted Average
0.343		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.4200	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.62"
1.3	190	0.2530	2.51		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
0.4	258	0.1000	11.45	45.80	**Channel Flow,** Area= 4.0 sf Perim= 6.4' r= 0.63' n= 0.030 Earth, grassed & winding
8.7	548	Total			

Subcatchment DA-5U: DA-5 Upper



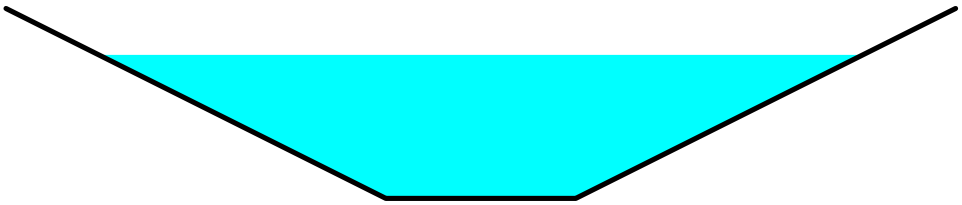
Summary for Reach 1R: Reach DA-1 North

Inflow Area = 25.400 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 88.76 cfs @ 11.98 hrs, Volume= 4.314 af
Outflow = 79.59 cfs @ 12.02 hrs, Volume= 4.314 af, Atten= 10%, Lag= 2.0 min
Routed to Pond 1P : Proposed DA-1 Basin

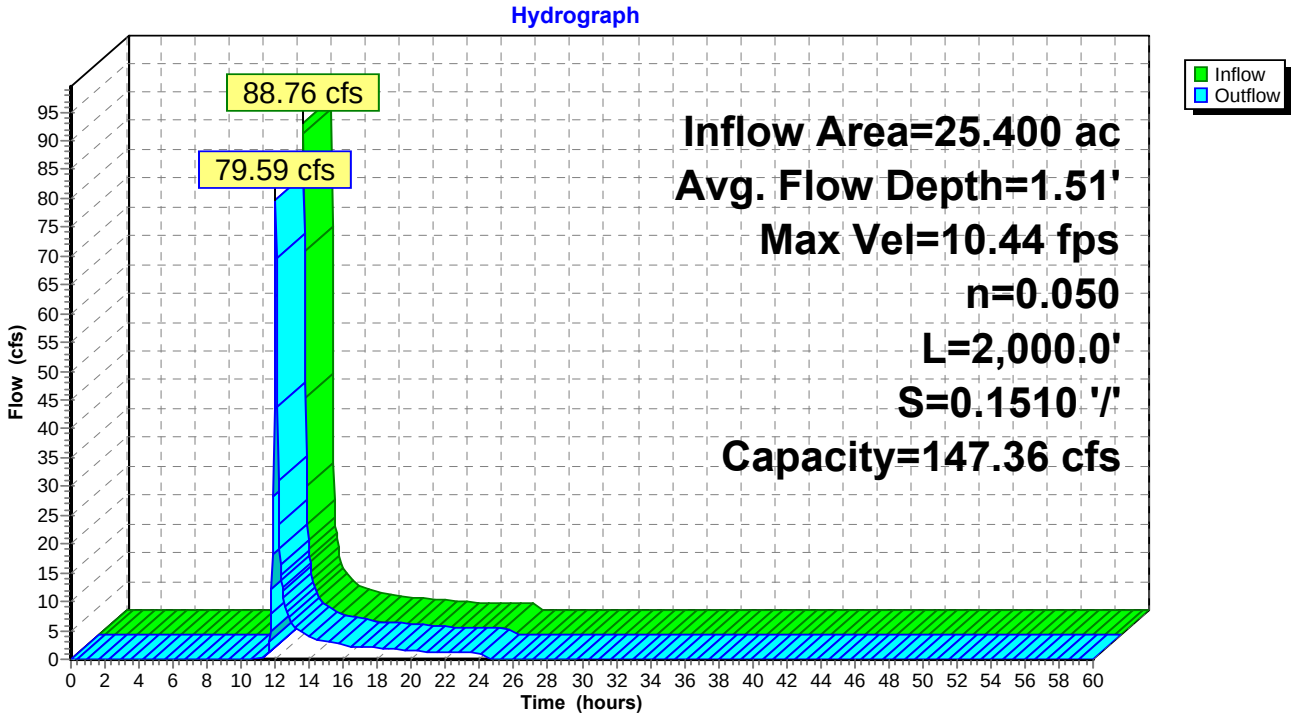
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 10.44 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 3.12 fps, Avg. Travel Time= 10.7 min

Peak Storage= 15,176 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.51' , Surface Width= 8.05'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 147.36 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 2,000.0' Slope= 0.1510 '/'
Inlet Invert= 2,270.00', Outlet Invert= 1,968.00'



Reach 1R: Reach DA-1 North



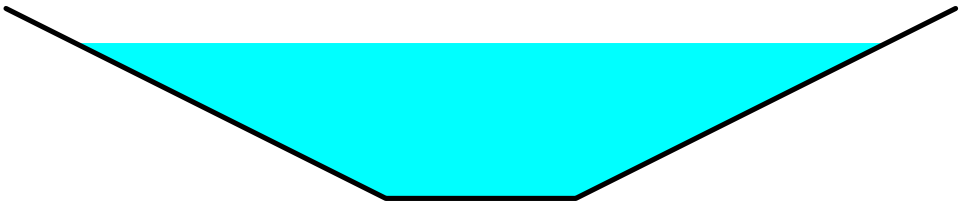
Summary for Reach 2R: Reach DA 1 East

Inflow Area = 19.000 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 67.06 cfs @ 11.98 hrs, Volume= 3.227 af
Outflow = 60.93 cfs @ 12.01 hrs, Volume= 3.227 af, Atten= 9%, Lag= 1.9 min
Routed to Pond 1P : Proposed DA-1 Basin

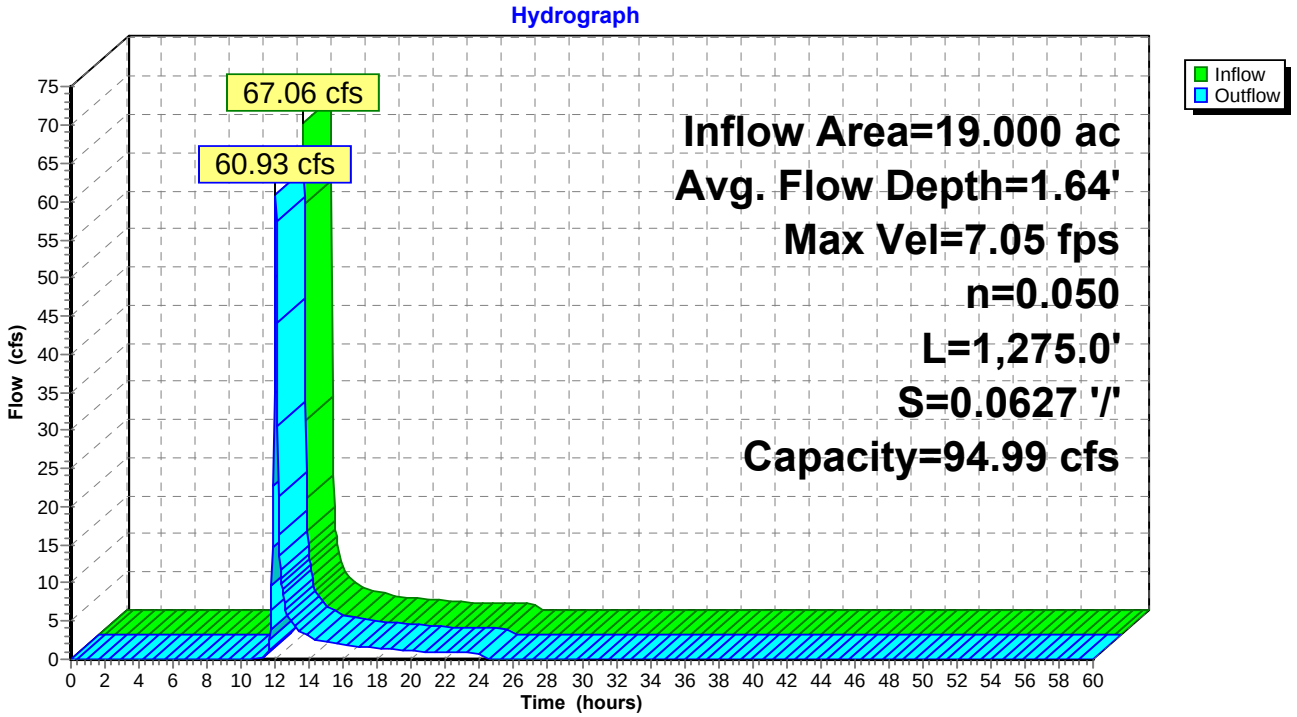
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.05 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 2.11 fps, Avg. Travel Time= 10.1 min

Peak Storage= 10,991 cf @ 12.01 hrs
Average Depth at Peak Storage= 1.64' , Surface Width= 8.54'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 94.99 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,275.0' Slope= 0.0627 '/'
Inlet Invert= 2,048.00', Outlet Invert= 1,968.00'



Reach 2R: Reach DA 1 East



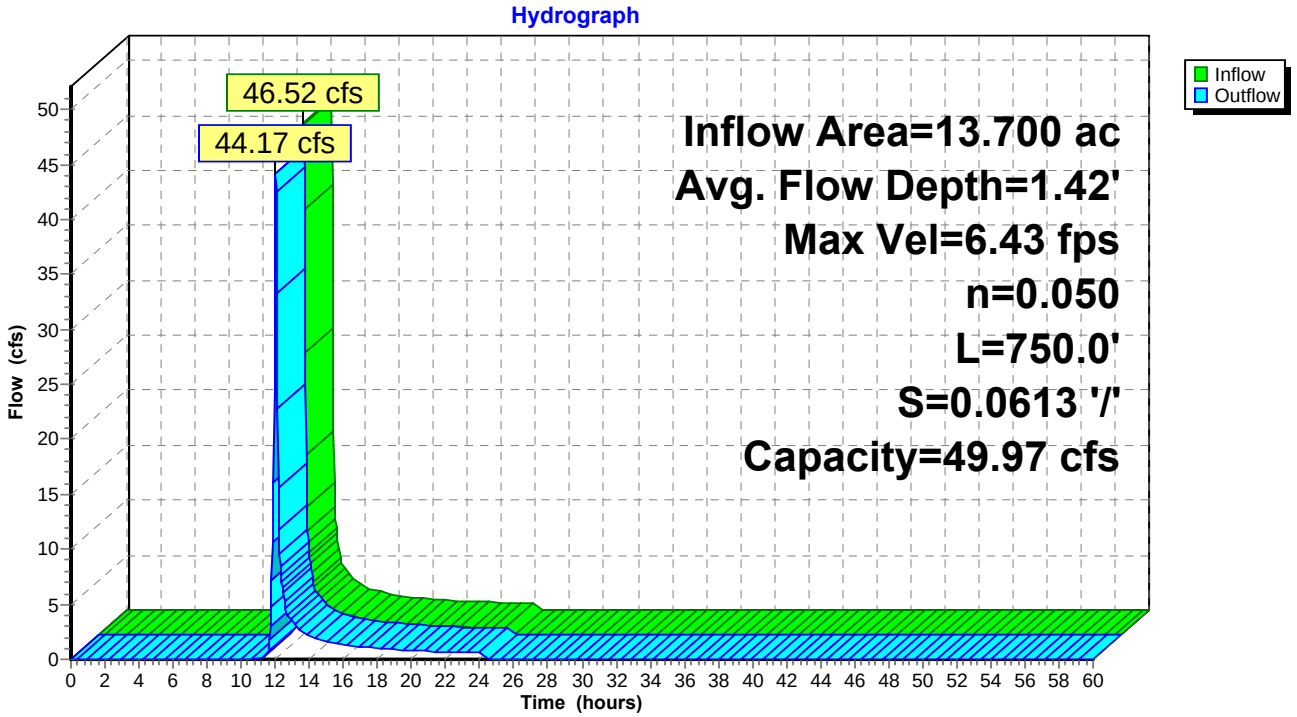
Summary for Reach 3R: Reach DA 2 East

Inflow Area = 13.700 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 46.52 cfs @ 11.99 hrs, Volume= 2.327 af
Outflow = 44.17 cfs @ 12.02 hrs, Volume= 2.327 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 2P : Proposed DA-2 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.43 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 6.3 min

Peak Storage= 5,135 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.42' , Surface Width= 7.67'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 49.97 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 750.0' Slope= 0.0613 '/'
Inlet Invert= 2,052.00', Outlet Invert= 2,006.00'



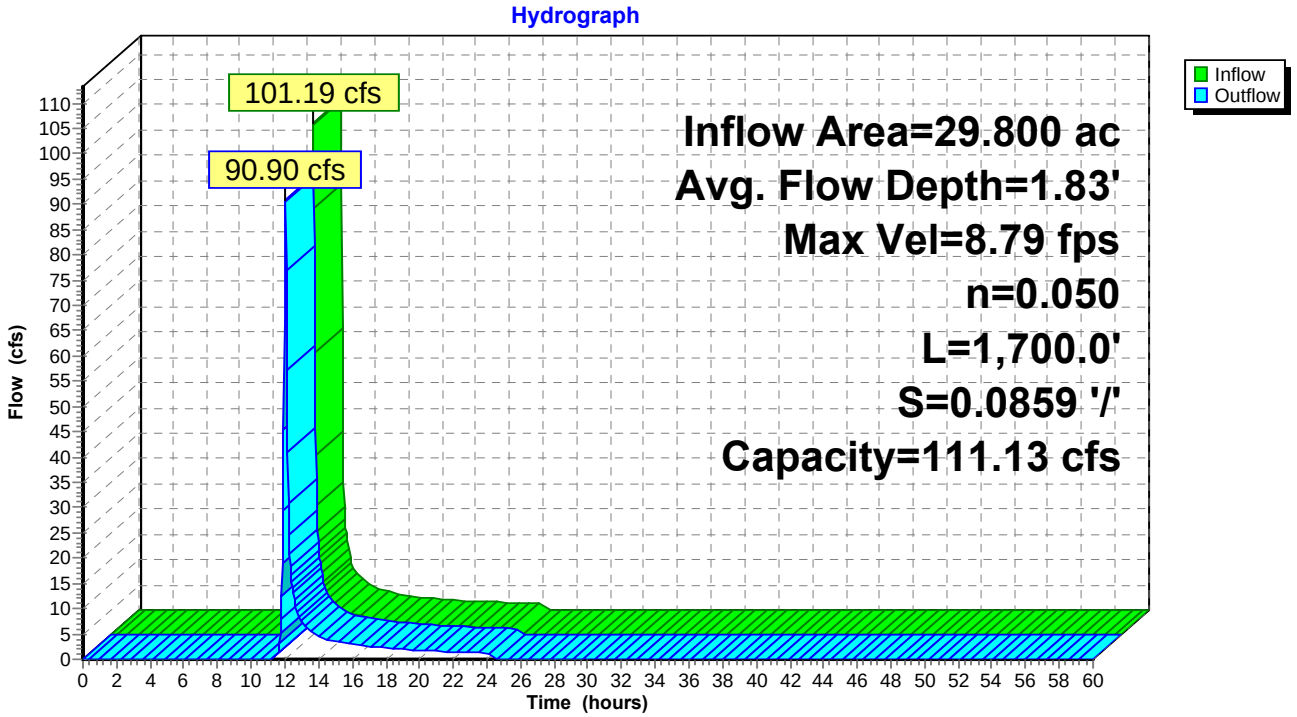
Summary for Reach 4R: Reach DA-2 South

Inflow Area = 29.800 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 101.19 cfs @ 11.99 hrs, Volume= 5.061 af
Outflow = 90.90 cfs @ 12.03 hrs, Volume= 5.061 af, Atten= 10%, Lag= 2.2 min
Routed to Pond 2P : Proposed DA-2 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 8.79 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 10.9 min

Peak Storage= 17,563 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.83' , Surface Width= 9.31'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 111.13 cfs

2.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,700.0' Slope= 0.0859 '/'
Inlet Invert= 2,152.00', Outlet Invert= 2,006.00'



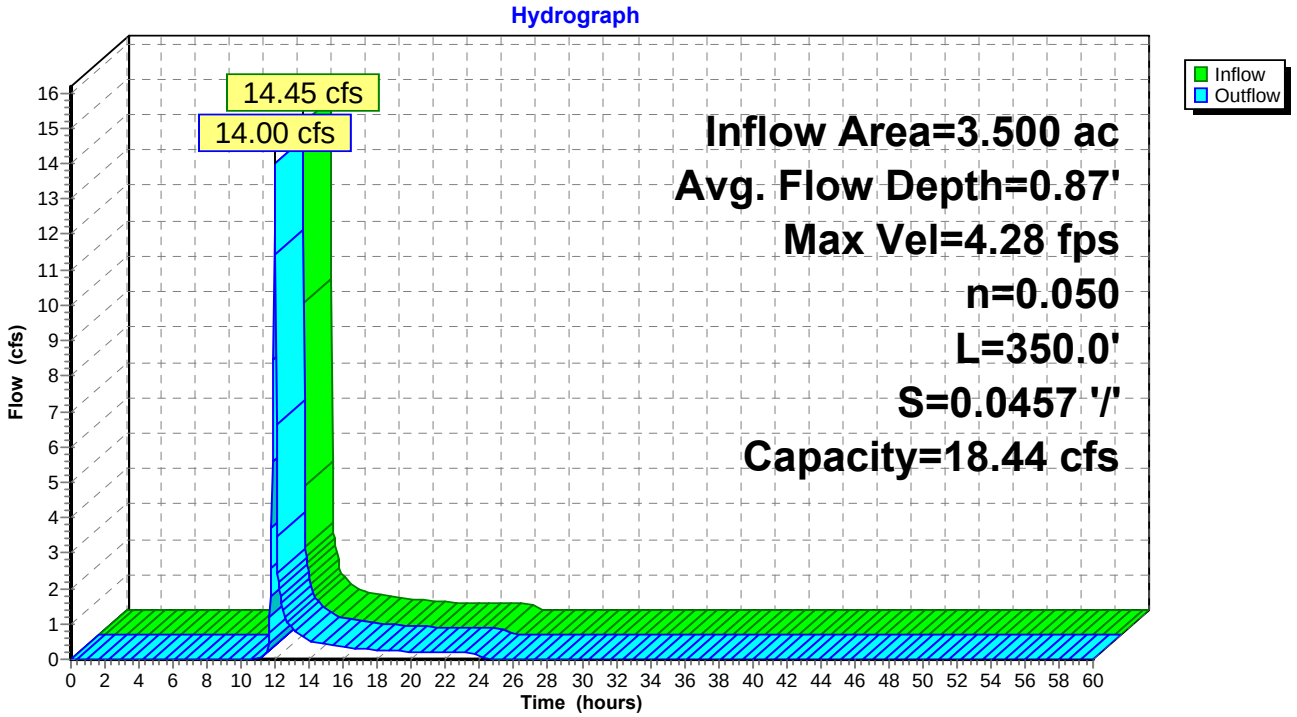
Summary for Reach 5R: Reach DA-3 South

Inflow Area = 3.500 ac, 0.00% Impervious, Inflow Depth = 2.13" for 100-Yr Proj event
Inflow = 14.45 cfs @ 11.94 hrs, Volume= 0.621 af
Outflow = 14.00 cfs @ 11.96 hrs, Volume= 0.621 af, Atten= 3%, Lag= 0.9 min
Routed to Pond 3P : Proposed DA-3 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.28 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1,144 cf @ 11.96 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 5.49'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 18.44 cfs

2.00' x 1.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 350.0' Slope= 0.0457 '/'
Inlet Invert= 2,148.00', Outlet Invert= 2,132.00'



Summary for Reach 6R: Reach DA-3 West

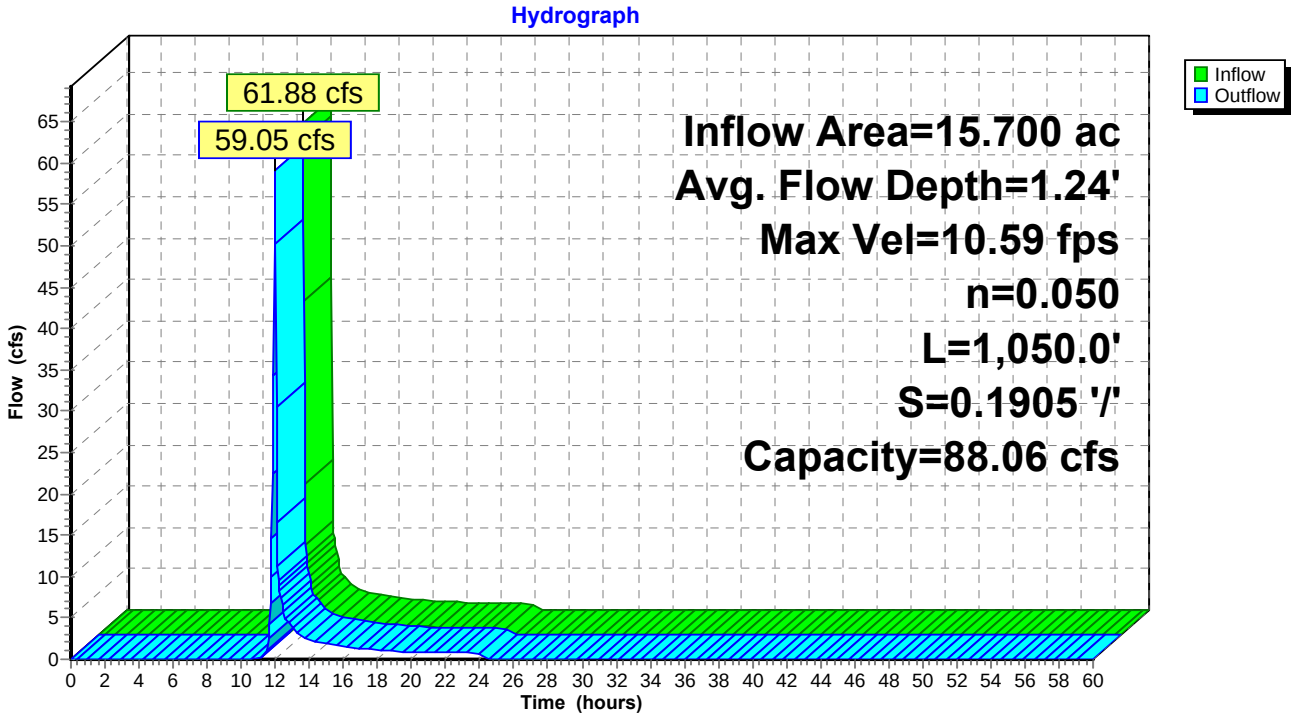
Inflow Area = 15.700 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 61.88 cfs @ 11.94 hrs, Volume= 2.667 af
Outflow = 59.05 cfs @ 11.96 hrs, Volume= 2.667 af, Atten= 5%, Lag= 1.1 min
Routed to Pond 3P : Proposed DA-3 Basin

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 10.59 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 3.18 fps, Avg. Travel Time= 5.5 min

Peak Storage= 5,855 cf @ 11.96 hrs
Average Depth at Peak Storage= 1.24' , Surface Width= 6.97'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 88.06 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 1,050.0' Slope= 0.1905 '/'
Inlet Invert= 2,332.00', Outlet Invert= 2,132.00'

Reach 6R: Reach DA-3 West



Summary for Reach 7R: Reach DA-4 West

[91] Warning: Storage range exceeded by 0.01'
[55] Hint: Peak inflow is 115% of Manning's capacity

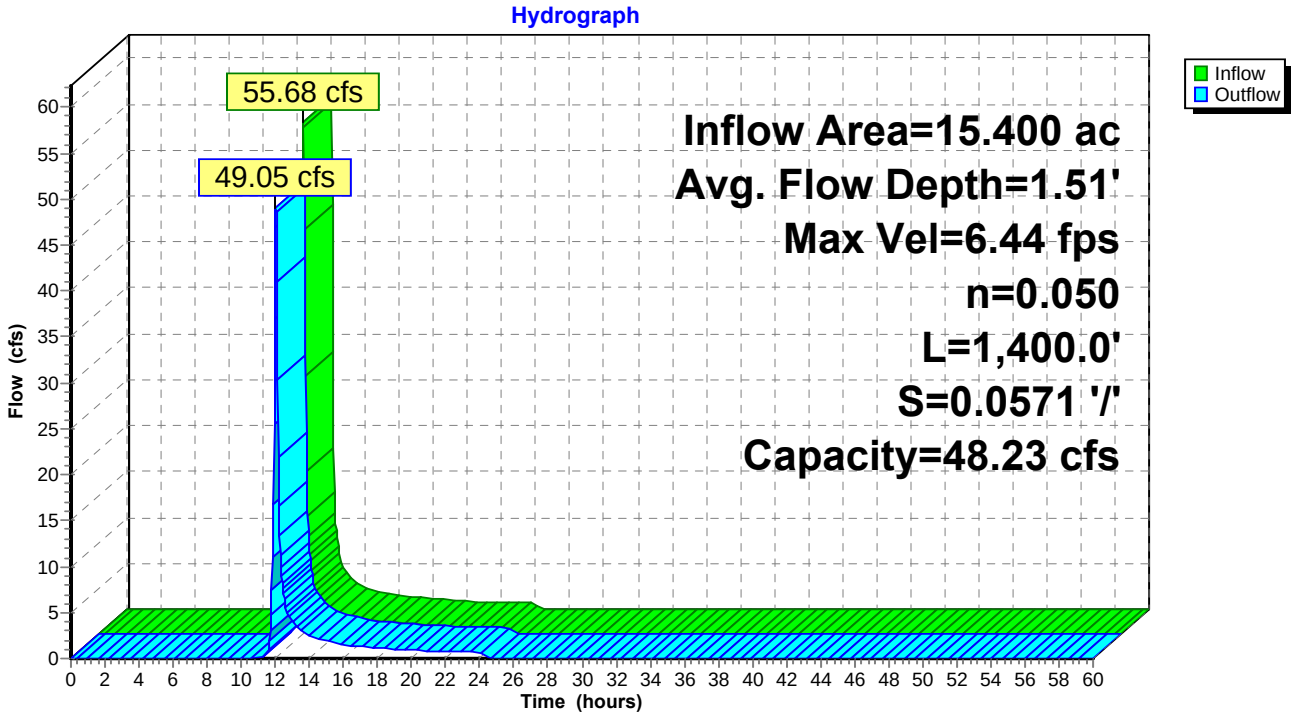
Inflow Area = 15.400 ac, 0.00% Impervious, Inflow Depth = 2.13" for 100-Yr Proj event
Inflow = 55.68 cfs @ 11.99 hrs, Volume= 2.732 af
Outflow = 49.05 cfs @ 12.03 hrs, Volume= 2.732 af, Atten= 12%, Lag= 2.3 min
Routed to Pond 4P : Proposed Basin DA-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.44 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 13.0 min

Peak Storage= 10,634 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.51' , Surface Width= 8.05'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 48.23 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 1,400.0' Slope= 0.0571 '/'
Inlet Invert= 2,320.00', Outlet Invert= 2,240.00'

Reach 7R: Reach DA-4 West



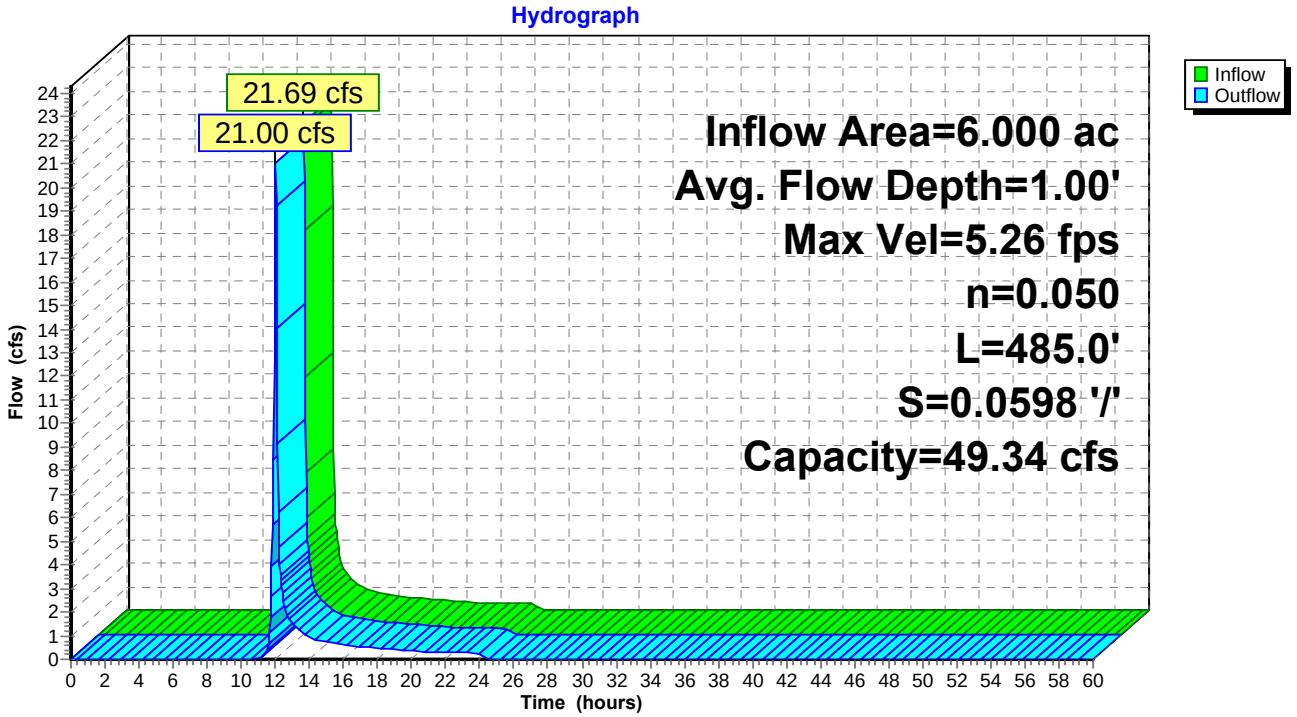
Summary for Reach 8R: Reach DA-4 North

Inflow Area = 6.000 ac, 0.00% Impervious, Inflow Depth = 2.13" for 100-Yr Proj event
Inflow = 21.69 cfs @ 11.99 hrs, Volume= 1.065 af
Outflow = 21.00 cfs @ 12.01 hrs, Volume= 1.065 af, Atten= 3%, Lag= 1.1 min
Routed to Pond 4P : Proposed Basin DA-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.26 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 5.0 min

Peak Storage= 1,934 cf @ 12.01 hrs
Average Depth at Peak Storage= 1.00' , Surface Width= 5.99'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 49.34 cfs

2.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 485.0' Slope= 0.0598 '/'
Inlet Invert= 2,269.00', Outlet Invert= 2,240.00'



Summary for Pond 1P: Proposed DA-1 Basin

Inflow Area = 44.400 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 140.41 cfs @ 12.02 hrs, Volume= 7.541 af
Outflow = 9.10 cfs @ 13.34 hrs, Volume= 3.886 af, Atten= 94%, Lag= 79.4 min
Primary = 9.10 cfs @ 13.34 hrs, Volume= 3.886 af
Routed to Link 009A : SPDES Outfall 009A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,966.58' @ 13.34 hrs Storage= 3.959 af

Plug-Flow detention time= 310.5 min calculated for 3.886 af (52% of inflow)
Center-of-Mass det. time= 167.9 min (1,037.1 - 869.2)

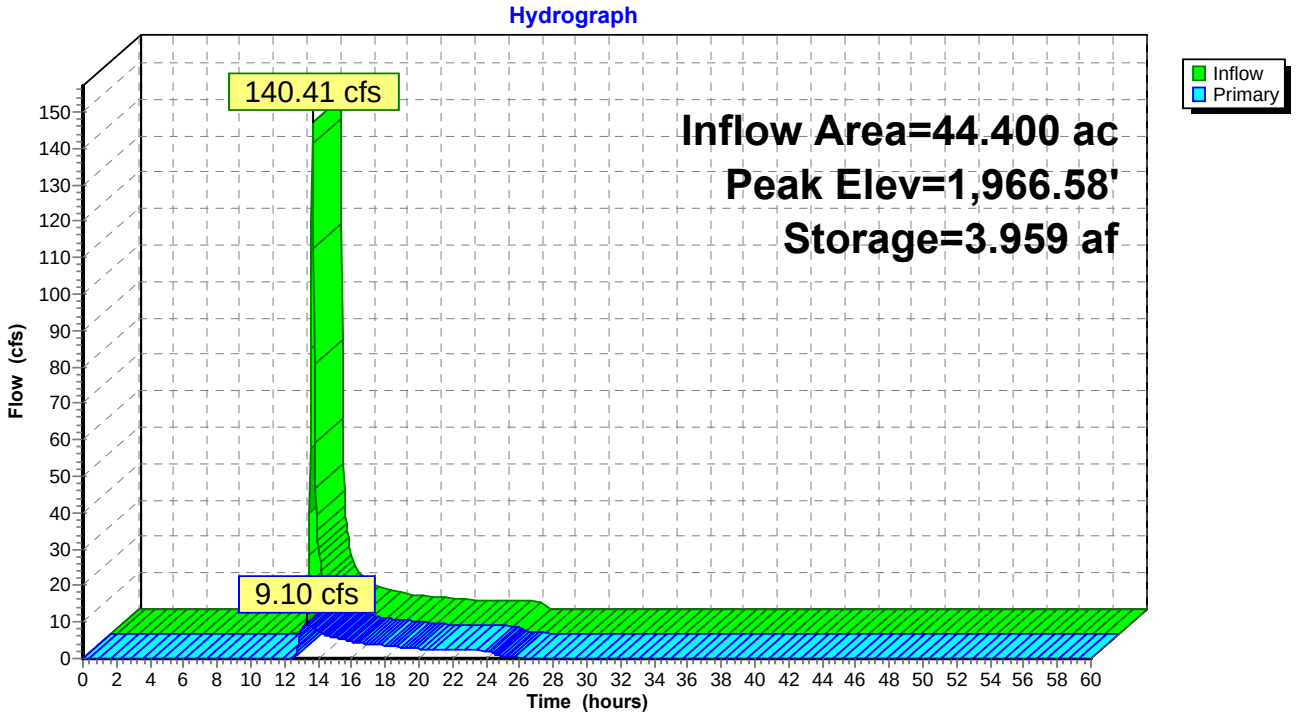
Volume	Invert	Avail.Storage	Storage Description
#1	1,959.00'	4.700 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
1,959.00	0.000
1,968.00	4.700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,959.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,959.00' / 1,956.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,966.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.08 cfs @ 13.34 hrs HW=1,966.58' (Free Discharge)
↑—**1=Culvert** (Passes 9.08 cfs of 15.12 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 9.08 cfs @ 2.49 fps)

Pond 1P: Proposed DA-1 Basin



Summary for Pond 2P: Proposed DA-2 Basin

Inflow Area = 43.500 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100-Yr Proj event
Inflow = 134.68 cfs @ 12.03 hrs, Volume= 7.388 af
Outflow = 9.97 cfs @ 13.13 hrs, Volume= 3.966 af, Atten= 93%, Lag= 66.1 min
Primary = 9.97 cfs @ 13.13 hrs, Volume= 3.966 af
Routed to Link 006A : SPDES Outfall 006A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,004.62' @ 13.13 hrs Storage= 3.724 af

Plug-Flow detention time= 295.6 min calculated for 3.966 af (54% of inflow)
Center-of-Mass det. time= 155.2 min (1,024.6 - 869.4)

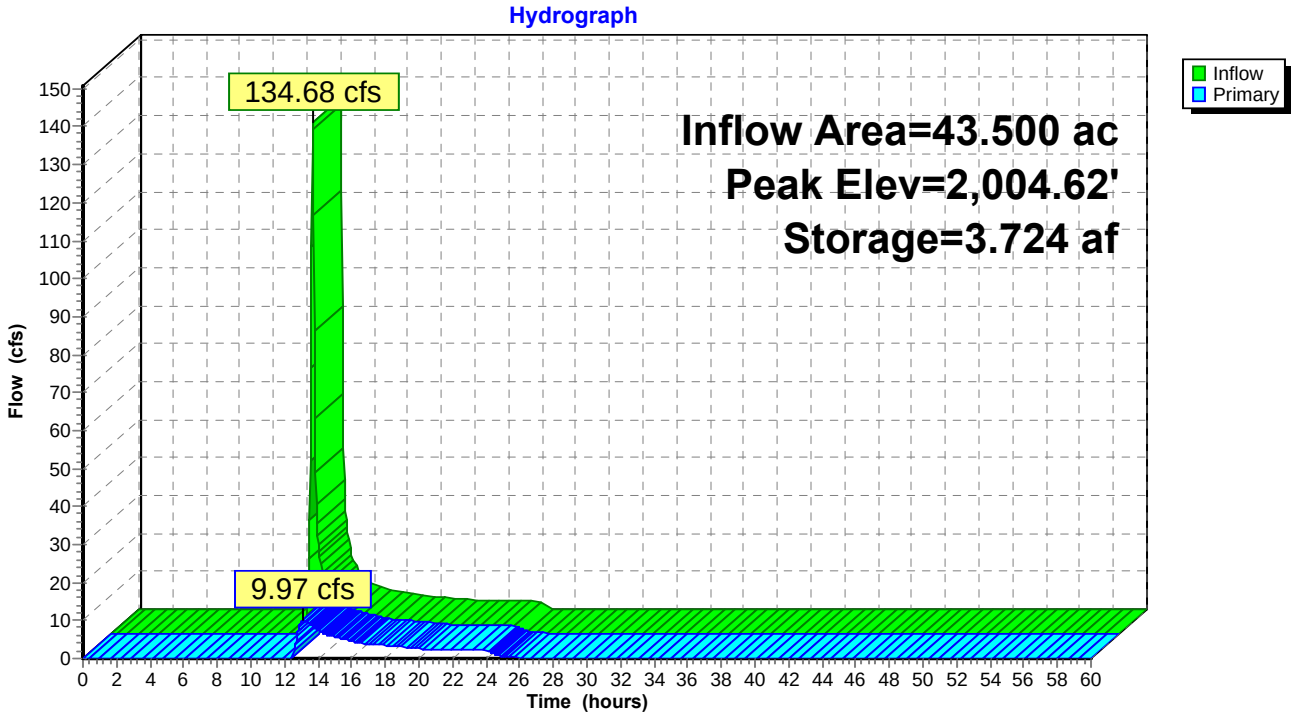
Volume	Invert	Avail.Storage	Storage Description
#1	1,997.00'	4.400 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
1,997.00	0.000
2,006.00	4.400

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,997.00' / 1,994.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	2,004.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.95 cfs @ 13.13 hrs HW=2,004.62' (Free Discharge)
↑—**1=Culvert** (Passes 9.95 cfs of 15.15 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 9.95 cfs @ 2.57 fps)

Pond 2P: Proposed DA-2 Basin



Summary for Pond 3P: Proposed DA-3 Basin

[62] Hint: Exceeded Reach 5R OUTLET depth by 0.19' @ 12.96 hrs
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.09' @ 13.04 hrs

Inflow Area = 19.200 ac, 0.00% Impervious, Inflow Depth = 2.05" for 100-Yr Proj event
Inflow = 73.04 cfs @ 11.96 hrs, Volume= 3.288 af
Outflow = 4.88 cfs @ 12.89 hrs, Volume= 1.732 af, Atten= 93%, Lag= 55.9 min
Primary = 4.88 cfs @ 12.89 hrs, Volume= 1.732 af
Routed to Link 007A : SPDES Outfall 007A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,132.38' @ 12.89 hrs Storage= 1.641 af

Plug-Flow detention time= 285.9 min calculated for 1.731 af (53% of inflow)
Center-of-Mass det. time= 146.5 min (1,009.4 - 862.9)

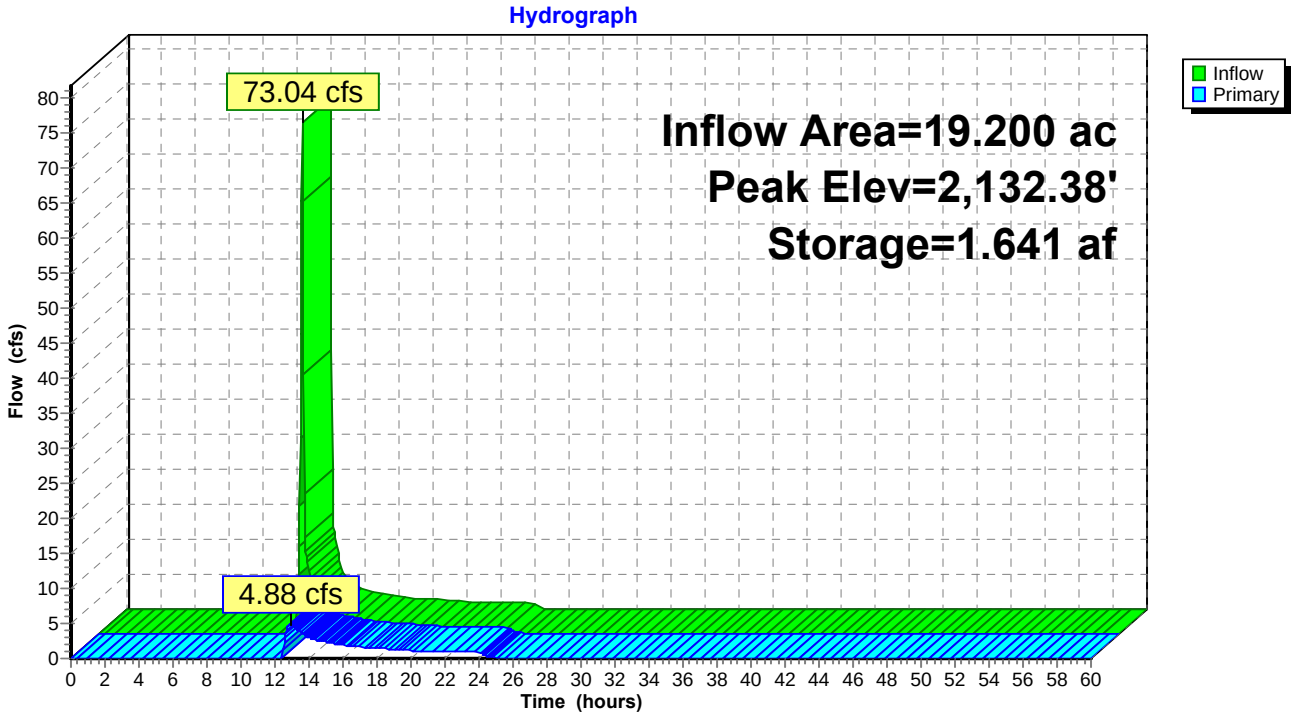
Volume	Invert	Avail.Storage	Storage Description
#1	2,125.00'	2.000 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
2,125.00	0.000
2,134.00	2.000

Device	Routing	Invert	Outlet Devices
#1	Primary	2,125.00'	**18.0" Round Culvert** L= 90.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,125.00' / 2,124.00' S= 0.0111 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	2,132.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.87 cfs @ 12.89 hrs HW=2,132.38' (Free Discharge)
↑**1=Culvert** (Passes 4.87 cfs of 13.16 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 4.87 cfs @ 2.02 fps)

Pond 3P: Proposed DA-3 Basin



Summary for Pond 4P: Proposed Basin DA-4

Inflow Area = 21.400 ac, 0.00% Impervious, Inflow Depth = 2.13" for 100-Yr Proj event
Inflow = 69.52 cfs @ 12.02 hrs, Volume= 3.797 af
Outflow = 5.68 cfs @ 12.96 hrs, Volume= 2.008 af, Atten= 92%, Lag= 56.2 min
Primary = 5.68 cfs @ 12.96 hrs, Volume= 2.008 af
Routed to Link 008A : SPDES Outfall 008A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 2,238.42' @ 12.96 hrs Storage= 1.897 af

Plug-Flow detention time= 285.7 min calculated for 2.007 af (53% of inflow)
Center-of-Mass det. time= 146.8 min (1,013.7 - 866.9)

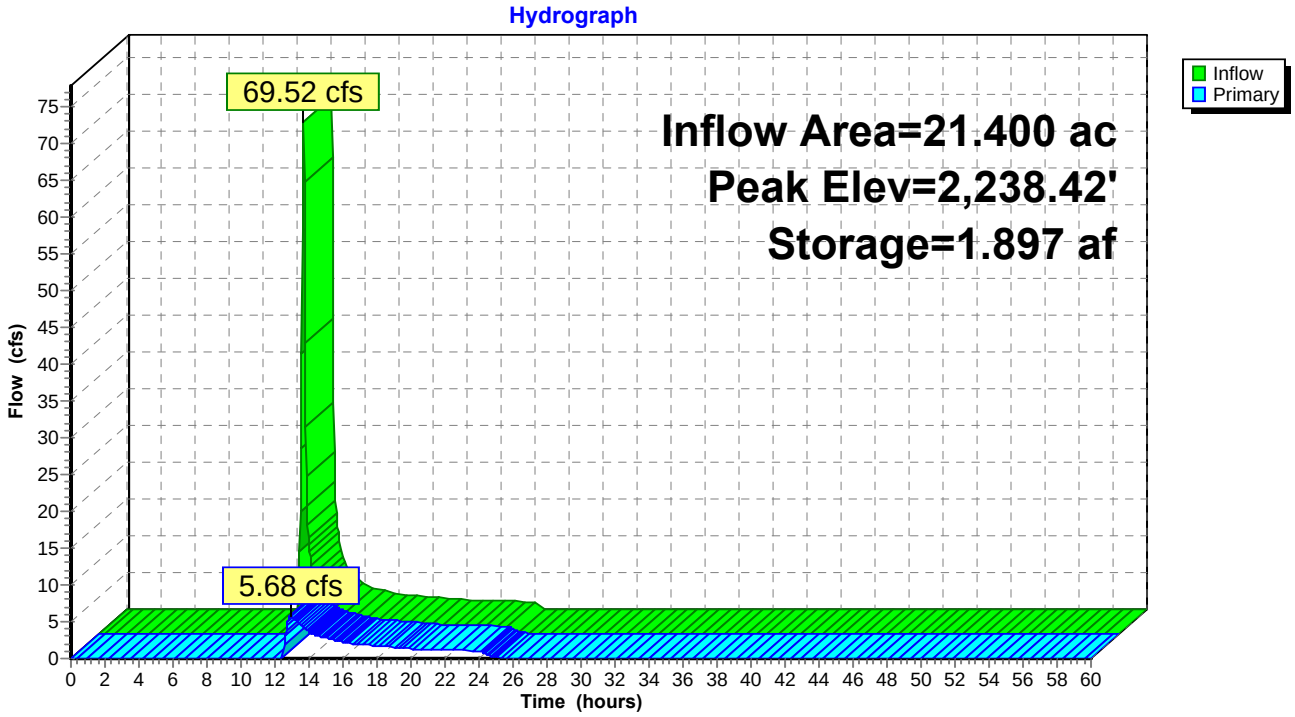
Volume	Invert	Avail.Storage	Storage Description
#1	2,231.00'	2.300 af	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (acre-feet)
2,231.00	0.000
2,240.00	2.300

Device	Routing	Invert	Outlet Devices
#1	Primary	2,231.00'	**18.0" Round Culvert** L= 180.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,231.00' / 2,230.00' S= 0.0056 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Device 1	2,238.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.65 cfs @ 12.96 hrs HW=2,238.42' (Free Discharge)
↑—**1=Culvert** (Passes 5.65 cfs of 17.20 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 5.65 cfs @ 2.13 fps)

Pond 4P: Proposed Basin DA-4



Summary for Pond 5P: Frog Pond

Inflow Area = 11.246 ac, 0.00% Impervious, Inflow Depth = 4.29" for 100-Yr Proj event
Inflow = 73.52 cfs @ 12.01 hrs, Volume= 4.019 af
Outflow = 63.87 cfs @ 12.06 hrs, Volume= 3.869 af, Atten= 13%, Lag= 3.0 min
Primary = 17.46 cfs @ 12.06 hrs, Volume= 3.121 af
Routed to Link 001A : SPDES Outfall 001A
Secondary = 46.42 cfs @ 12.06 hrs, Volume= 0.749 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,891.53' @ 12.06 hrs Surf.Area= 10,280 sf Storage= 47,344 cf

Plug-Flow detention time= 221.2 min calculated for 3.869 af (96% of inflow)
Center-of-Mass det. time= 199.2 min (1,017.6 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,882.00'	51,821 cf	**Custom Stage Data (Irregular)** Listed below

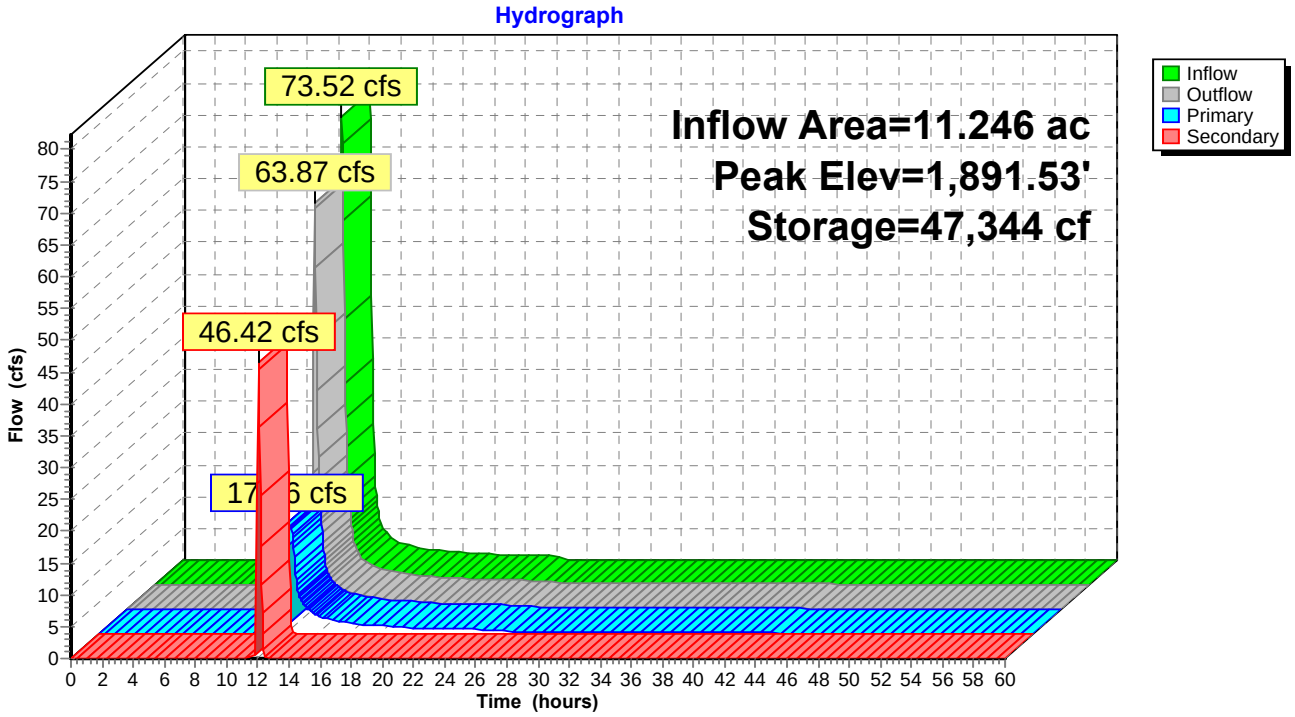
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,882.00	1,214	162.0	0	0	1,214
1,884.00	2,272	224.0	3,431	3,431	3,157
1,886.00	3,880	332.0	6,081	9,512	7,968
1,888.00	5,766	367.0	9,584	19,096	10,036
1,890.00	8,066	425.0	13,768	32,864	13,777
1,892.00	10,965	475.0	18,957	51,821	17,469

Device	Routing	Invert	Outlet Devices
#1	Primary	1,882.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,882.00' / 1,881.00' S= 0.0167 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,885.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 6.0" cc spacing C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,889.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,890.50'	**15.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=17.44 cfs @ 12.06 hrs HW=1,891.51' (Free Discharge)
└**1=Culvert** (Barrel Controls 17.44 cfs @ 9.87 fps)
└**2=Orifice/Grate** (Passes < 0.52 cfs potential flow)
└**3=Orifice/Grate** (Passes < 21.45 cfs potential flow)

Secondary OutFlow Max=45.18 cfs @ 12.06 hrs HW=1,891.51' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 45.18 cfs @ 2.63 fps)

Pond 5P: Frog Pond



Summary for Pond 6P: Guppy Pond P2

Inflow Area = 0.343 ac, 0.00% Impervious, Inflow Depth = 4.87" for 100-Yr Proj event
Inflow = 2.57 cfs @ 12.00 hrs, Volume= 0.139 af
Outflow = 0.52 cfs @ 12.22 hrs, Volume= 0.067 af, Atten= 80%, Lag= 13.5 min
Primary = 0.52 cfs @ 12.22 hrs, Volume= 0.067 af
Routed to Pond 5P : Frog Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,954.72' @ 12.22 hrs Surf.Area= 1,875 sf Storage= 3,386 cf

Plug-Flow detention time= 245.4 min calculated for 0.067 af (48% of inflow)
Center-of-Mass det. time= 131.4 min (930.0 - 798.7)

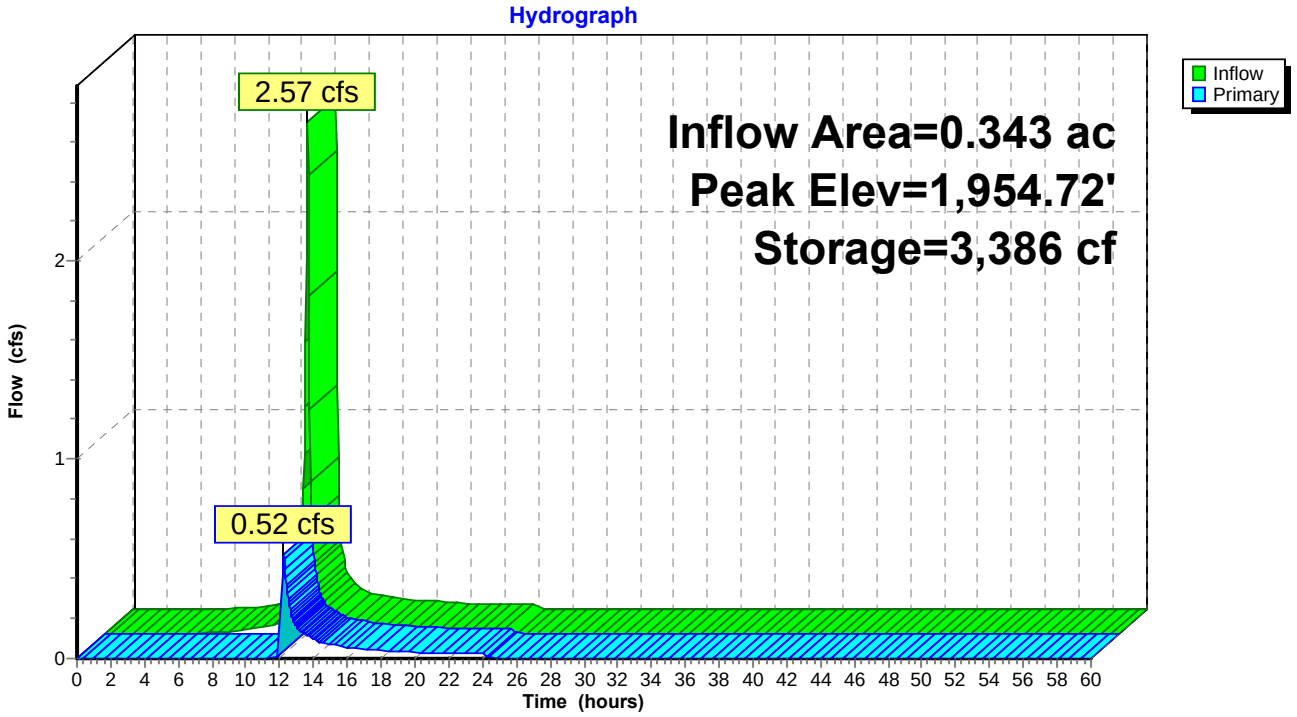
Volume	Invert	Avail.Storage	Storage Description
#1	1,950.60'	5,246 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,950.60	70	50.0	0	0	70
1,952.60	730	150.0	684	684	1,674
1,954.60	1,795	200.0	2,446	3,131	3,110
1,955.60	2,454	230.0	2,116	5,246	4,159

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.60'	**5.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	1,955.00'	**15.0' long + 2.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.51 cfs @ 12.22 hrs HW=1,954.72' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.51 cfs @ 0.80 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Guppy Pond P2



Summary for Pond 7P: Unnanmed Pond

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 5.117 ac, 0.00% Impervious, Inflow Depth = 4.44" for 100-Yr Proj event
Inflow = 34.81 cfs @ 12.01 hrs, Volume= 1.892 af
Outflow = 35.94 cfs @ 12.01 hrs, Volume= 1.864 af, Atten= 0%, Lag= 0.4 min
Primary = 35.94 cfs @ 12.01 hrs, Volume= 1.864 af
Routed to Pond 5P : Frog Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,927.47' @ 12.01 hrs Surf.Area= 2,301 sf Storage= 6,318 cf

Plug-Flow detention time= 20.0 min calculated for 1.863 af (98% of inflow)
Center-of-Mass det. time= 11.1 min (820.7 - 809.6)

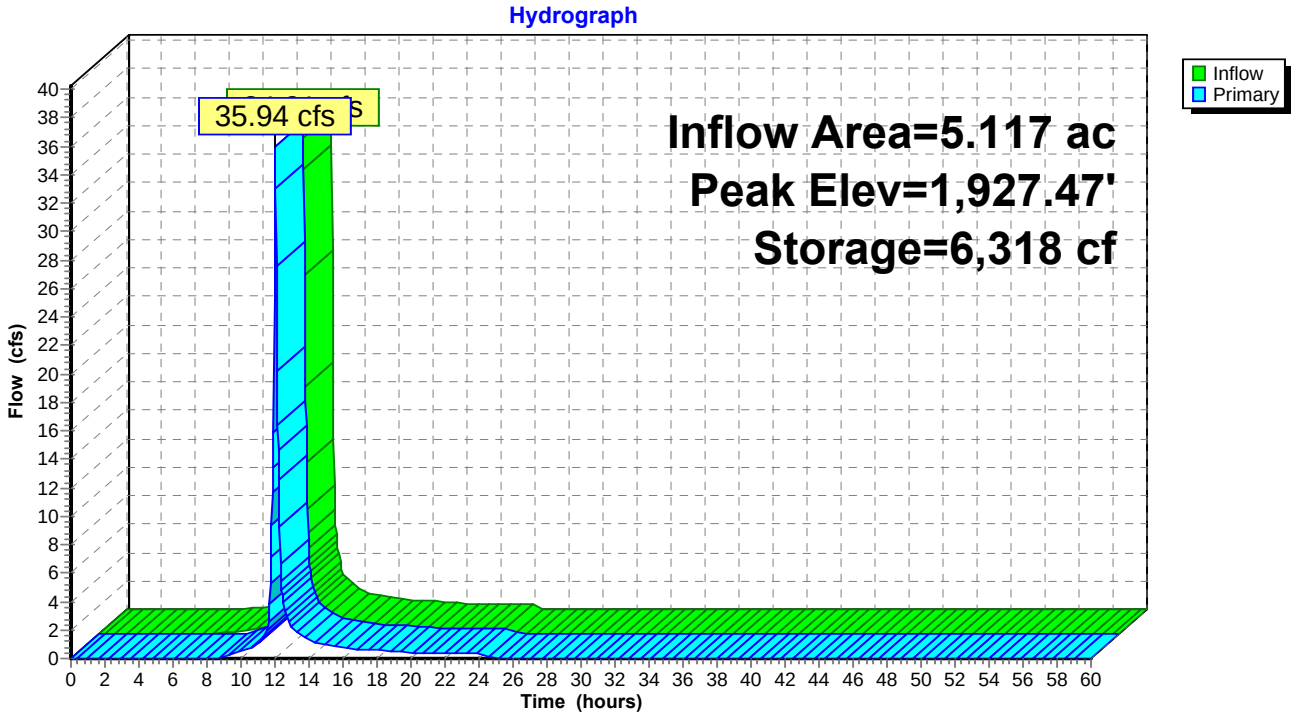
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	7,376 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,922.00	490	95.0	0	0	490
1,924.00	730	122.0	1,212	1,212	1,004
1,926.00	1,465	150.0	2,153	3,365	1,669
1,928.00	2,600	202.0	4,011	7,376	3,167

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,924.00' / 1,921.00' S= 0.0750 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,927.00'	**20.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=34.59 cfs @ 12.01 hrs HW=1,927.45' (Free Discharge)
1=Culvert (Inlet Controls 18.69 cfs @ 5.95 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 15.90 cfs @ 1.69 fps)

Pond 7P: Unnamed Pond

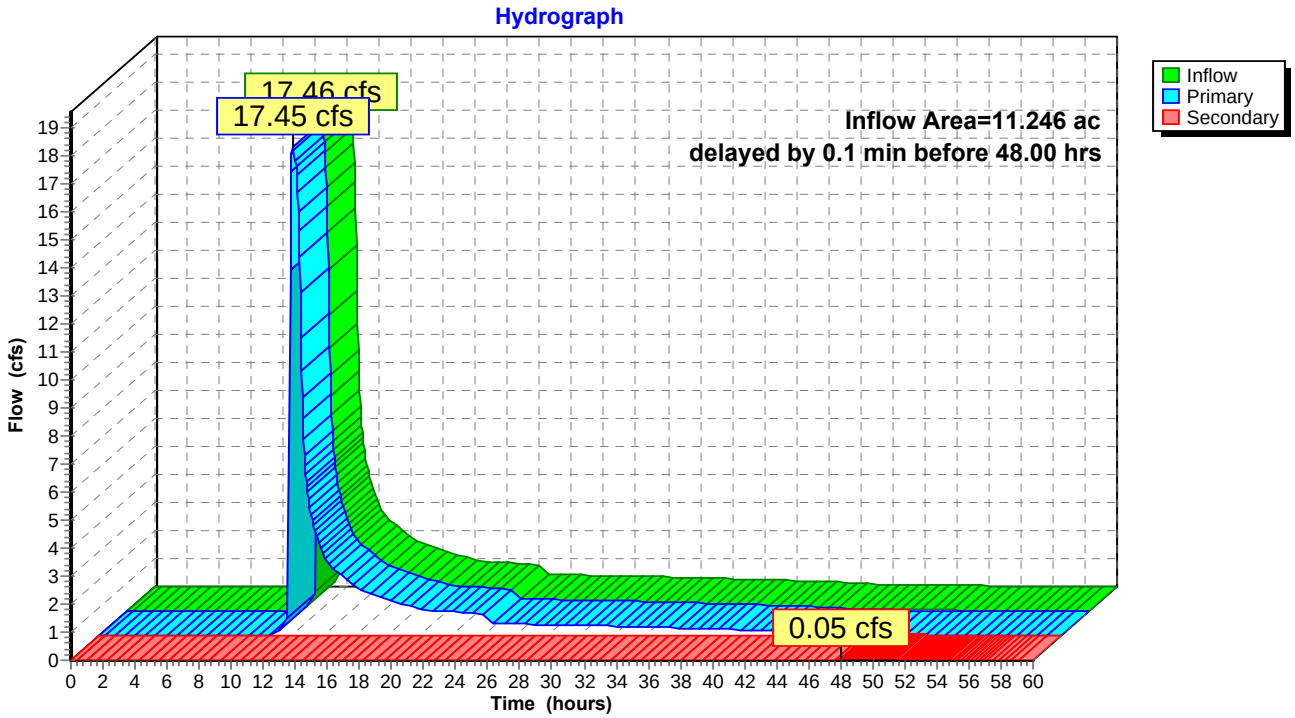


Summary for Link 001A: SPDES Outfall 001A

Inflow Area = 11.246 ac, 0.00% Impervious, Inflow Depth > 3.33" for 100-Yr Proj event
Inflow = 17.46 cfs @ 12.06 hrs, Volume= 3.121 af
Primary = 17.45 cfs @ 12.07 hrs, Volume= 3.099 af, Atten= 0%, Lag= 0.2 min
Secondary = 0.05 cfs @ 48.00 hrs, Volume= 0.021 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 001A: SPDES Outfall 001A

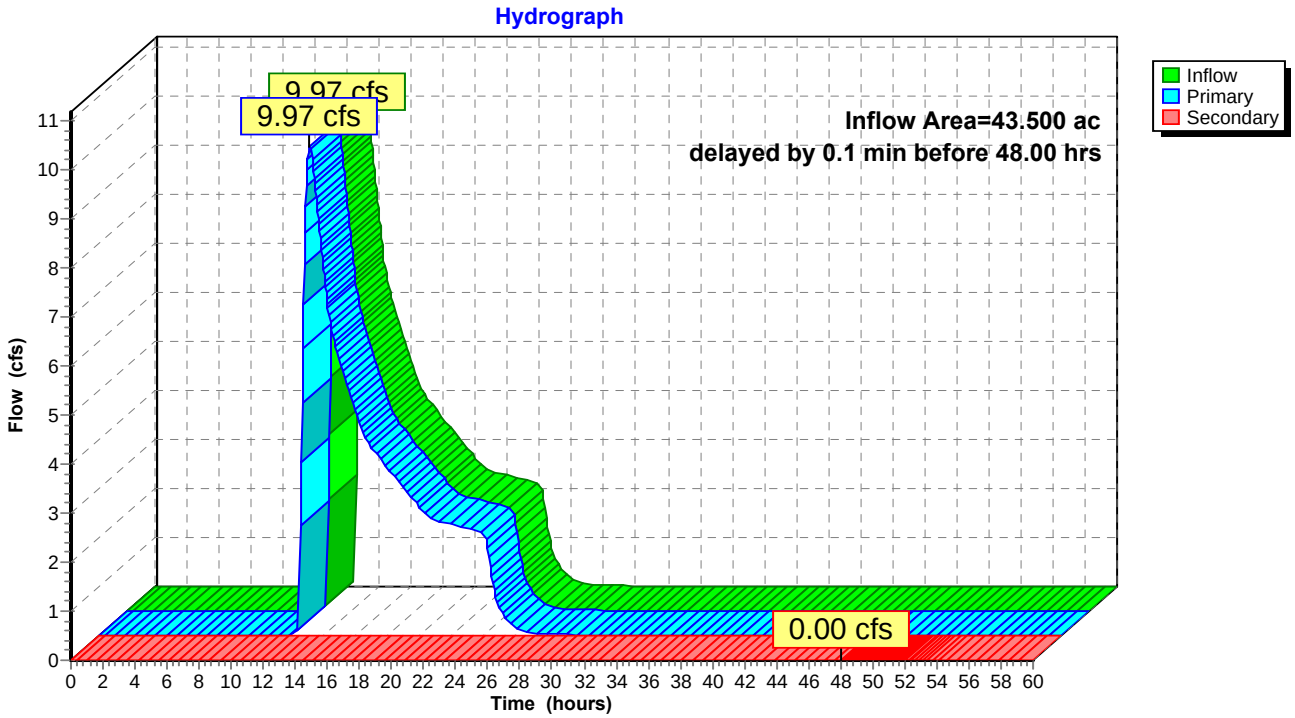


Summary for Link 006A: SPDES Outfall 006A

Inflow Area = 43.500 ac, 0.00% Impervious, Inflow Depth = 1.09" for 100-Yr Proj event
Inflow = 9.97 cfs @ 13.13 hrs, Volume= 3.966 af
Primary = 9.97 cfs @ 13.13 hrs, Volume= 3.966 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 48.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 006A: SPDES Outfall 006A

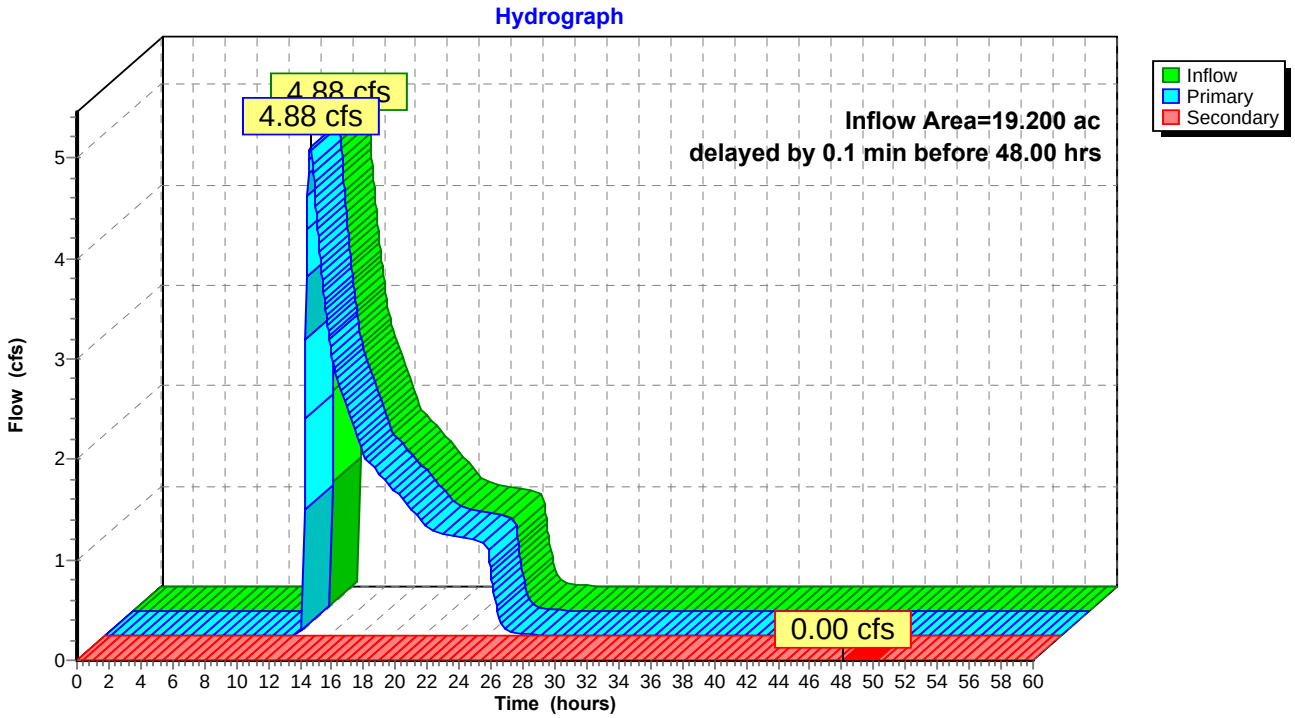


Summary for Link 007A: SPDES Outfall 007A

Inflow Area = 19.200 ac, 0.00% Impervious, Inflow Depth = 1.08" for 100-Yr Proj event
Inflow = 4.88 cfs @ 12.89 hrs, Volume= 1.732 af
Primary = 4.88 cfs @ 12.89 hrs, Volume= 1.732 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 48.02 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 007A: SPDES Outfall 007A

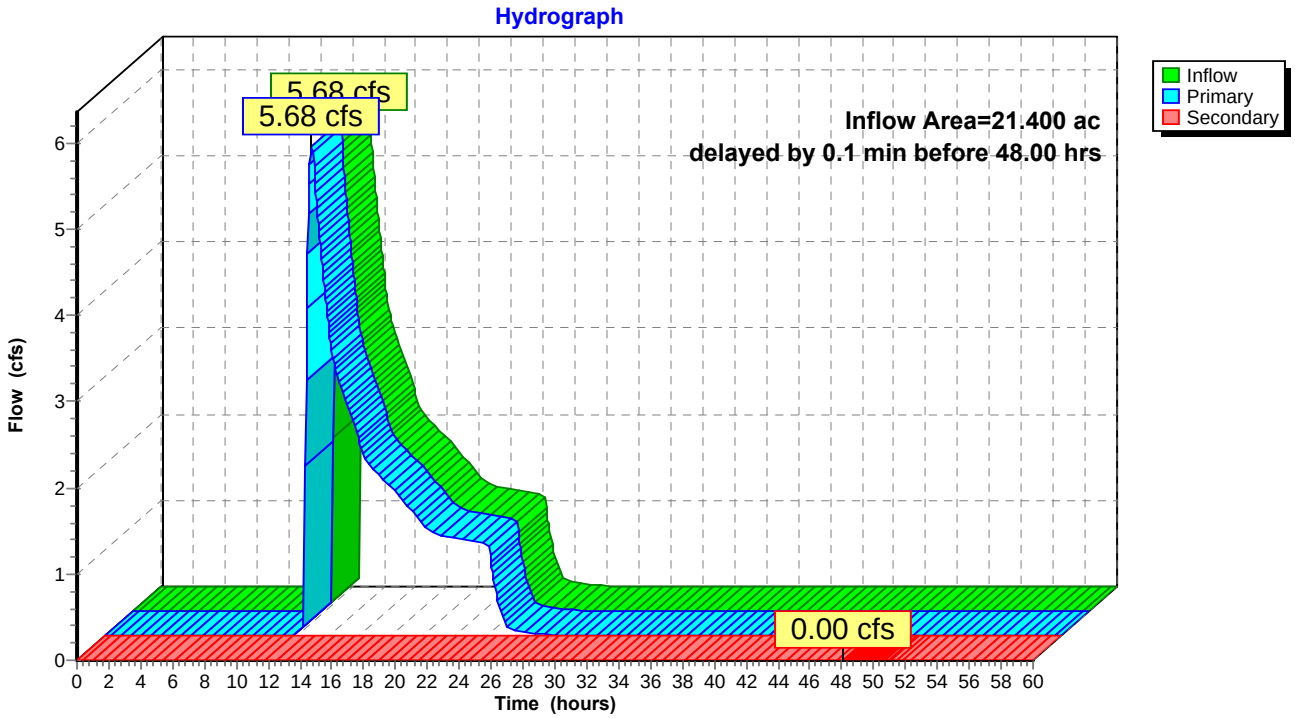


Summary for Link 008A: SPDES Outfall 008A

Inflow Area = 21.400 ac, 0.00% Impervious, Inflow Depth = 1.13" for 100-Yr Proj event
Inflow = 5.68 cfs @ 12.96 hrs, Volume= 2.008 af
Primary = 5.68 cfs @ 12.96 hrs, Volume= 2.008 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 48.02 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 008A: SPDES Outfall 008A

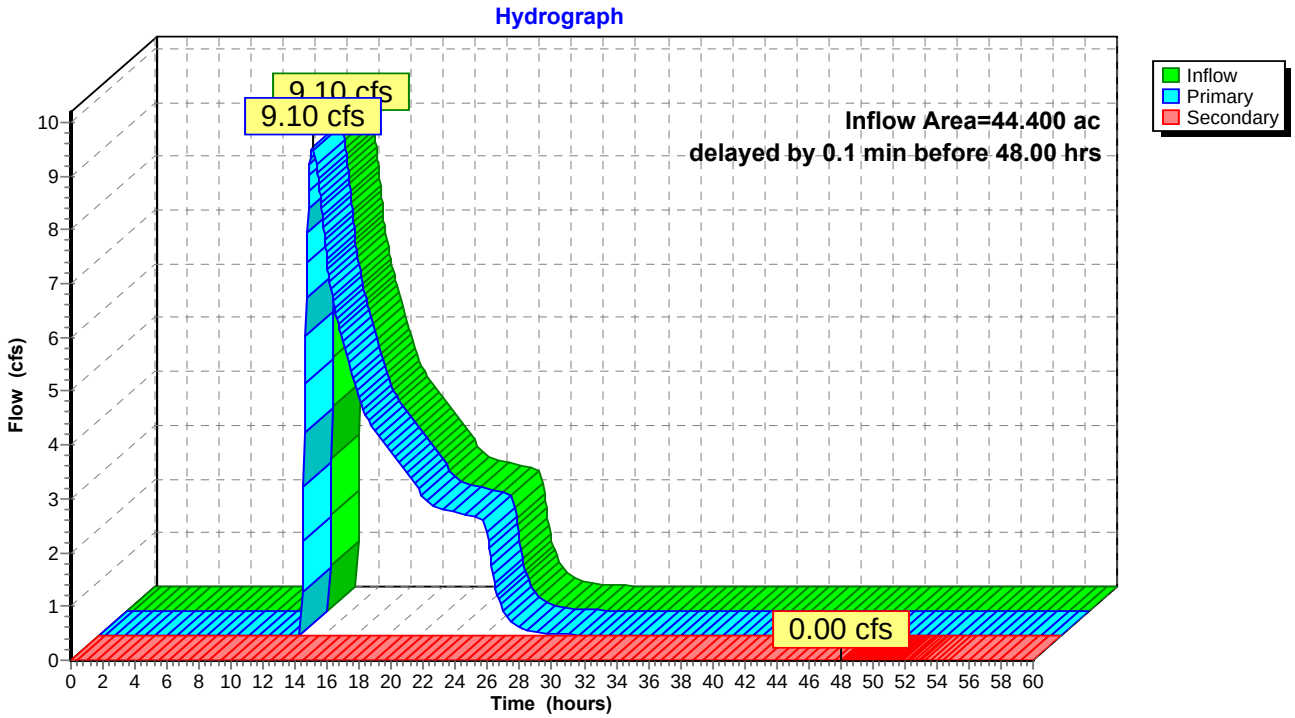


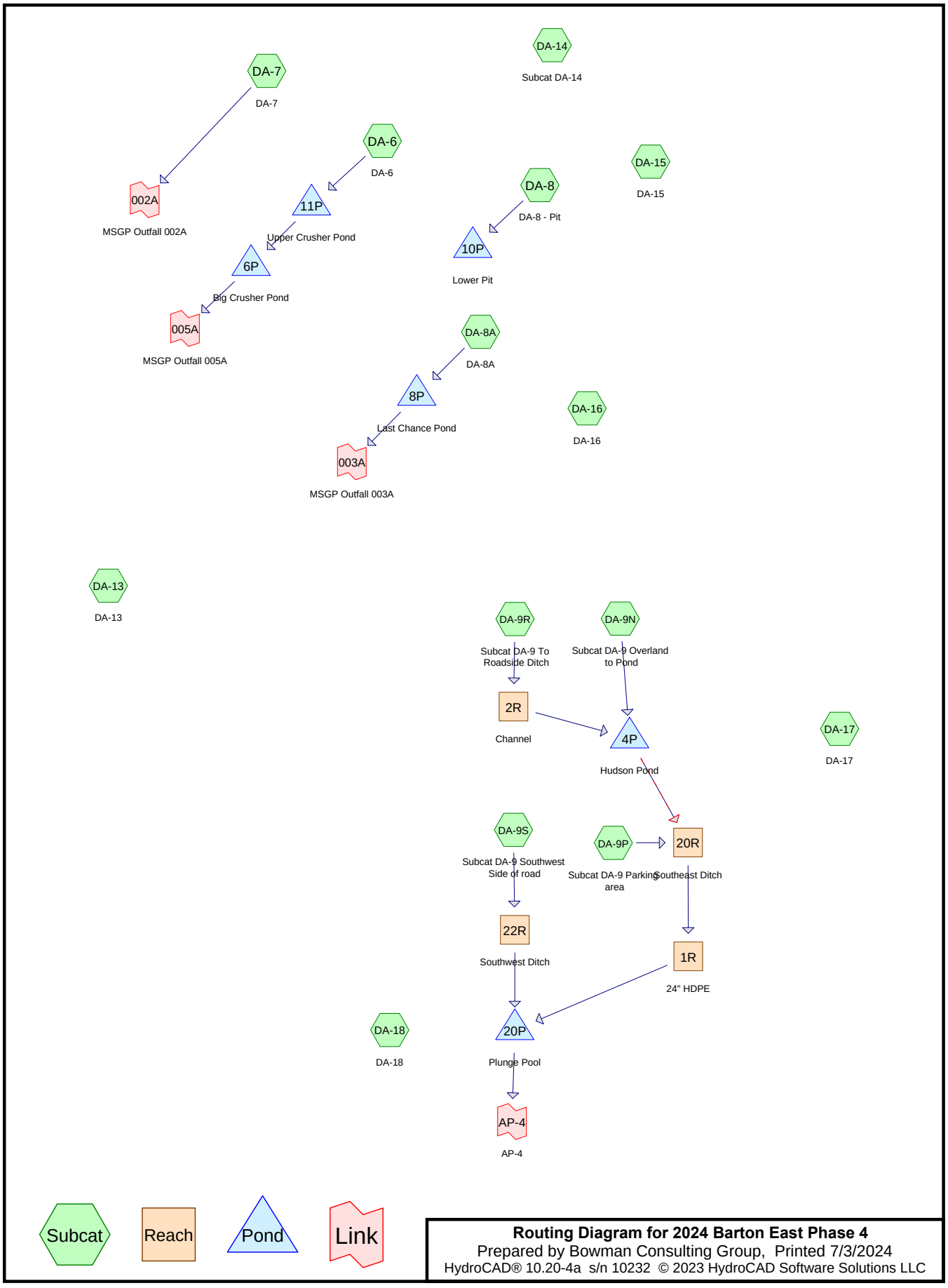
Summary for Link 009A: SPDES Outfall 009A

Inflow Area = 44.400 ac, 0.00% Impervious, Inflow Depth = 1.05" for 100-Yr Proj event
Inflow = 9.10 cfs @ 13.34 hrs, Volume= 3.886 af
Primary = 9.10 cfs @ 13.34 hrs, Volume= 3.886 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 48.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 009A: SPDES Outfall 009A





Routing Diagram for 2024 Barton East Phase 4
Prepared by Bowman Consulting Group, Printed 7/3/2024
HydroCAD® 10.20-4a s/n 10232 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.066	39	>75% Grass cover, Good, HSG A (DA-13, DA-7)
2.177	61	>75% Grass cover, Good, HSG B (DA-13)
1.132	74	>75% Grass cover, Good, HSG C (DA-17, DA-6, DA-9P, DA-9S)
0.452	80	>75% Grass cover, Good, HSG D (DA-17)
0.210	72	Dirt roads, HSG A (DA-7)
2.239	82	Dirt roads, HSG B (DA-13)
1.068	87	Dirt roads, HSG C (DA-9R)
0.142	96	Gravel surface, HSG A (DA-8A)
7.506	96	Gravel surface, HSG C (DA-6, DA-9P, DA-9R)
68.165	77	Newly graded area, HSG A (DA-8, DA-8A)
1.380	98	Paved parking, HSG B (DA-13)
0.154	98	Paved parking, HSG C (DA-9P, DA-9S)
0.053	98	Water Surface, HSG A (DA-8A)
5.037	36	Woods, Fair, HSG A (DA-13, DA-17, DA-6, DA-7, DA-8A)
16.580	60	Woods, Fair, HSG B (DA-13)
12.783	73	Woods, Fair, HSG C (DA-14, DA-15, DA-17, DA-6, DA-7, DA-9N, DA-9R)
18.925	79	Woods, Fair, HSG D (DA-14, DA-15, DA-16, DA-17, DA-9N, DA-9R)
0.418	43	Woods/grass comb., Fair, HSG A (DA-18)
139.488	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
75.090	HSG A	DA-13, DA-17, DA-18, DA-6, DA-7, DA-8, DA-8A
22.376	HSG B	DA-13
22.644	HSG C	DA-14, DA-15, DA-17, DA-6, DA-7, DA-9N, DA-9P, DA-9R, DA-9S
19.377	HSG D	DA-14, DA-15, DA-16, DA-17, DA-9N, DA-9R
0.000	Other	
139.488		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.066	2.177	1.132	0.452	0.000	4.827	>75% Grass cover, Good	DA-13, DA-17, DA-6, DA-7, DA-9P, DA-9S
0.210	2.239	1.068	0.000	0.000	3.517	Dirt roads	DA-13, DA-7, DA-9R
0.142	0.000	7.506	0.000	0.000	7.649	Gravel surface	DA-6, DA-8A, DA-9P, DA-9R
68.165	0.000	0.000	0.000	0.000	68.165	Newly graded area	DA-8, DA-8A
0.000	1.380	0.154	0.000	0.000	1.535	Paved parking	DA-13, DA-9P, DA-9S
0.053	0.000	0.000	0.000	0.000	0.053	Water Surface	DA-8A
5.037	16.580	12.783	18.925	0.000	53.326	Woods, Fair	DA-13, DA-14, DA-15, DA-16, DA-17, DA-6, DA-7, DA-8A, DA-9N, DA-9R
0.418	0.000	0.000	0.000	0.000	0.418	Woods/grass comb., Fair	DA-18
75.090	**22.376**	**22.644**	**19.377**	**0.000**	**139.488**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1R	1,618.00	1,612.00	65.0	0.0923	0.013	0.0	24.0	0.0	
2	4P	1,632.00	1,630.50	65.0	0.0231	0.025	0.0	18.0	0.0	
3	11P	1,893.00	1,891.00	75.0	0.0267	0.013	0.0	21.0	0.0	
4	20P	1,608.00	1,606.00	45.0	0.0444	0.013	0.0	20.0	0.0	

Time span=0.00-60.00 hrs, dt=0.04 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA-13: DA-13 Runoff Area=1,122,333 sf 5.36% Impervious Runoff Depth=2.50"
Flow Length=2,100' Tc=2.7 min CN=61 Runoff=125.51 cfs 5.372 af

Subcatchment DA-14: Subcat DA-14 Runoff Area=211,658 sf 0.00% Impervious Runoff Depth=3.90"
Flow Length=944' Tc=25.5 min CN=75 Runoff=18.22 cfs 1.581 af

Subcatchment DA-15: DA-15 Runoff Area=66,156 sf 0.00% Impervious Runoff Depth=3.90"
Flow Length=789' Tc=14.8 min CN=75 Runoff=7.68 cfs 0.494 af

Subcatchment DA-16: DA-16 Runoff Area=561,386 sf 0.00% Impervious Runoff Depth=4.33"
Flow Length=686' Tc=32.3 min CN=79 Runoff=46.01 cfs 4.649 af

Subcatchment DA-17: DA-17 Runoff Area=199,793 sf 0.00% Impervious Runoff Depth=3.39"
Flow Length=1,066' Tc=12.4 min CN=70 Runoff=21.87 cfs 1.295 af

Subcatchment DA-18: DA-18 Runoff Area=18,196 sf 0.00% Impervious Runoff Depth=0.96"
Flow Length=212' Tc=13.3 min CN=43 Runoff=0.39 cfs 0.033 af

Subcatchment DA-6: DA-6 Runoff Area=7.470 ac 0.00% Impervious Runoff Depth=5.89"
Flow Length=824' Tc=7.6 min CN=93 Runoff=65.41 cfs 3.669 af

Subcatchment DA-7: DA-7 Runoff Area=7.256 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=523' Tc=17.6 min CN=65 Runoff=24.64 cfs 1.746 af

Subcatchment DA-8: DA-8 - Pit Runoff Area=2,958,604 sf 0.00% Impervious Runoff Depth=4.12"
Flow Length=1,885' Tc=10.0 min CN=77 Runoff=421.81 cfs 23.291 af

Subcatchment DA-8A: DA-8A Runoff Area=28,424 sf 8.08% Impervious Runoff Depth=3.29"
Flow Length=137' Tc=1.1 min CN=69 Runoff=4.41 cfs 0.179 af

Subcatchment DA-9N: Subcat DA-9 Runoff Area=88,956 sf 0.00% Impervious Runoff Depth=3.80"
Flow Length=464' Tc=14.0 min CN=74 Runoff=10.32 cfs 0.647 af

Subcatchment DA-9P: Subcat DA-9 Runoff Area=10,890 sf 25.77% Impervious Runoff Depth=5.10"
Flow Length=1,938' Tc=6.9 min CN=86 Runoff=2.04 cfs 0.106 af

Subcatchment DA-9R: Subcat DA-9 To Runoff Area=161,286 sf 0.00% Impervious Runoff Depth=4.99"
Flow Length=1,938' Tc=6.9 min CN=85 Runoff=29.69 cfs 1.538 af

Subcatchment DA-9S: Subcat DA-9 Runoff Area=6,969 sf 56.25% Impervious Runoff Depth=5.21"
Flow Length=1,938' Tc=6.9 min CN=87 Runoff=1.32 cfs 0.069 af

Reach 1R: 24" HDPE Avg. Flow Depth=0.93' Max Vel=21.10 fps Inflow=29.97 cfs 2.217 af
24.0" Round Pipe n=0.013 L=65.0' S=0.0923 '/' Capacity=68.73 cfs Outflow=30.03 cfs 2.217 af

Reach 2R: Channel Avg. Flow Depth=0.85' Max Vel=12.10 fps Inflow=29.69 cfs 1.538 af
n=0.025 L=1,418.0' S=0.0994 '/' Capacity=91.93 cfs Outflow=28.78 cfs 1.538 af

Reach 20R: Southeast Ditch Avg. Flow Depth=1.31' Max Vel=5.53 fps Inflow=29.38 cfs 2.217 af
n=0.069 L=100.0' S=0.1000 '/' Capacity=40.35 cfs Outflow=29.97 cfs 2.217 af

Reach 22R: Southwest Ditch Avg. Flow Depth=0.30' Max Vel=2.67 fps Inflow=1.32 cfs 0.069 af
n=0.069 L=314.0' S=0.1274 '/' Capacity=15.45 cfs Outflow=1.28 cfs 0.069 af

Pond 4P: Hudson Pond Peak Elev=1,638.63' Storage=0.746 af Inflow=37.94 cfs 2.185 af
Primary=15.04 cfs 1.944 af Secondary=13.47 cfs 0.166 af Outflow=28.51 cfs 2.111 af

Pond 6P: Big Crusher Pond Peak Elev=1,885.65' Storage=7,760 cf Inflow=22.47 cfs 3.442 af
Outflow=22.47 cfs 3.305 af

Pond 8P: Last Chance Pond Peak Elev=1,802.50' Storage=7,485 cf Inflow=4.41 cfs 0.179 af
Outflow=0.04 cfs 0.007 af

Pond 10P: Lower Pit Peak Elev=1,727.73' Storage=1,014,559 cf Inflow=421.81 cfs 23.291 af
Outflow=0.00 cfs 0.000 af

Pond 11P: Upper Crusher Pond Peak Elev=1,901.95' Storage=67,106 cf Inflow=65.41 cfs 3.669 af
Outflow=22.47 cfs 3.442 af

Pond 20P: Plunge Pool Peak Elev=1,611.68' Storage=0.014 af Inflow=30.82 cfs 2.286 af
Outflow=30.78 cfs 2.286 af

Link 002A: MSGP Outfall 002A delayed by 0.1 min before 48.00 hrs Inflow=24.64 cfs 1.746 af
Primary=24.60 cfs 1.746 af Secondary=0.00 cfs 0.000 af

Link 003A: MSGP Outfall 003A delayed by 0.1 min before 48.00 hrs Inflow=0.04 cfs 0.007 af
Primary=0.04 cfs 0.007 af Secondary=0.00 cfs 0.000 af

Link 005A: MSGP Outfall 005A delayed by 0.1 min before 48.00 hrs Inflow=22.47 cfs 3.305 af
Primary=22.45 cfs 3.262 af Secondary=0.07 cfs 0.043 af

Link AP-4: AP-4 delayed by 0.1 min before 48.00 hrs Inflow=30.78 cfs 2.286 af
Primary=30.57 cfs 2.191 af Secondary=0.12 cfs 0.095 af

Total Runoff Area = 139.488 ac Runoff Volume = 44.669 af Average Runoff Depth = 3.84"
98.86% Pervious = 137.901 ac 1.14% Impervious = 1.587 ac

Summary for Subcatchment DA-13: DA-13

[49] Hint: Tc<2dt may require smaller dt

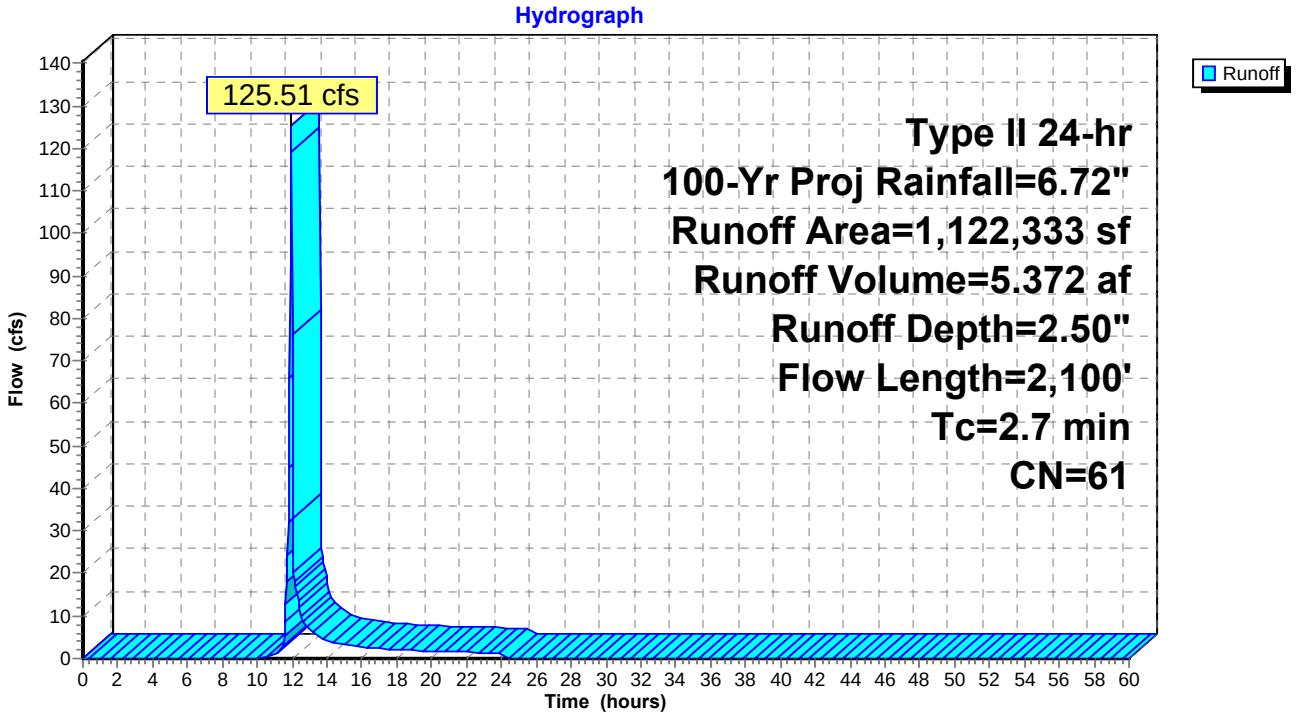
Runoff = 125.51 cfs @ 11.94 hrs, Volume= 5.372 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
60,127	98	Paved parking, HSG B
97,529	82	Dirt roads, HSG B
722,246	60	Woods, Fair, HSG B
94,817	61	>75% Grass cover, Good, HSG B
30,178	39	>75% Grass cover, Good, HSG A
117,436	36	Woods, Fair, HSG A
1,122,333	61	Weighted Average
1,062,206		94.64% Pervious Area
60,127		5.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0600	1.93		**Sheet Flow, sheet flow** Smooth surfaces n= 0.011 P2= 2.62"
1.8	2,000	0.0910	18.52	255.59	**Channel Flow,** Area= 13.8 sf Perim= 10.0' r= 1.38' n= 0.030 Earth, grassed & winding
2.7	2,100	Total			

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: Subcat DA-14

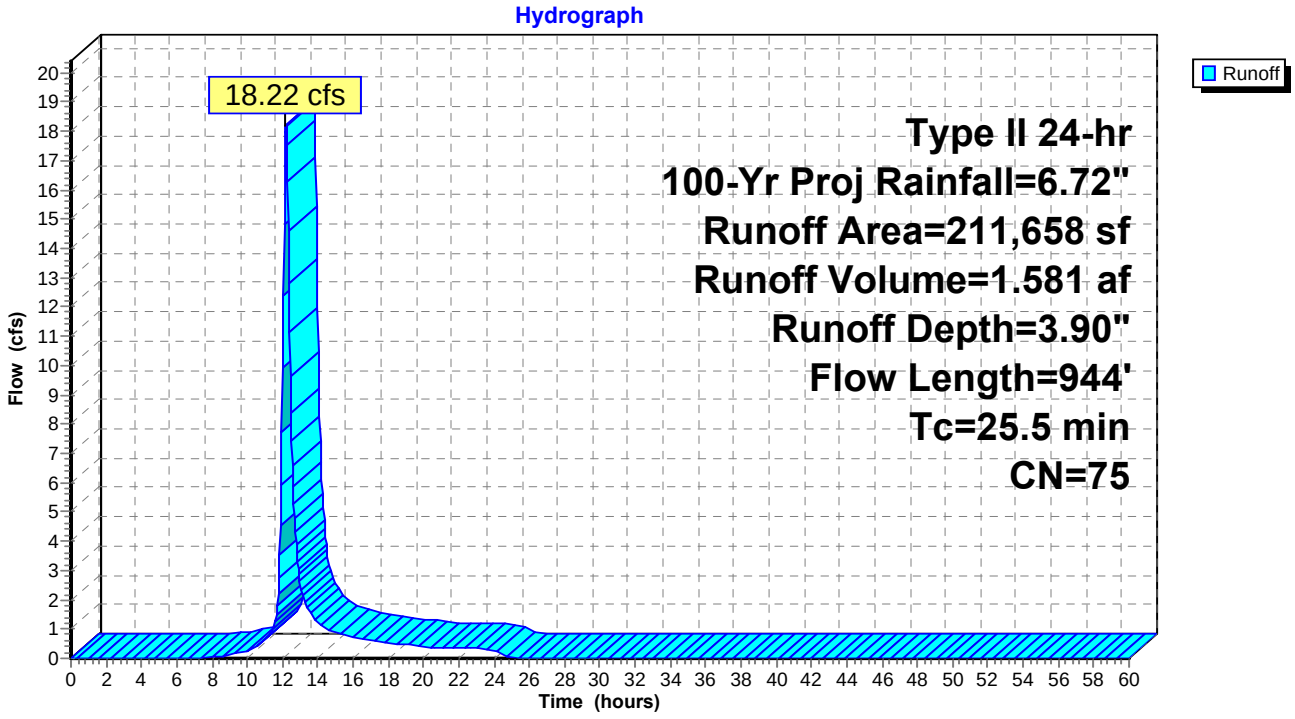
Runoff = 18.22 cfs @ 12.19 hrs, Volume= 1.581 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
127,421	73	Woods, Fair, HSG C
84,237	79	Woods, Fair, HSG D
211,658	75	Weighted Average
211,658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	100	0.1200	0.08		**Sheet Flow, sheet flow** Woods: Dense underbrush n= 0.800 P2= 2.62"
5.3	844	0.2840	2.66		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
25.5	944	Total			

Subcatchment DA-14: Subcat DA-14



Summary for Subcatchment DA-15: DA-15

[47] Hint: Peak is 124% of capacity of segment #3

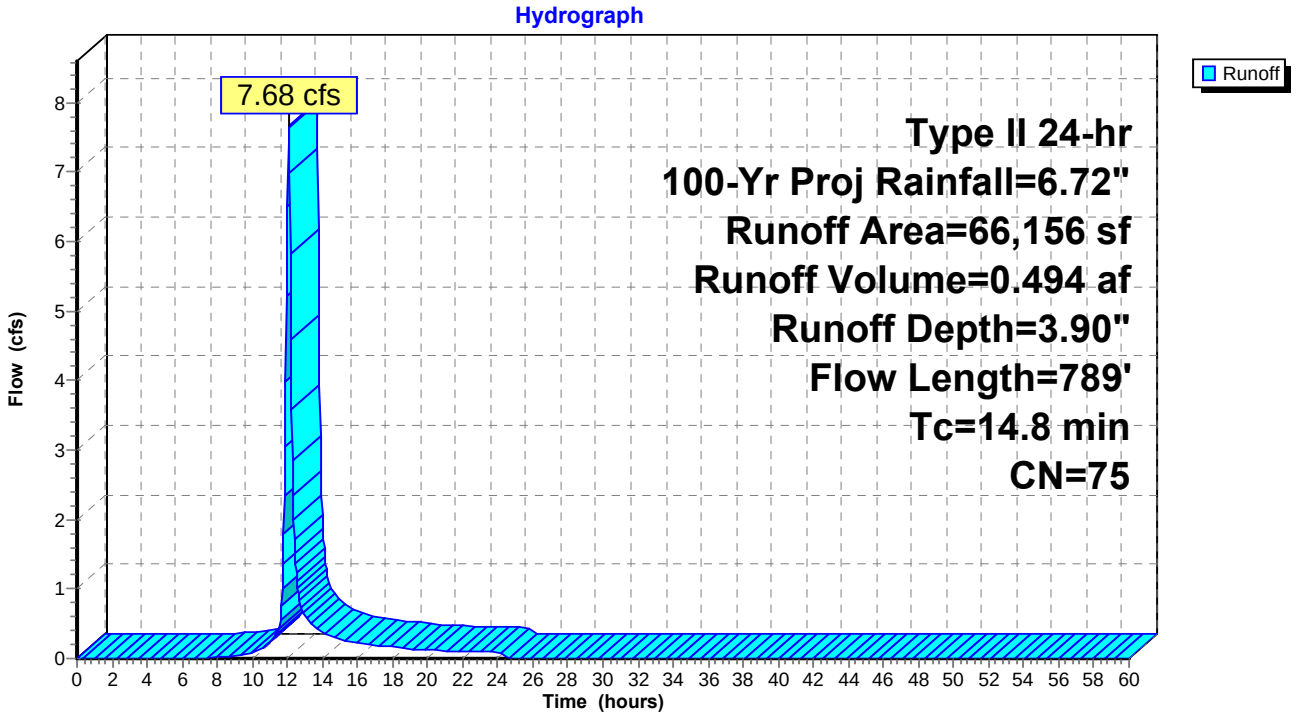
Runoff = 7.68 cfs @ 12.07 hrs, Volume= 0.494 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
41,592	73	Woods, Fair, HSG C
24,564	79	Woods, Fair, HSG D
66,156	75	Weighted Average
66,156		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.1300	0.15		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
0.3	50	0.3000	2.74		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
2.8	579	0.1140	3.45	6.22	**Channel Flow,** Area= 1.8 sf Perim= 5.5' r= 0.33' n= 0.069 Riprap, 6-inch
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	789	Total			

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

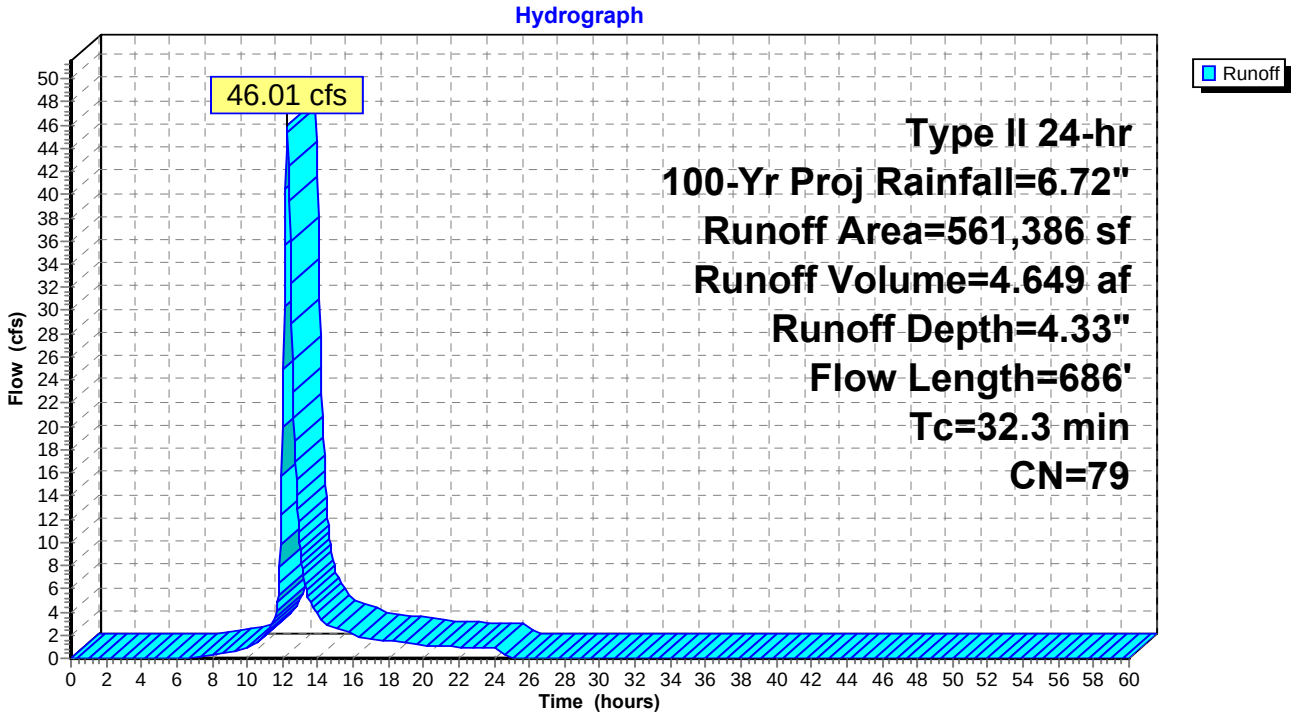
Runoff = 46.01 cfs @ 12.26 hrs, Volume= 4.649 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
561,386	79	Woods, Fair, HSG D
561,386		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	100	0.0500	0.06		**Sheet Flow, sheet flow** Woods: Dense underbrush n= 0.800 P2= 2.62"
3.7	586	0.2780	2.64		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
32.3	686	Total			

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

Good morning
Halftime

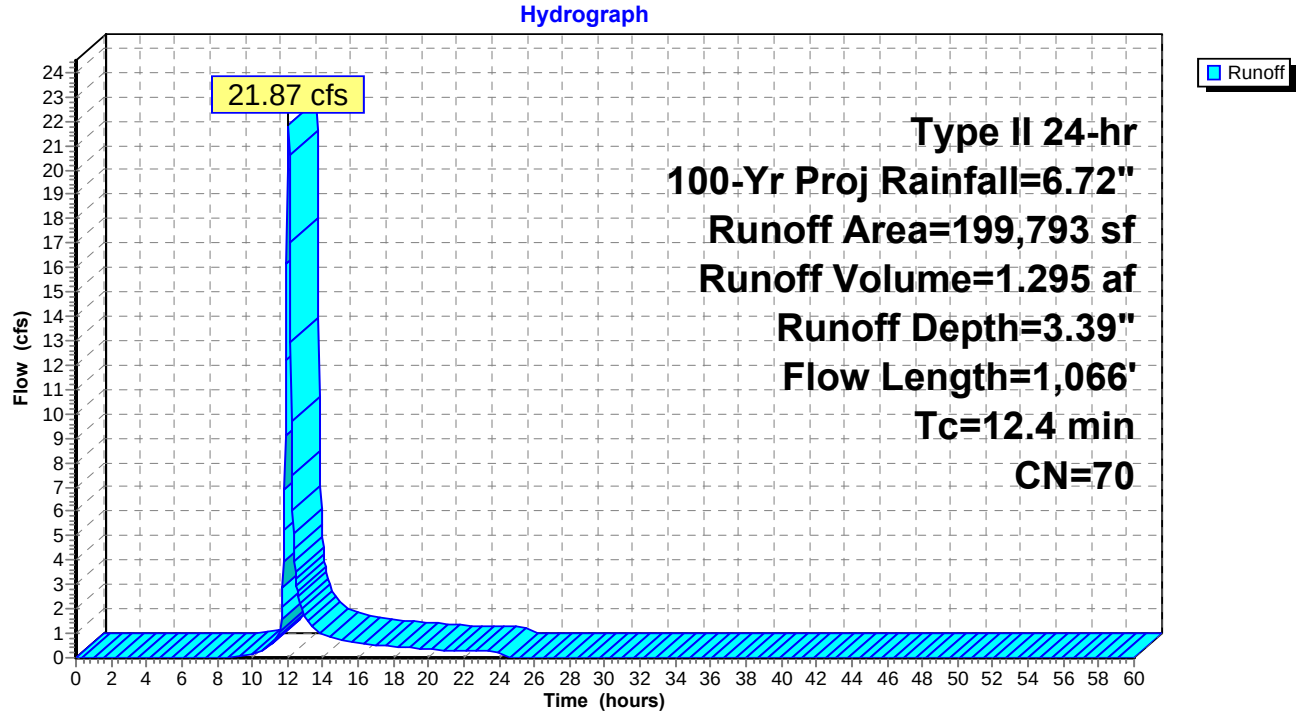
Runoff = 21.87 cfs @ 12.04 hrs, Volume= 1.295 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
34,115	36	Woods, Fair, HSG A
58,252	73	Woods, Fair, HSG C
70,641	79	Woods, Fair, HSG D
17,084	74	>75% Grass cover, Good, HSG C
19,701	80	>75% Grass cover, Good, HSG D
199,793	70	Weighted Average
199,793		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.2300	0.41		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 2.62"
8.3	966	0.1500	1.94		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
12.4	1,066	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

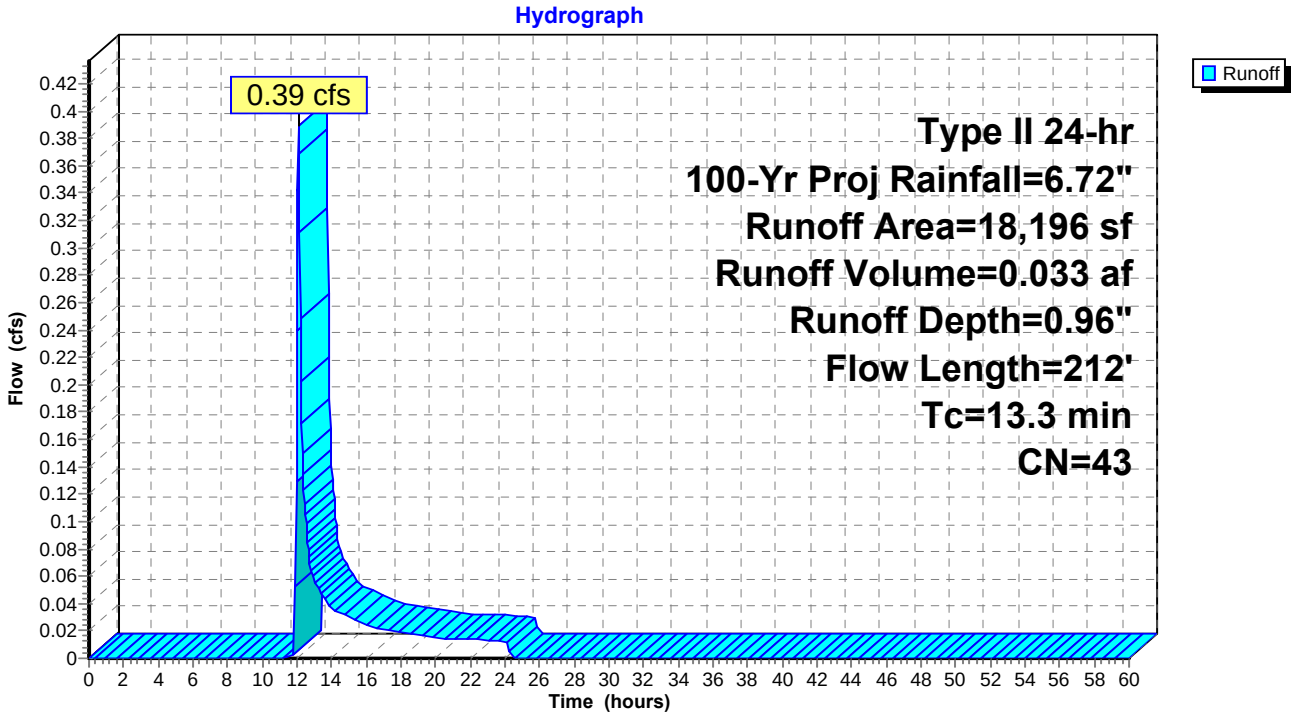
Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
18,196	43	Woods/grass comb., Fair, HSG A
18,196		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.1000	0.13		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
0.8	112	0.2200	2.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	212	Total			

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-6: DA-6

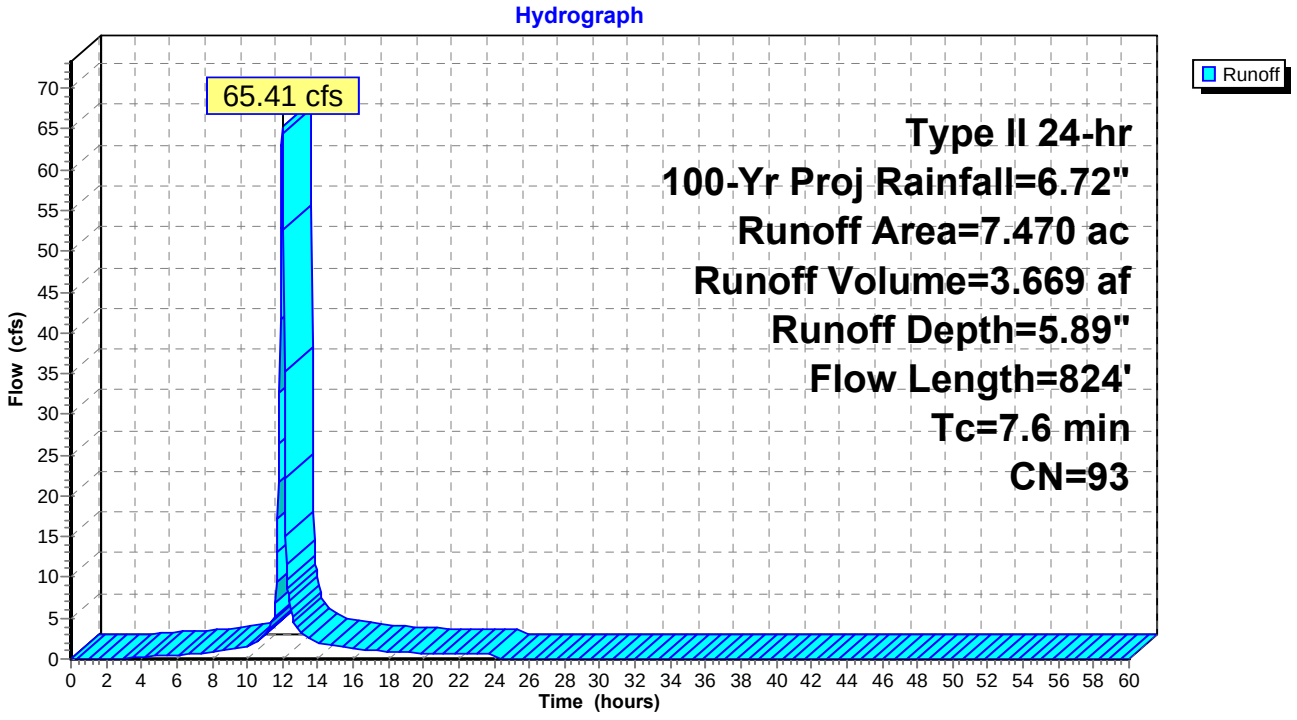
Runoff = 65.41 cfs @ 11.98 hrs, Volume= 3.669 af, Depth= 5.89"
Routed to Pond 11P : Upper Crusher Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
6.600	96	Gravel surface, HSG C
0.150	36	Woods, Fair, HSG A
0.170	73	Woods, Fair, HSG C
0.550	74	>75% Grass cover, Good, HSG C
7.470	93	Weighted Average
7.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0150	0.33		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
1.7	388	0.0570	3.84		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
0.9	336	0.1667	6.57		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.6	824	Total			

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

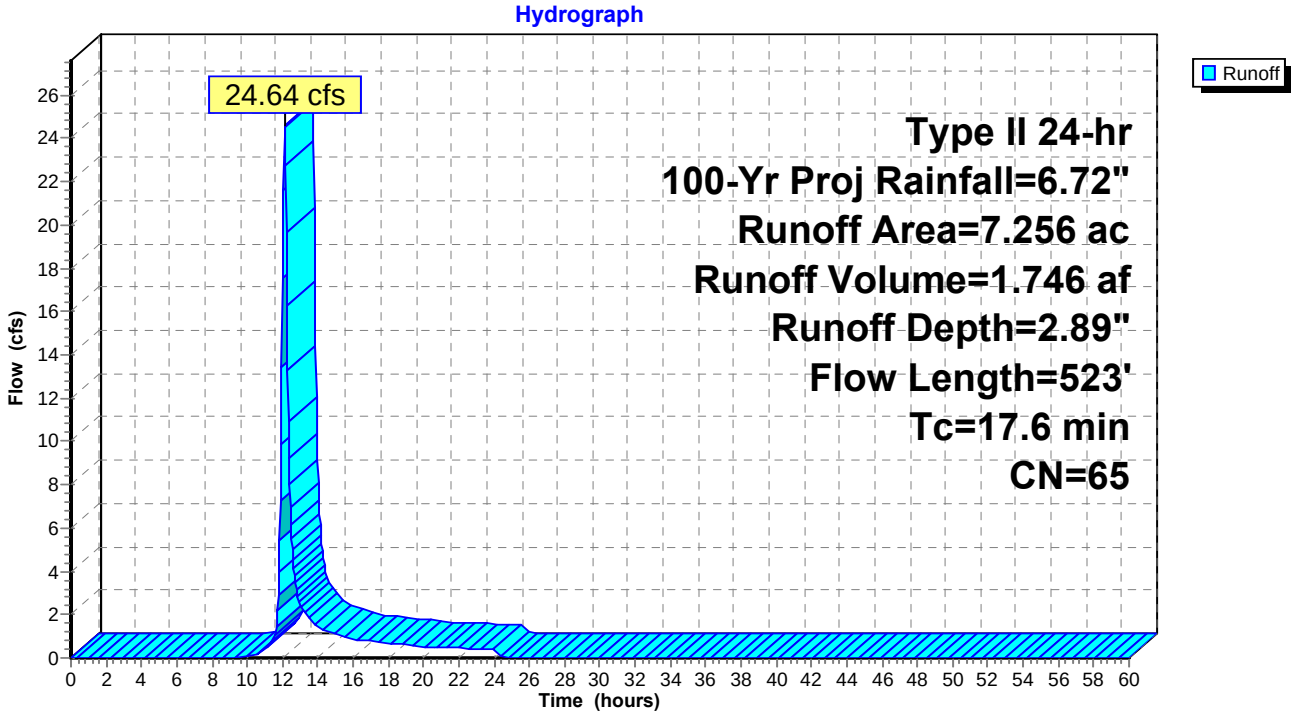
Runoff = 24.64 cfs @ 12.11 hrs, Volume= 1.746 af, Depth= 2.89"
Routed to Link 002A : MSGP Outfall 002A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (ac)	CN	Description
0.210	72	Dirt roads, HSG A
1.195	36	Woods, Fair, HSG A
5.478	73	Woods, Fair, HSG C
0.373	39	>75% Grass cover, Good, HSG A
7.256	65	Weighted Average
7.256		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0900	0.13		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
4.6	423	0.0940	1.53		**Shallow Concentrated Flow, shallow conc. woods** Woodland Kv= 5.0 fps
17.6	523	Total			

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8 - Pit

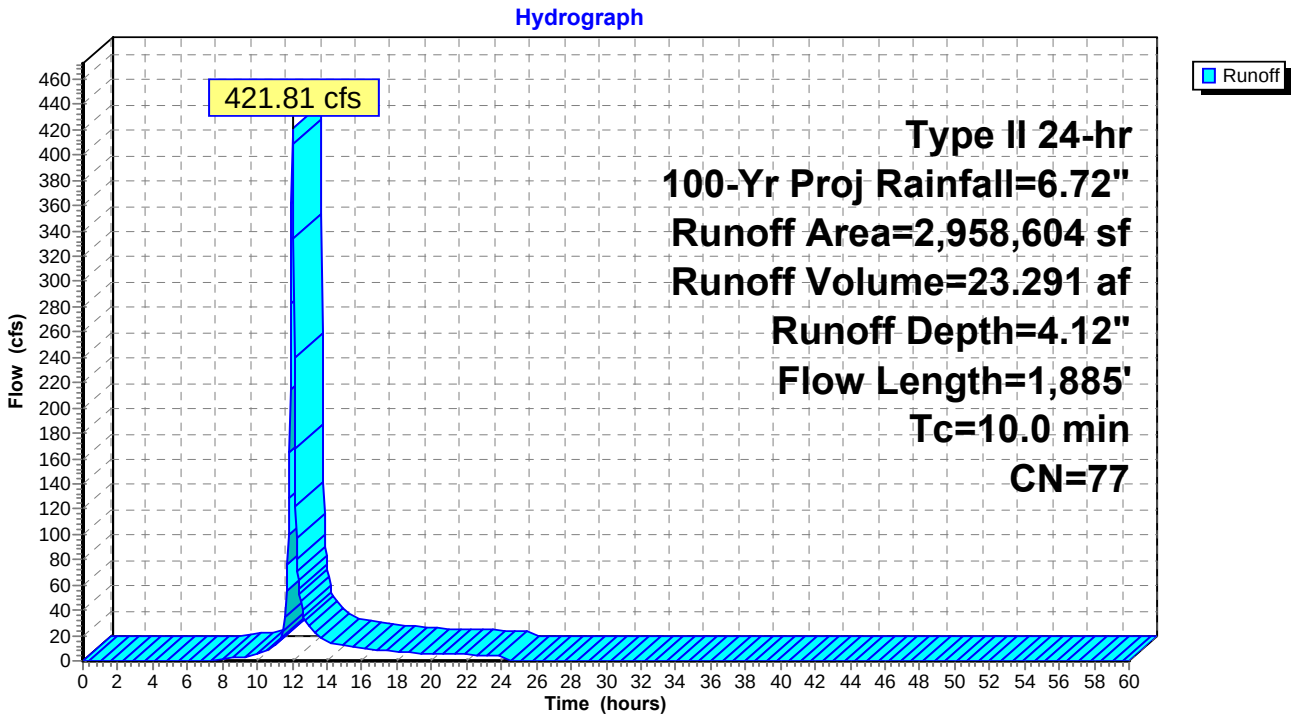
Runoff = 421.81 cfs @ 12.01 hrs, Volume= 23.291 af, Depth= 4.12"
Routed to Pond 10P : Lower Pit

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
2,958,604	77	Newly graded area, HSG A
2,958,604		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0150	0.33		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
5.0	1,785	0.1356	5.93		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
10.0	1,885	Total			

Subcatchment DA-8: DA-8 - Pit



Summary for Subcatchment DA-8A: DA-8A

[49] Hint: Tc<2dt may require smaller dt

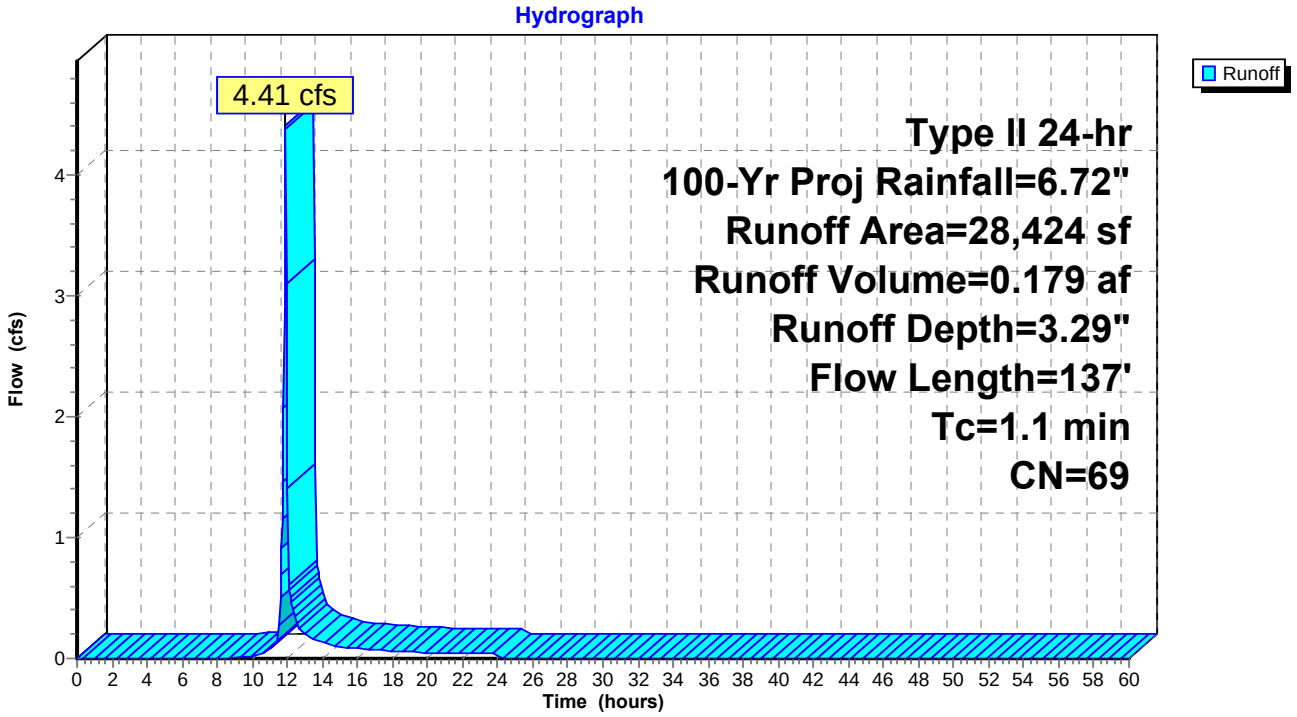
Runoff = 4.41 cfs @ 11.91 hrs, Volume= 0.179 af, Depth= 3.29"
Routed to Pond 8P : Last Chance Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
9,281	36	Woods, Fair, HSG A
6,194	96	Gravel surface, HSG A
2,297	98	Water Surface, HSG A
10,652	77	Newly graded area, HSG A
28,424	69	Weighted Average
26,127		91.92% Pervious Area
2,297		8.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.3200	0.98		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.2	87	0.0460	5.93	23.73	**Channel Flow,** Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.041 Riprap, 2-inch
1.1	137	Total			

Subcatchment DA-8A: DA-8A



Summary for Subcatchment DA-9N: Subcat DA-9 Overland to Pond

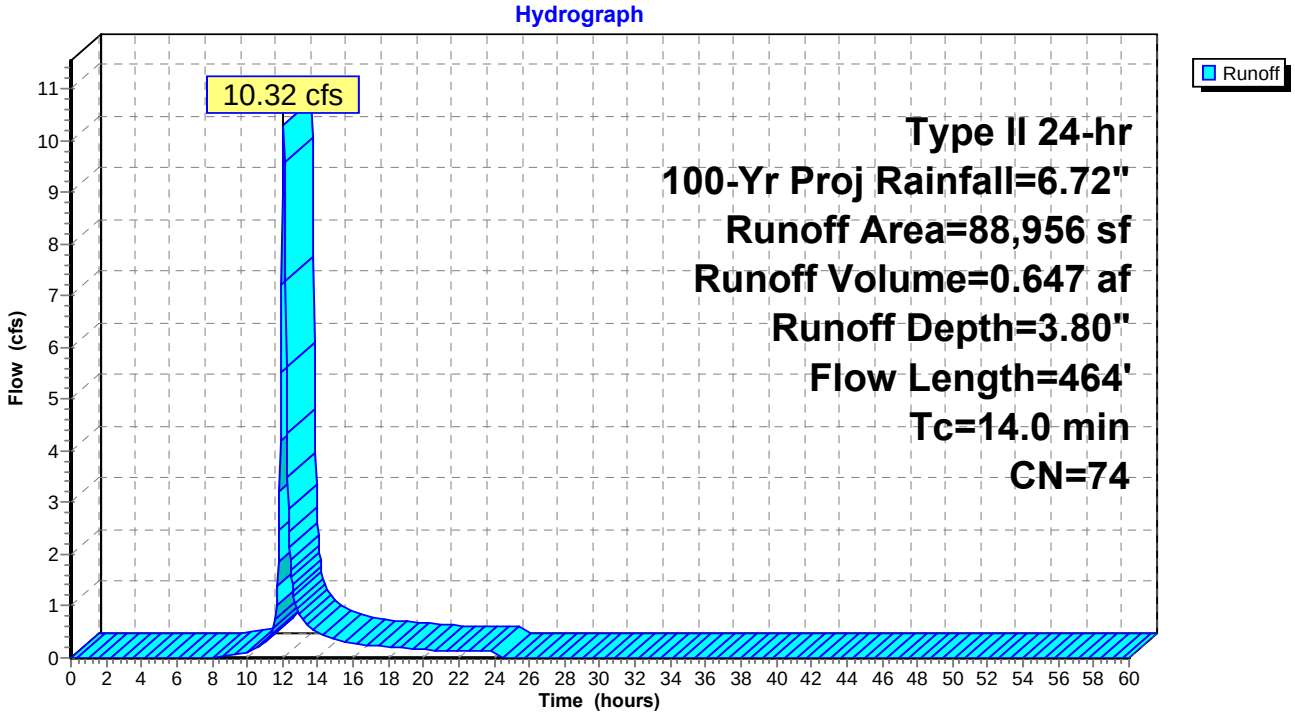
Runoff = 10.32 cfs @ 12.06 hrs, Volume= 0.647 af, Depth= 3.80"
Routed to Pond 4P : Hudson Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
67,945	73	Woods, Fair, HSG C
21,011	79	Woods, Fair, HSG D
88,956	74	Weighted Average
88,956		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.1200	0.14		**Sheet Flow, sheet flow** Woods: Light underbrush n= 0.400 P2= 2.62"
2.4	364	0.2600	2.55		**Shallow Concentrated Flow, shallow conc. flow** Woodland Kv= 5.0 fps
14.0	464	Total			

Subcatchment DA-9N: Subcat DA-9 Overland to Pond



Summary for Subcatchment DA-9P: Subcat DA-9 Parking area

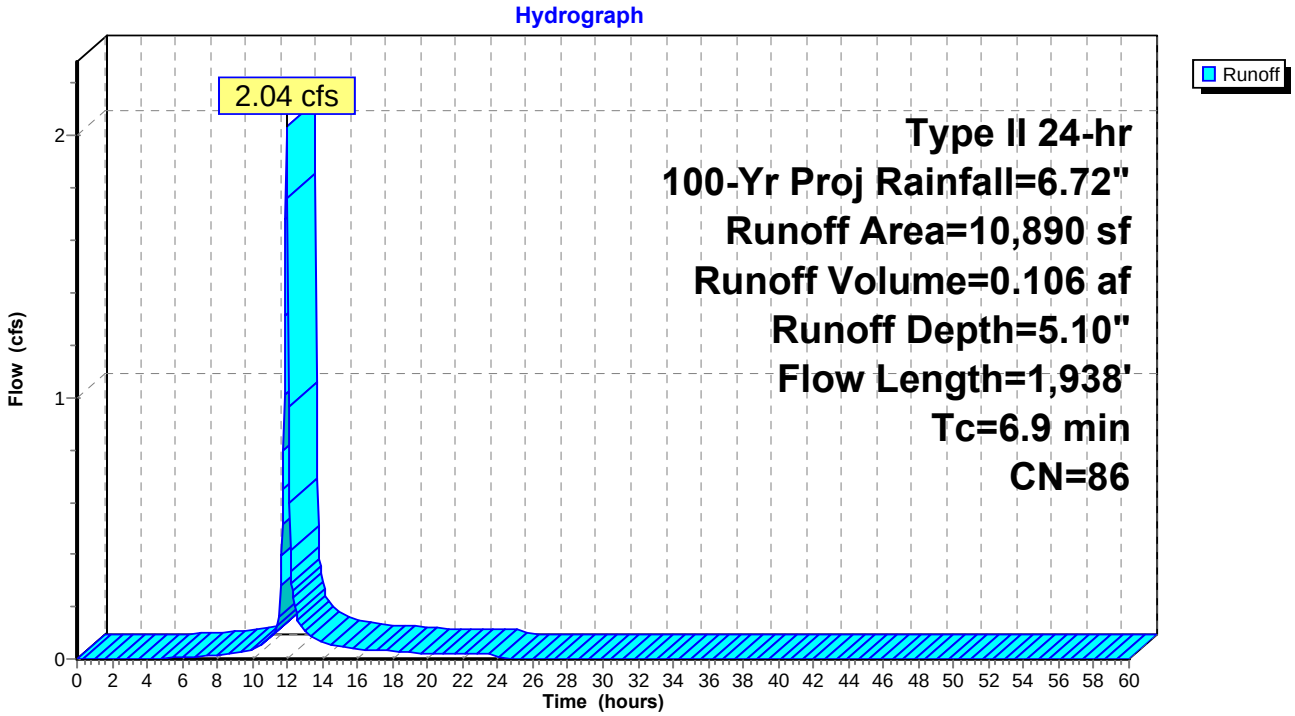
Runoff = 2.04 cfs @ 11.98 hrs, Volume= 0.106 af, Depth= 5.10"
Routed to Reach 20R : Southeast Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
5,227	74	>75% Grass cover, Good, HSG C
2,857	96	Gravel surface, HSG C
2,806	98	Paved parking, HSG C
10,890	86	Weighted Average
8,084		74.23% Pervious Area
2,806		25.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9P: Subcat DA-9 Parking area



Summary for Subcatchment DA-9R: Subcat DA-9 To Roadside Ditch

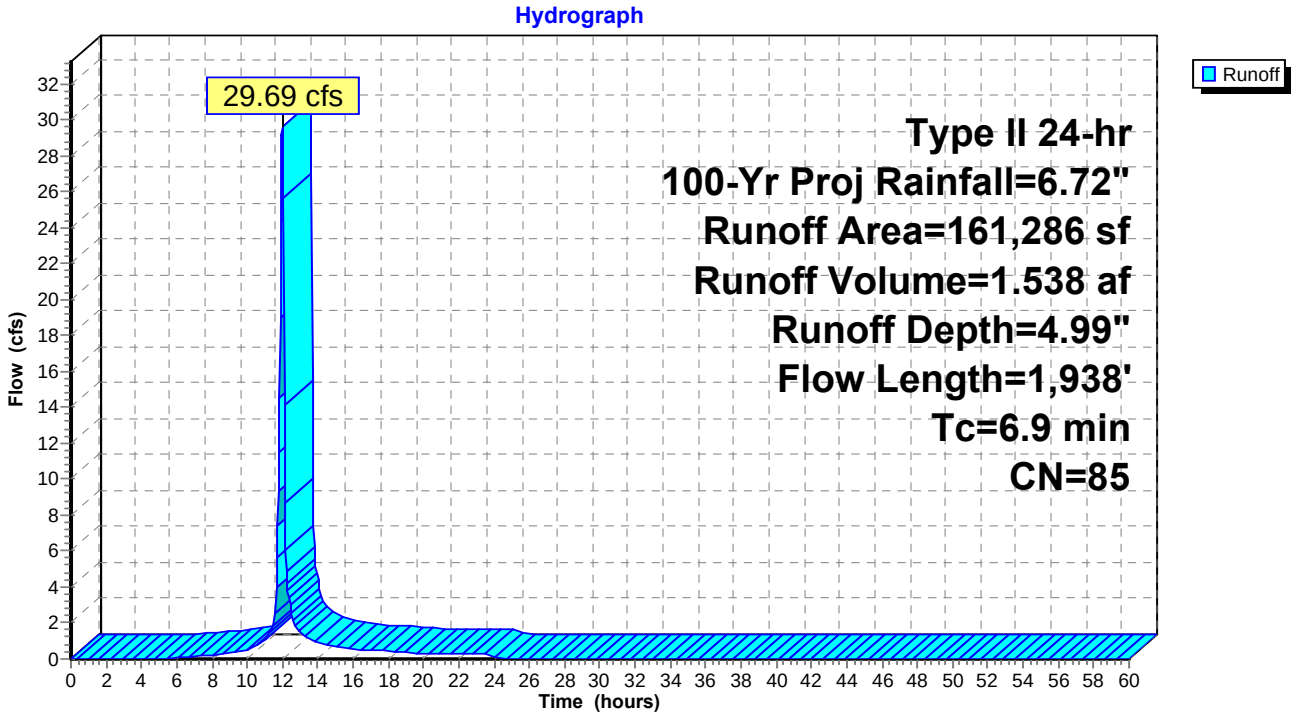
Runoff = 29.69 cfs @ 11.98 hrs, Volume= 1.538 af, Depth= 4.99"
Routed to Reach 2R : Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
15,603	73	Woods, Fair, HSG C
62,537	79	Woods, Fair, HSG D
36,629	96	Gravel surface, HSG C
46,517	87	Dirt roads, HSG C
161,286	85	Weighted Average
161,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9R: Subcat DA-9 To Roadside Ditch



Summary for Subcatchment DA-9S: Subcat DA-9 Southwest Side of road

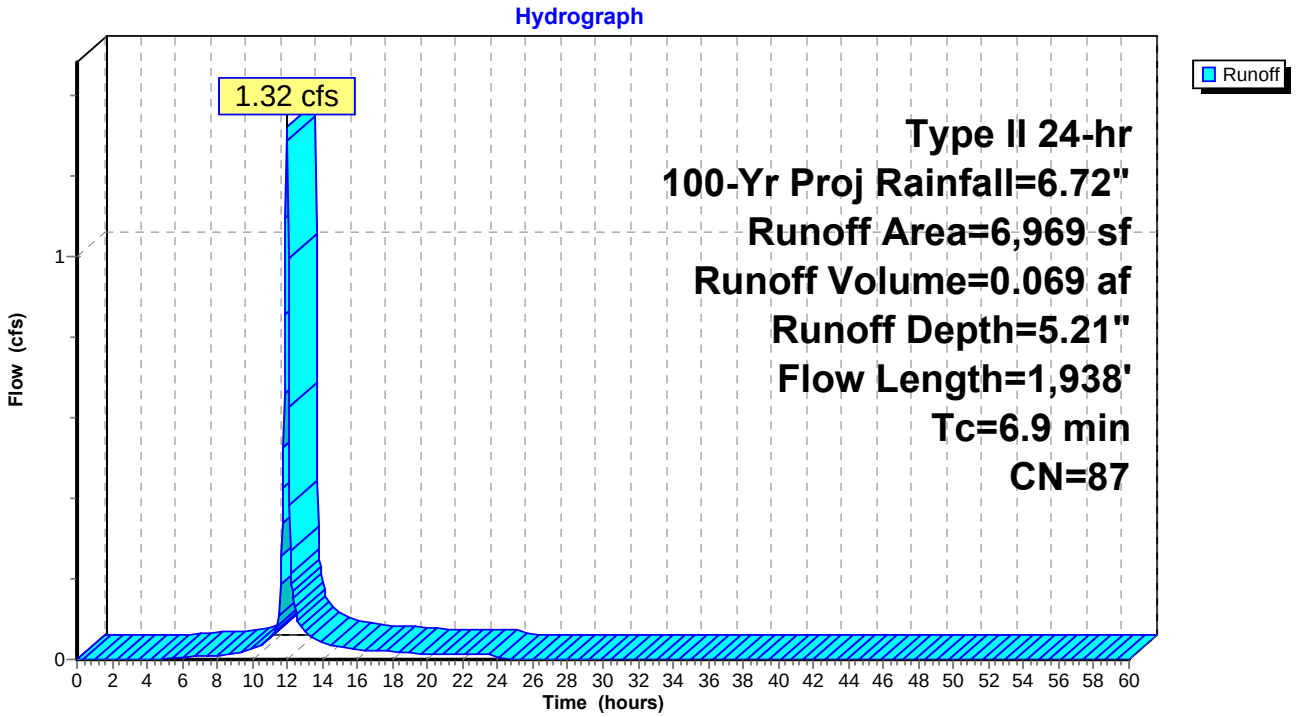
Runoff = 1.32 cfs @ 11.98 hrs, Volume= 0.069 af, Depth= 5.21"
Routed to Reach 22R : Southwest Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Yr Proj Rainfall=6.72"

Area (sf)	CN	Description
3,049	74	>75% Grass cover, Good, HSG C
3,920	98	Paved parking, HSG C
6,969	87	Weighted Average
3,049		43.75% Pervious Area
3,920		56.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.1000	0.71		**Sheet Flow, sheet flow** Fallow n= 0.050 P2= 2.62"
0.3	116	0.1380	5.98		**Shallow Concentrated Flow, shallow conc. unpaved** Unpaved Kv= 16.1 fps
4.2	1,722	0.1110	6.76		**Shallow Concentrated Flow, shallow conc. paved** Paved Kv= 20.3 fps
6.9	1,938	Total			

Subcatchment DA-9S: Subcat DA-9 Southwest Side of road



Summary for Reach 1R: 24" HDPE

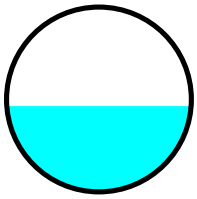
[52] Hint: Inlet/Outlet conditions not evaluated
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 5.995 ac, 1.07% Impervious, Inflow Depth > 4.44" for 100-Yr Proj event
Inflow = 29.97 cfs @ 12.09 hrs, Volume= 2.217 af
Outflow = 30.03 cfs @ 12.09 hrs, Volume= 2.217 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 20P : Plunge Pool

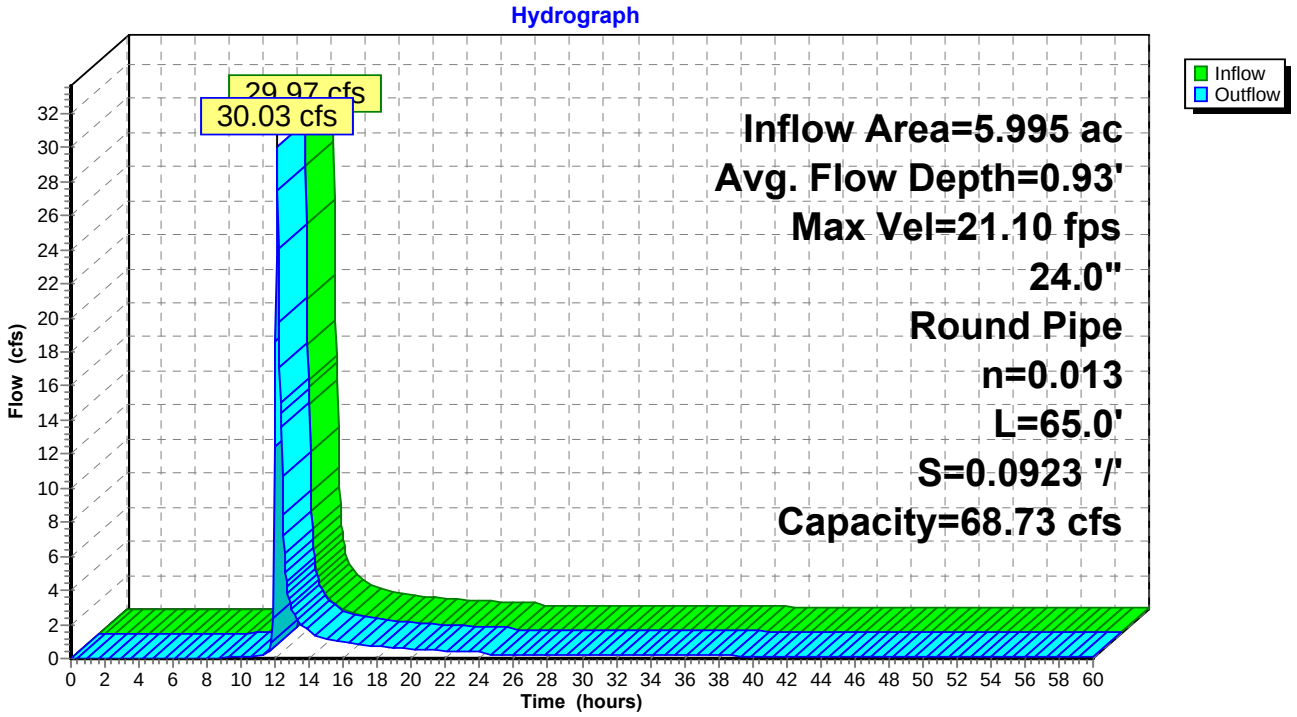
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 21.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.95 fps, Avg. Travel Time= 0.2 min

Peak Storage= 92 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.93' , Surface Width= 1.99'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 68.73 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 65.0' Slope= 0.0923 '/'
Inlet Invert= 1,618.00', Outlet Invert= 1,612.00'



Reach 1R: 24" HDPE



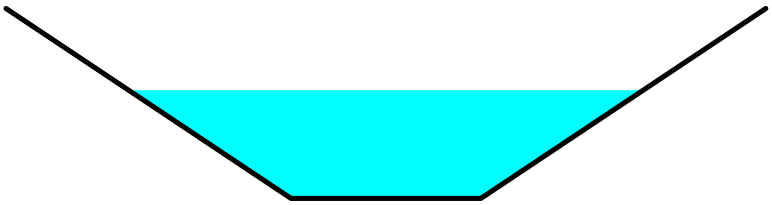
Summary for Reach 2R: Channel

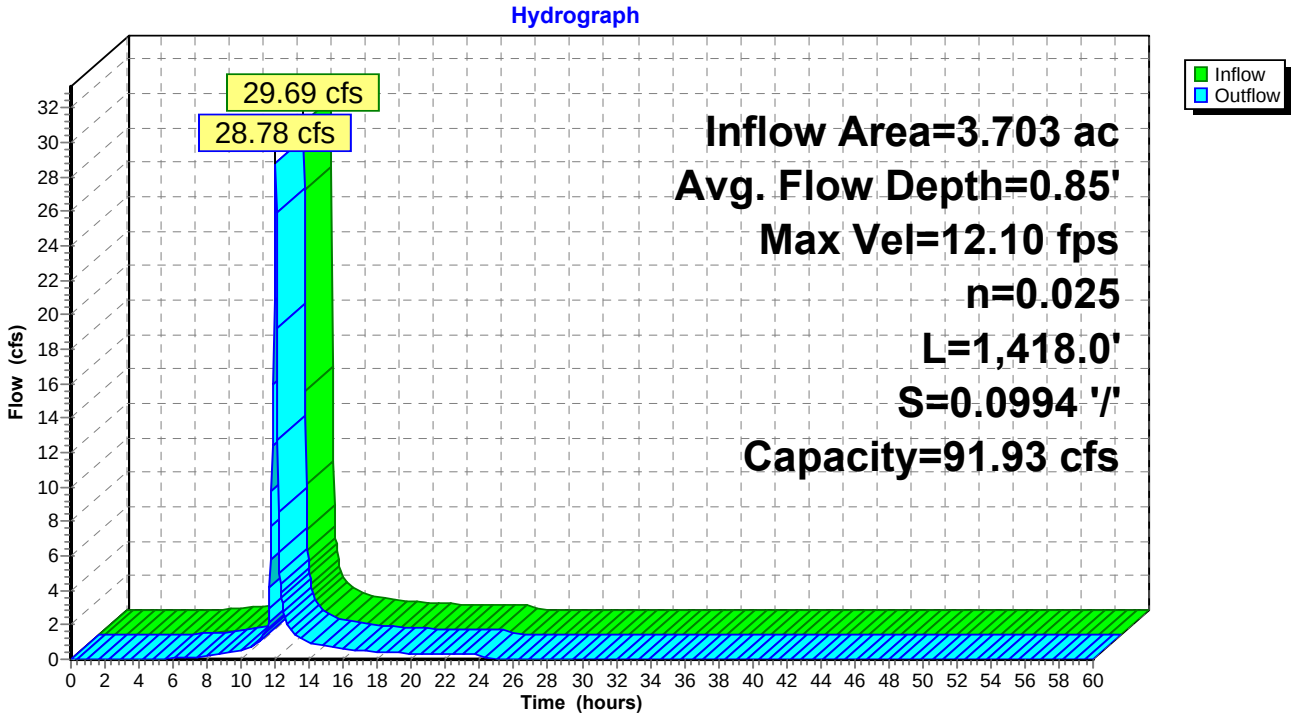
Inflow Area = 3.703 ac, 0.00% Impervious, Inflow Depth = 4.99" for 100-Yr Proj event
Inflow = 29.69 cfs @ 11.98 hrs, Volume= 1.538 af
Outflow = 28.78 cfs @ 12.00 hrs, Volume= 1.538 af, Atten= 3%, Lag= 1.3 min
Routed to Pond 4P : Hudson Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 12.10 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 3.18 fps, Avg. Travel Time= 7.4 min

Peak Storage= 3,372 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.85' , Surface Width= 4.06'
Bank-Full Depth= 1.50' Flow Area= 5.6 sf, Capacity= 91.93 cfs

1.50' x 1.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.5 '/' Top Width= 6.00'
Length= 1,418.0' Slope= 0.0994 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,659.00'





Summary for Reach 20R: Southeast Ditch

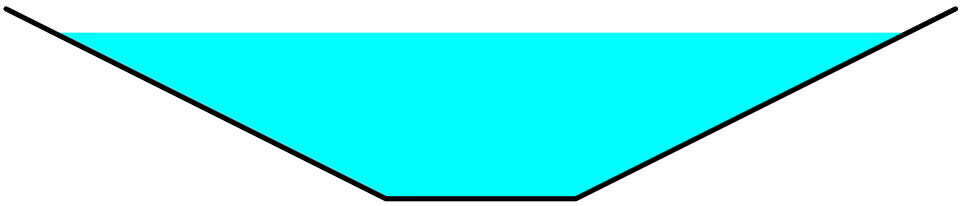
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 5.995 ac, 1.07% Impervious, Inflow Depth > 4.44" for 100-Yr Proj event
Inflow = 29.38 cfs @ 12.09 hrs, Volume= 2.217 af
Outflow = 29.97 cfs @ 12.09 hrs, Volume= 2.217 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 1R : 24" HDPE

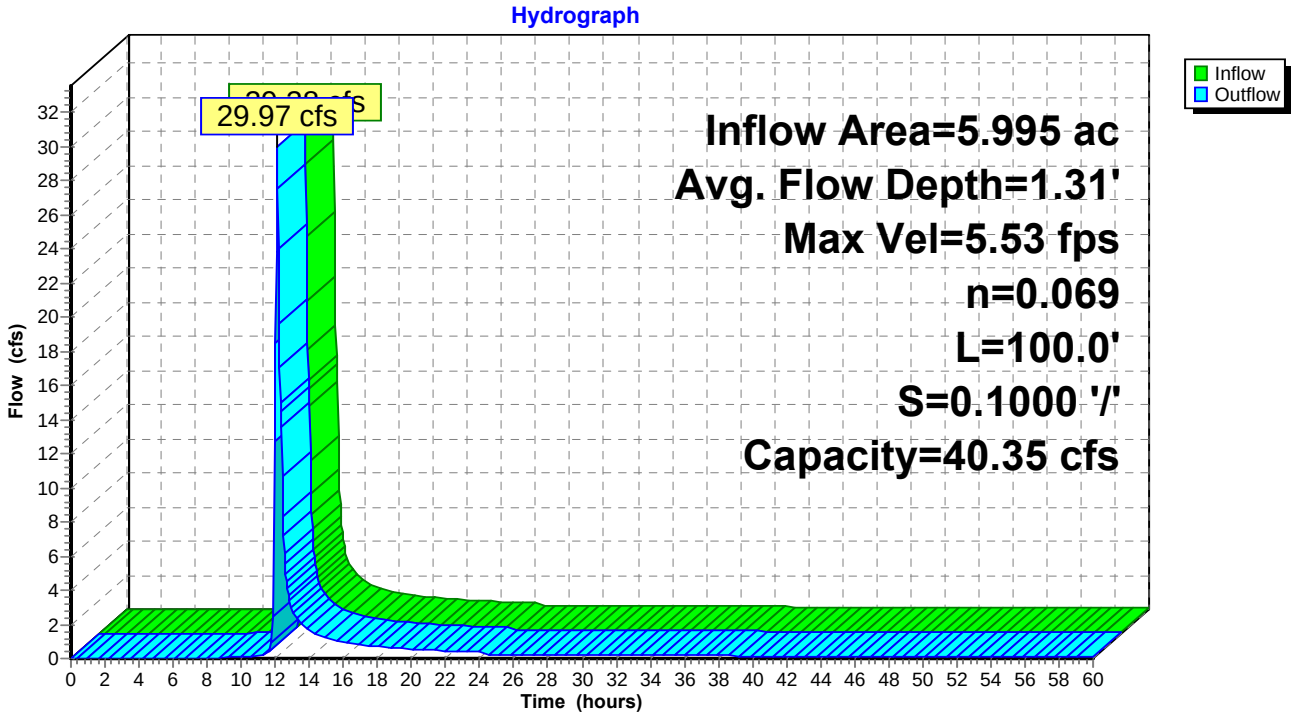
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.53 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.3 min

Peak Storage= 541 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.31' , Surface Width= 6.75'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 40.35 cfs

1.50' x 1.50' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 100.0' Slope= 0.1000 '/'
Inlet Invert= 1,629.00', Outlet Invert= 1,619.00'



Reach 20R: Southeast Ditch



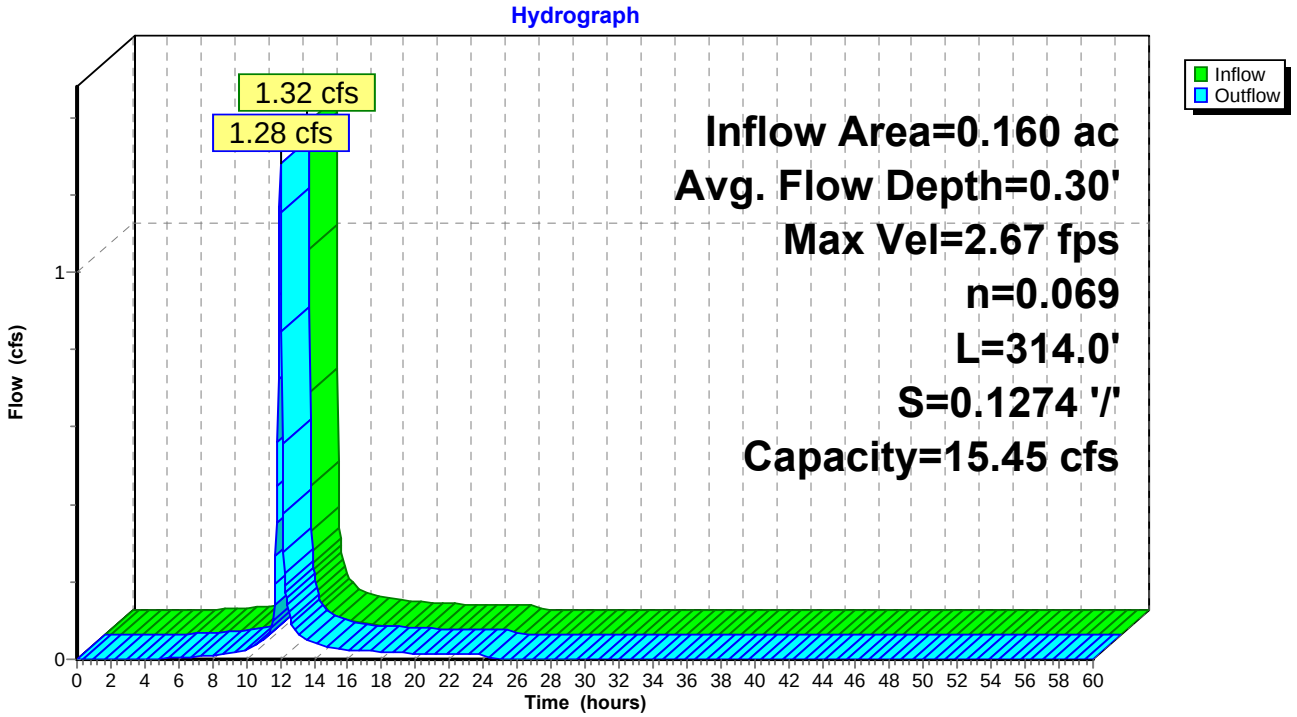
Summary for Reach 22R: Southwest Ditch

Inflow Area = 0.160 ac, 56.25% Impervious, Inflow Depth = 5.21" for 100-Yr Proj event
Inflow = 1.32 cfs @ 11.98 hrs, Volume= 0.069 af
Outflow = 1.28 cfs @ 12.00 hrs, Volume= 0.069 af, Atten= 3%, Lag= 1.3 min
Routed to Pond 20P : Plunge Pool

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 7.6 min

Peak Storage= 151 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 2.20'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 15.45 cfs

1.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 5.00'
Length= 314.0' Slope= 0.1274 '/'
Inlet Invert= 1,652.00', Outlet Invert= 1,612.00'



Summary for Pond 4P: Hudson Pond

Inflow Area = 5.745 ac, 0.00% Impervious, Inflow Depth = 4.56" for 100-Yr Proj event
Inflow = 37.94 cfs @ 12.01 hrs, Volume= 2.185 af
Outflow = 28.51 cfs @ 12.09 hrs, Volume= 2.111 af, Atten= 25%, Lag= 4.9 min
Primary = 15.04 cfs @ 12.09 hrs, Volume= 1.944 af
Routed to Reach 20R : Southeast Ditch
Secondary = 13.47 cfs @ 12.09 hrs, Volume= 0.166 af
Routed to Reach 20R : Southeast Ditch

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,638.63' @ 12.09 hrs Surf.Area= 0.170 ac Storage= 0.746 af

Plug-Flow detention time= 367.3 min calculated for 2.111 af (97% of inflow)
Center-of-Mass det. time= 346.9 min (1,154.3 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,632.00'	0.808 af	**Custom Stage Data (Prismatic)**Listed below

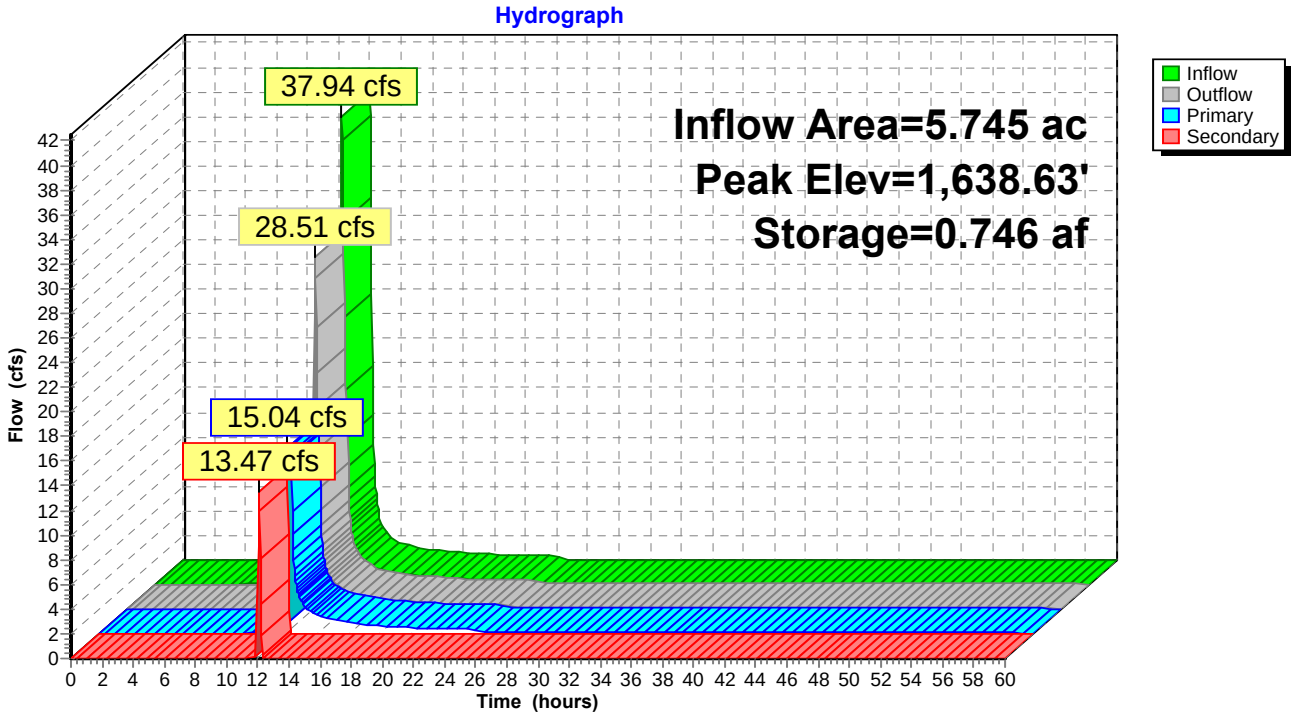
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,632.00	0.029	0.000	0.000
1,632.99	0.037	0.033	0.033
1,633.00	0.085	0.001	0.033
1,634.00	0.099	0.092	0.125
1,637.00	0.143	0.363	0.488
1,638.00	0.160	0.151	0.640
1,639.00	0.176	0.168	0.808

Device	Routing	Invert	Outlet Devices
#1	Primary	1,632.00'	**18.0" Round Culvert** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,632.00' / 1,630.50' S= 0.0231 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	1,633.00'	**1.0" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,637.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,638.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=15.02 cfs @ 12.09 hrs HW=1,638.61' (Free Discharge)
└**1=Culvert** (Barrel Controls 15.02 cfs @ 8.50 fps)
├**2=Orifice/Grate** (Passes < 0.25 cfs potential flow)
└**3=Orifice/Grate** (Passes < 19.21 cfs potential flow)

Secondary OutFlow Max=12.97 cfs @ 12.09 hrs HW=1,638.61' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 12.97 cfs @ 2.11 fps)

Pond 4P: Hudson Pond



Summary for Pond 6P: Big Crusher Pond

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth > 5.53" for 100-Yr Proj event
Inflow = 22.47 cfs @ 12.12 hrs, Volume= 3.442 af
Outflow = 22.47 cfs @ 12.14 hrs, Volume= 3.305 af, Atten= 0%, Lag= 0.8 min
Primary = 22.47 cfs @ 12.14 hrs, Volume= 3.305 af
Routed to Link 005A : MSGP Outfall 005A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,885.65' @ 12.14 hrs Surf.Area= 3,119 sf Storage= 7,760 cf

Plug-Flow detention time= 88.5 min calculated for 3.303 af (96% of inflow)
Center-of-Mass det. time= 16.8 min (1,033.0 - 1,016.3)

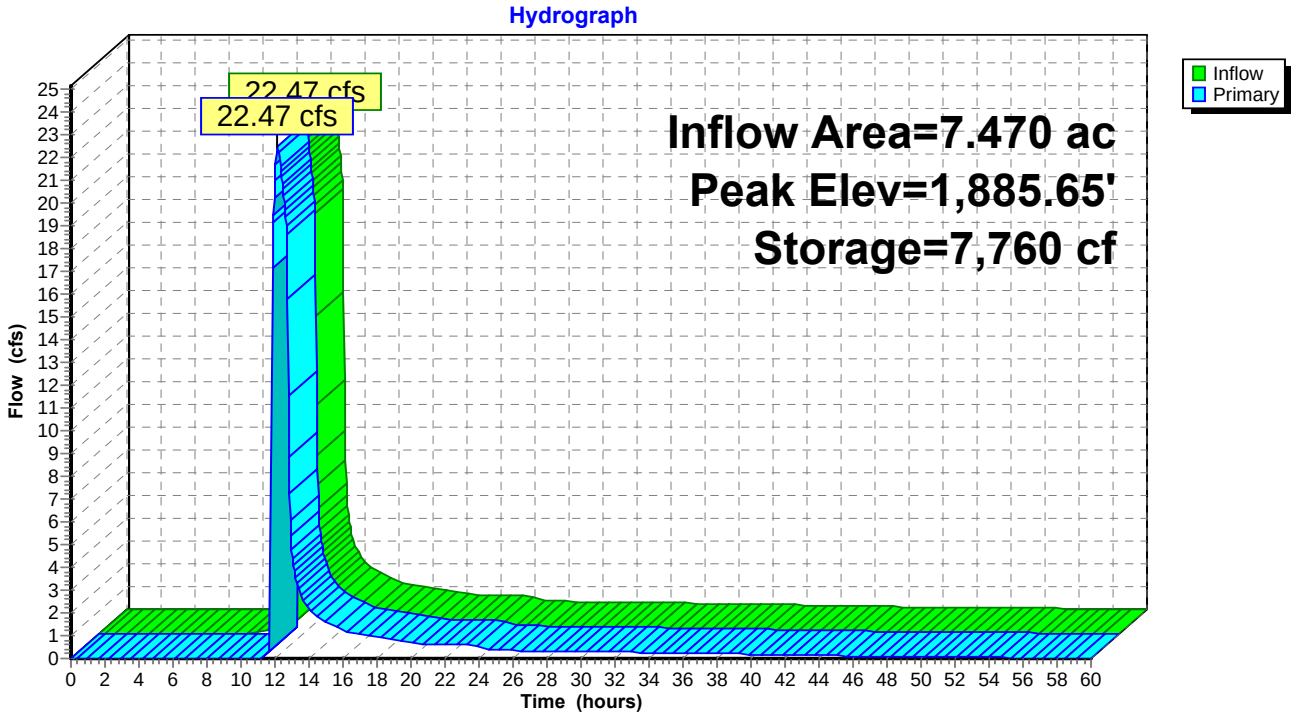
Volume	Invert	Avail.Storage	Storage Description
#1	1,882.00'	12,393 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,882.00	991	185.0	0	0	991
1,884.00	2,286	243.0	3,188	3,188	3,012
1,886.00	3,298	269.0	5,553	8,741	4,189
1,887.00	4,017	308.0	3,652	12,393	6,003

Device	Routing	Invert	Outlet Devices
#1	Primary	1,885.00'	**15.0' long + 2.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=22.44 cfs @ 12.14 hrs HW=1,885.65' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 22.44 cfs @ 2.13 fps)

Pond 6P: Big Crusher Pond



Summary for Pond 8P: Last Chance Pond

Inflow Area = 0.653 ac, 8.08% Impervious, Inflow Depth = 3.29" for 100-Yr Proj event
Inflow = 4.41 cfs @ 11.91 hrs, Volume= 0.179 af
Outflow = 0.04 cfs @ 22.28 hrs, Volume= 0.007 af, Atten= 99%, Lag= 621.8 min
Primary = 0.04 cfs @ 22.28 hrs, Volume= 0.007 af
Routed to Link 003A : MSGP Outfall 003A

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,802.50' @ 22.28 hrs Surf.Area= 3,025 sf Storage= 7,485 cf

Plug-Flow detention time= 744.4 min calculated for 0.007 af (4% of inflow)
Center-of-Mass det. time= 554.1 min (1,381.4 - 827.3)

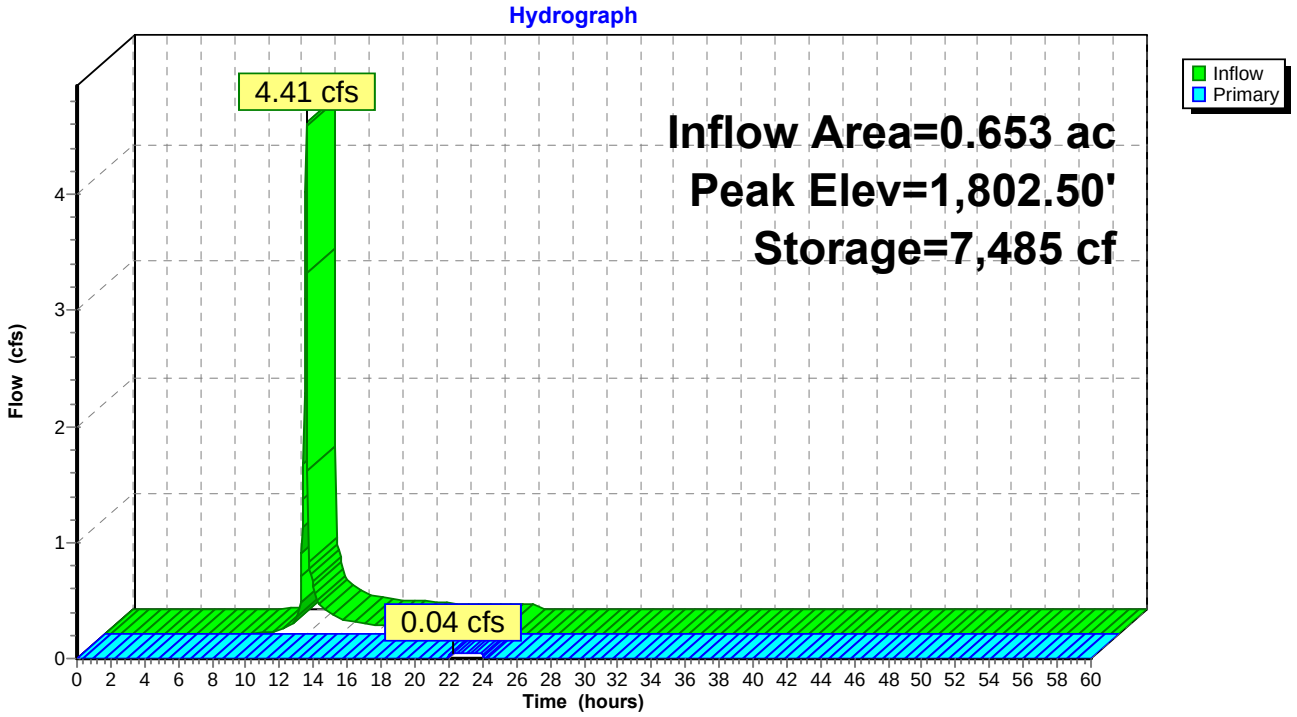
Volume	Invert	Avail.Storage	Storage Description
#1	1,798.00'	12,518 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,798.00	443	139.0	0	0	443
1,800.00	1,426	186.0	1,776	1,776	1,701
1,802.00	2,658	224.0	4,021	5,796	3,007
1,804.00	4,117	261.0	6,722	12,518	4,515

Device	Routing	Invert	Outlet Devices
#1	Primary	1,802.50'	**30.0' long + 2.0 '/' SideZ x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.01 cfs @ 22.28 hrs HW=1,802.50' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.12 fps)

Pond 8P: Last Chance Pond



Summary for Pond 10P: Lower Pit

Inflow Area = 67.920 ac, 0.00% Impervious, Inflow Depth = 4.12" for 100-Yr Proj event
Inflow = 421.81 cfs @ 12.01 hrs, Volume= 23.291 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

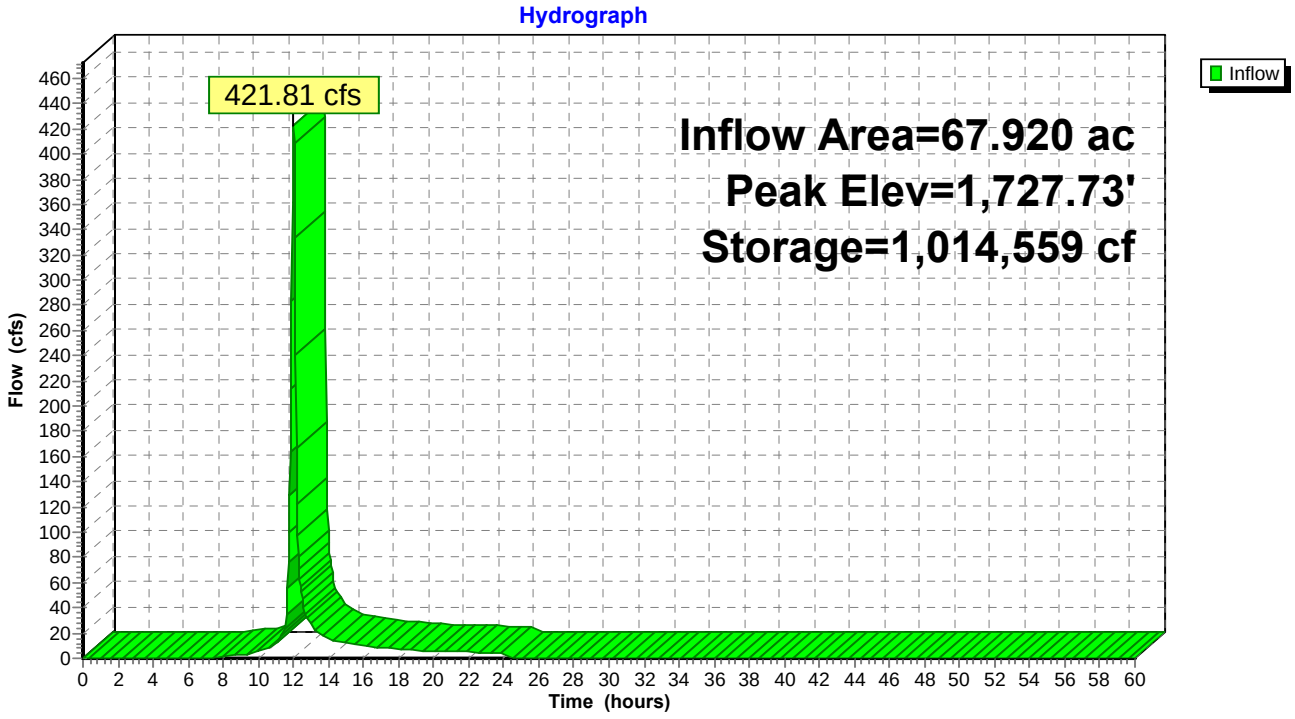
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,727.73' @ 24.60 hrs Surf.Area= 101,757 sf Storage= 1,014,559 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	1,720.00'	6,558,311 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,720.00	87,331	1,502.0	0	0	87,331
1,770.00	180,586	1,711.9	6,558,311	6,558,311	183,962

Pond 10P: Lower Pit



Summary for Pond 11P: Upper Crusher Pond

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth = 5.89" for 100-Yr Proj event
Inflow = 65.41 cfs @ 11.98 hrs, Volume= 3.669 af
Outflow = 22.47 cfs @ 12.12 hrs, Volume= 3.442 af, Atten= 66%, Lag= 8.4 min
Primary = 22.47 cfs @ 12.12 hrs, Volume= 3.442 af
Routed to Pond 6P : Big Crusher Pond

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,901.95' @ 12.12 hrs Surf.Area= 12,705 sf Storage= 67,106 cf

Plug-Flow detention time= 282.5 min calculated for 3.440 af (94% of inflow)
Center-of-Mass det. time= 248.5 min (1,016.3 - 767.8)

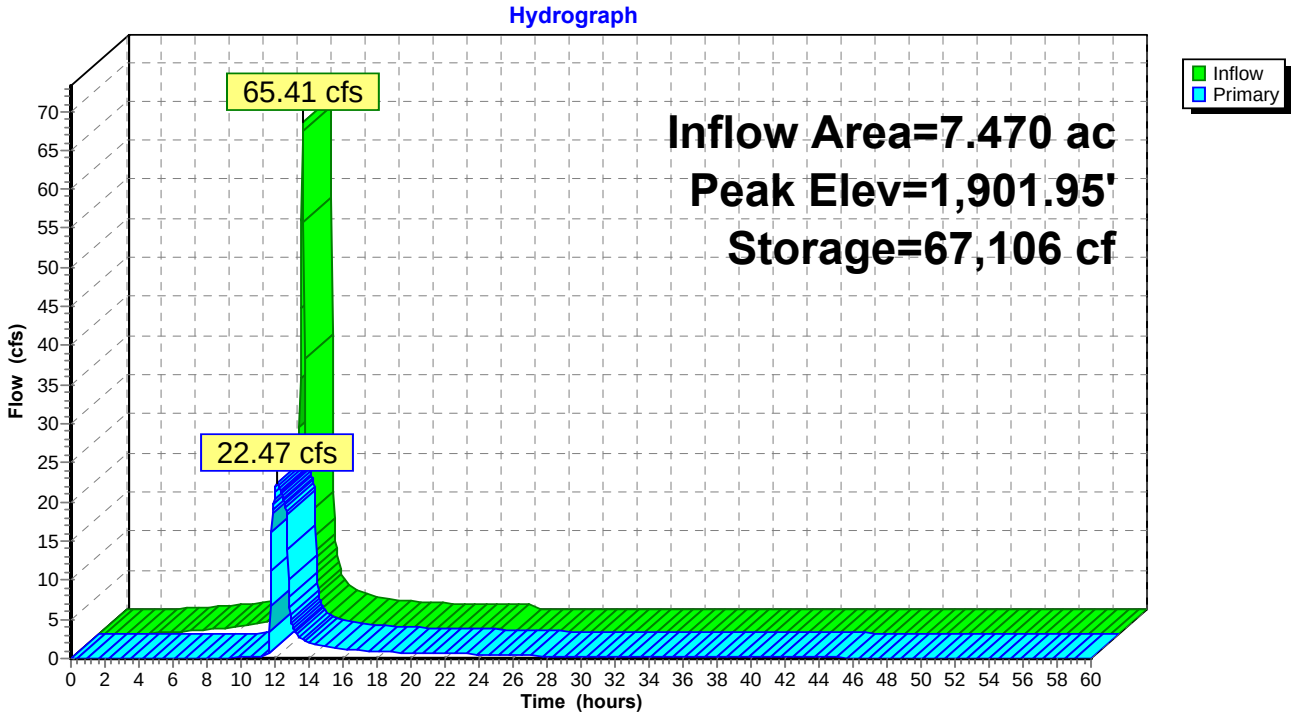
Volume	Invert	Avail.Storage	Storage Description
#1	1,893.00'	67,663 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,893.00	3,101	264.0	0	0	3,101
1,894.00	3,926	284.0	3,505	3,505	4,015
1,896.00	5,770	328.0	9,637	13,142	6,244
1,898.00	7,867	369.0	13,583	26,725	8,622
1,900.00	10,201	408.0	18,018	44,743	11,156
1,902.00	12,767	446.0	22,920	67,663	13,876

Device	Routing	Invert	Outlet Devices
#1	Primary	1,893.00'	**21.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,893.00' / 1,891.00' S= 0.0267 '/' Cc= 0.600 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	1,895.25'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 6.0" cc spacing C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,898.50'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.46 cfs @ 12.12 hrs HW=1,901.94' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.93 cfs @ 9.12 fps)
└**3=Orifice/Grate** (Passes 21.93 cfs of 43.87 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 12.18 fps)

Pond 11P: Upper Crusher Pond



Summary for Pond 20P: Plunge Pool

Inflow Area = 6.155 ac, 2.51% Impervious, Inflow Depth > 4.46" for 100-Yr Proj event
Inflow = 30.82 cfs @ 12.09 hrs, Volume= 2.286 af
Outflow = 30.78 cfs @ 12.09 hrs, Volume= 2.286 af, Atten= 0%, Lag= 0.1 min
Primary = 30.78 cfs @ 12.09 hrs, Volume= 2.286 af
Routed to Link AP-4 : AP-4

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs
Peak Elev= 1,611.68' @ 12.09 hrs Surf.Area= 0.007 ac Storage= 0.014 af

Plug-Flow detention time= 0.6 min calculated for 2.284 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (1,127.5 - 1,127.1)

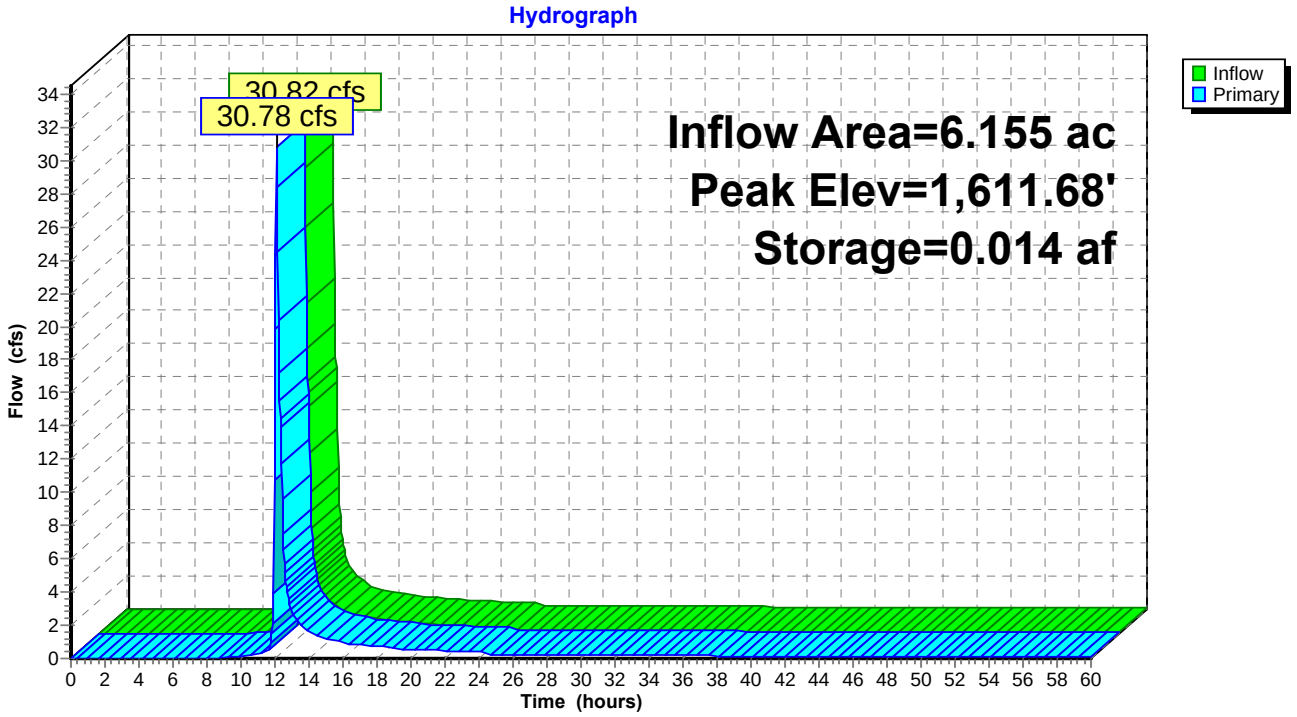
Volume	Invert	Avail.Storage	Storage Description
#1	1,608.00'	0.016 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,608.00	0.001	0.000	0.000
1,610.00	0.004	0.005	0.005
1,612.00	0.007	0.011	0.016

Device	Routing	Invert	Outlet Devices
#1	Primary	1,608.00'	**20.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,608.00' / 1,606.00' S= 0.0444 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.18 sf
#2	Primary	1,611.00'	**10.0' long + 2.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=29.99 cfs @ 12.09 hrs HW=1,611.66' (Free Discharge)
1=Culvert (Inlet Controls 13.95 cfs @ 6.40 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 16.03 cfs @ 2.13 fps)

Pond 20P: Plunge Pool

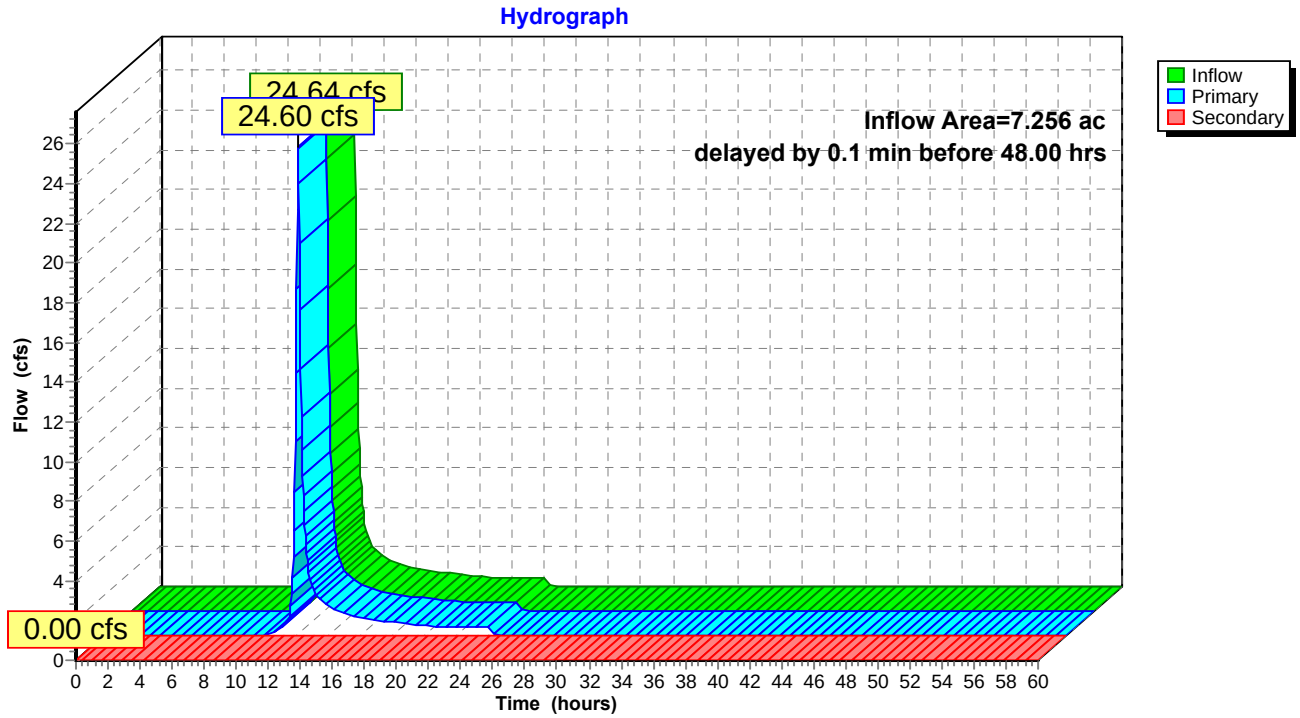


Summary for Link 002A: MSGP Outfall 002A

Inflow Area = 7.256 ac, 0.00% Impervious, Inflow Depth = 2.89" for 100-Yr Proj event
Inflow = 24.64 cfs @ 12.11 hrs, Volume= 1.746 af
Primary = 24.60 cfs @ 12.11 hrs, Volume= 1.746 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 002A: MSGP Outfall 002A

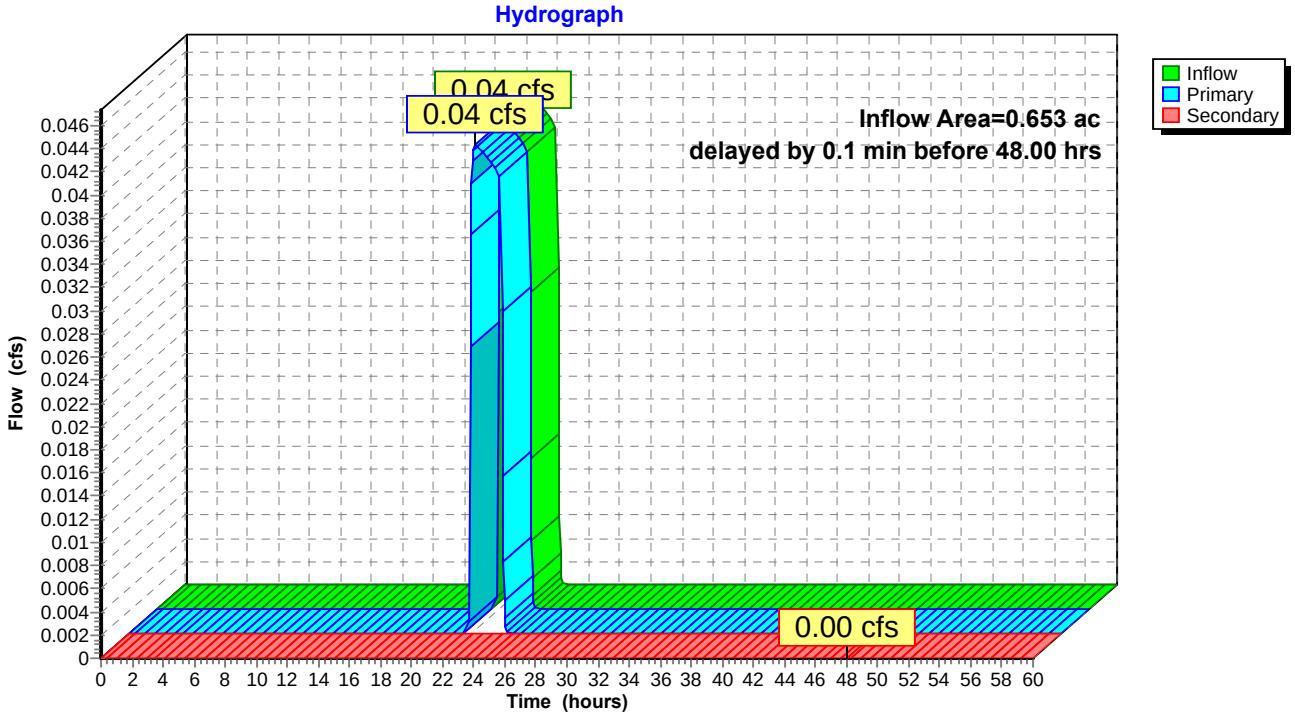


Summary for Link 003A: MSGP Outfall 003A

Inflow Area = 0.653 ac, 8.08% Impervious, Inflow Depth = 0.13" for 100-Yr Proj event
Inflow = 0.04 cfs @ 22.28 hrs, Volume= 0.007 af
Primary = 0.04 cfs @ 22.28 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.2 min
Secondary = 0.00 cfs @ 48.00 hrs, Volume= 0.000 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 003A: MSGP Outfall 003A

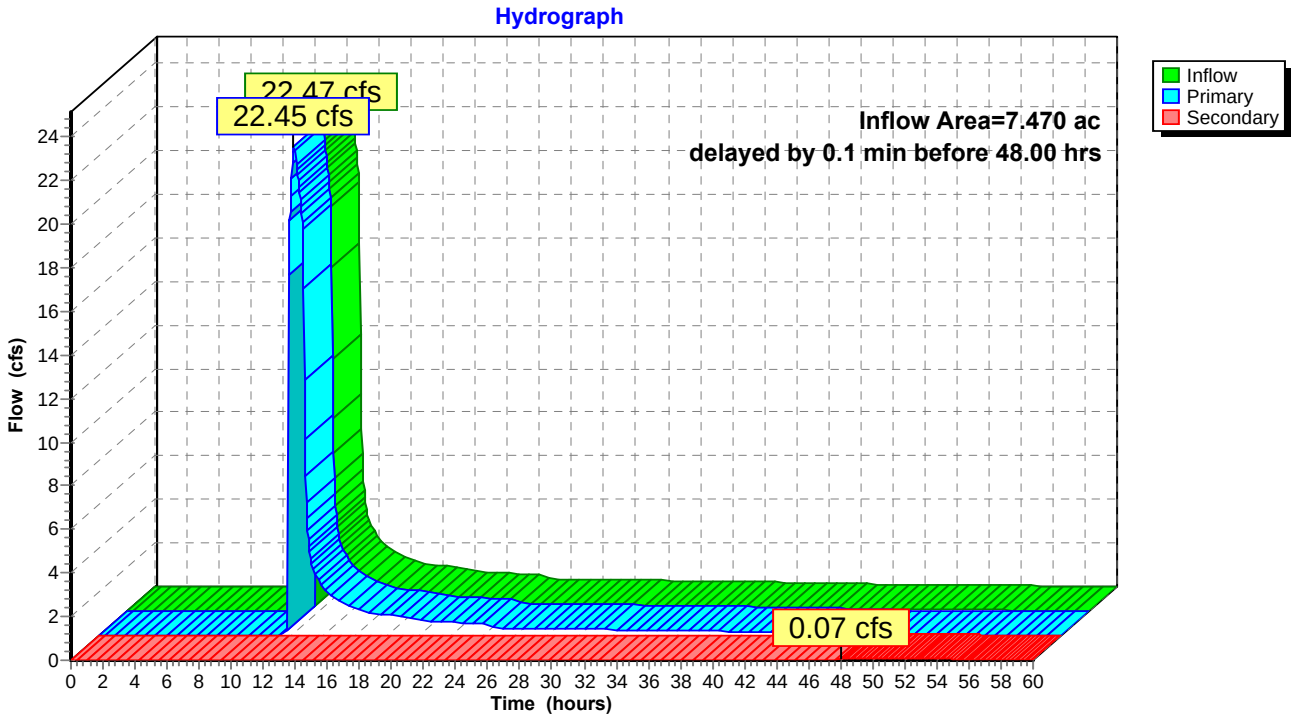


Summary for Link 005A: MSGP Outfall 005A

Inflow Area = 7.470 ac, 0.00% Impervious, Inflow Depth > 5.31" for 100-Yr Proj event
Inflow = 22.47 cfs @ 12.14 hrs, Volume= 3.305 af
Primary = 22.45 cfs @ 12.14 hrs, Volume= 3.262 af, Atten= 0%, Lag= 0.1 min
Secondary = 0.07 cfs @ 48.00 hrs, Volume= 0.043 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link 005A: MSGP Outfall 005A

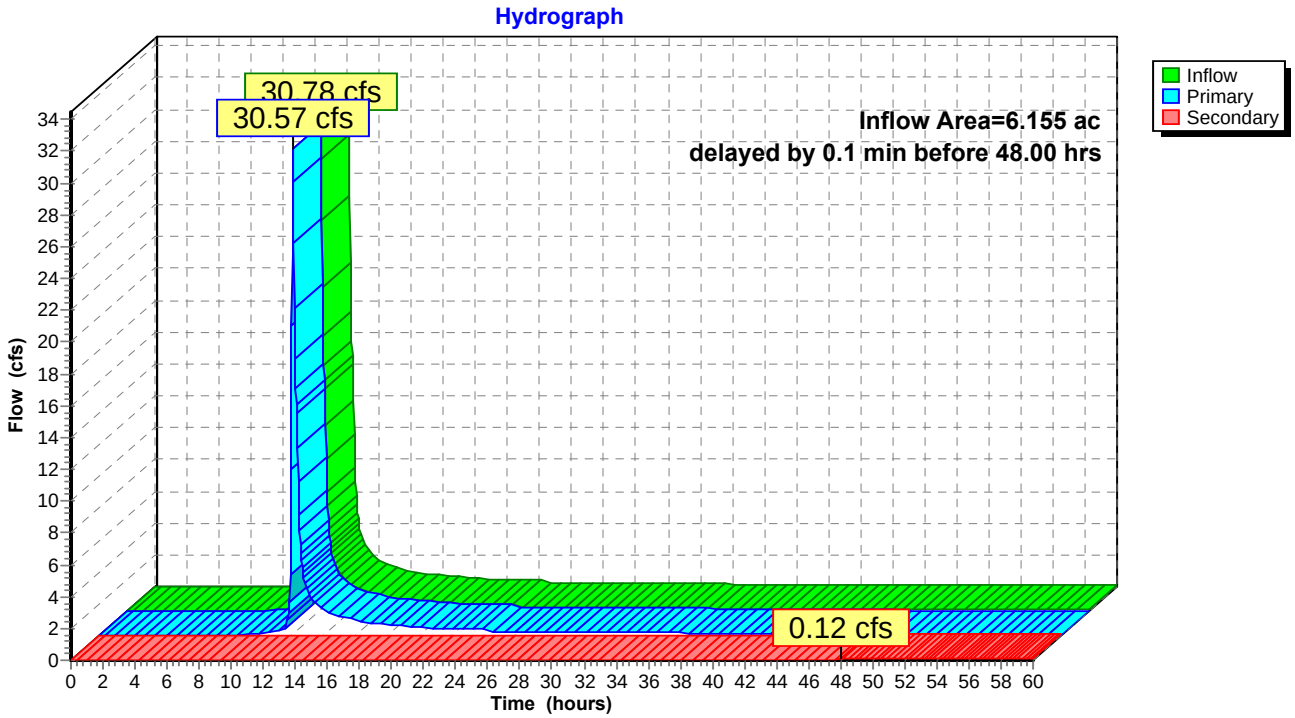


Summary for Link AP-4: AP-4

Inflow Area = 6.155 ac, 2.51% Impervious, Inflow Depth > 4.46" for 100-Yr Proj event
Inflow = 30.78 cfs @ 12.09 hrs, Volume= 2.286 af
Primary = 30.57 cfs @ 12.09 hrs, Volume= 2.191 af, Atten= 1%, Lag= 0.1 min
Secondary = 0.12 cfs @ 48.00 hrs, Volume= 0.095 af

Primary outflow = Inflow delayed by 0.1 min before 48.00 hrs, Time Span= 0.00-60.00 hrs, dt= 0.04 hrs

Link AP-4: AP-4



APPENDIX C

NY Standards and Specifications for Erosion and Sediment Control

Compost Filter Sock

Dust Control

Earth Dike

Lined Waterway

Mulching

Rock outlet Protection

Sediment Basin

Temporary Construction Area

Planting Topsoiling

STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK

Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

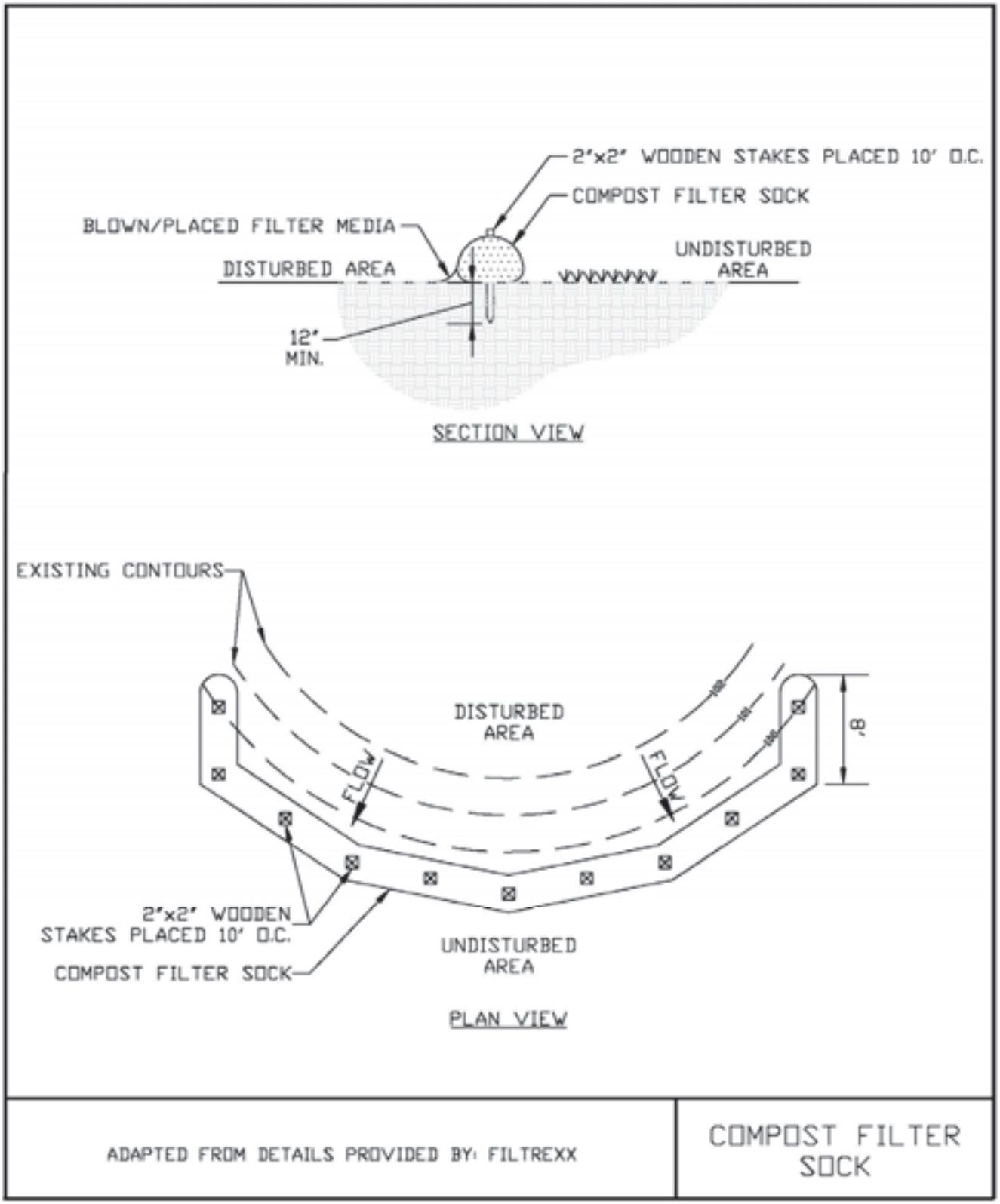
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

STANDARD AND SPECIFICATIONS FOR EARTH DIKE

Definition & Scope

A **temporary** berm or ridge of compacted soil, located in such a manner as to channel water to a desired location. Its purpose is to direct runoff to a sediment trapping device, thereby reducing the potential for erosion and off site sedimentation. Earth dikes can also be used for diverting clean water away from disturbed areas.

Conditions Where Practice Applies

Earth dikes are often constructed across disturbed areas and around construction sites such as graded parking lots and subdivisions. The dikes shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.5 on page 3.15 for details.

General

	Dike A	Dike B
Drainage Area	<5 Ac	5-10 Ac
Dike Height	18 in.	36 in.
Dike Width	24 in.	36 in.
Flow Width	4 ft.	6 ft.
Flow Depth in Channel	8 in.	15 in.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specifications for Diversion on page 3.9.

Stabilization

Stabilization of the dike shall be completed within 2 days of installation in accordance with the standard and specifications for seed and straw mulch or straw mulch only if not in seeding season. The flow channel shall be stabilized as per the following criteria:

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP, sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP, Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.

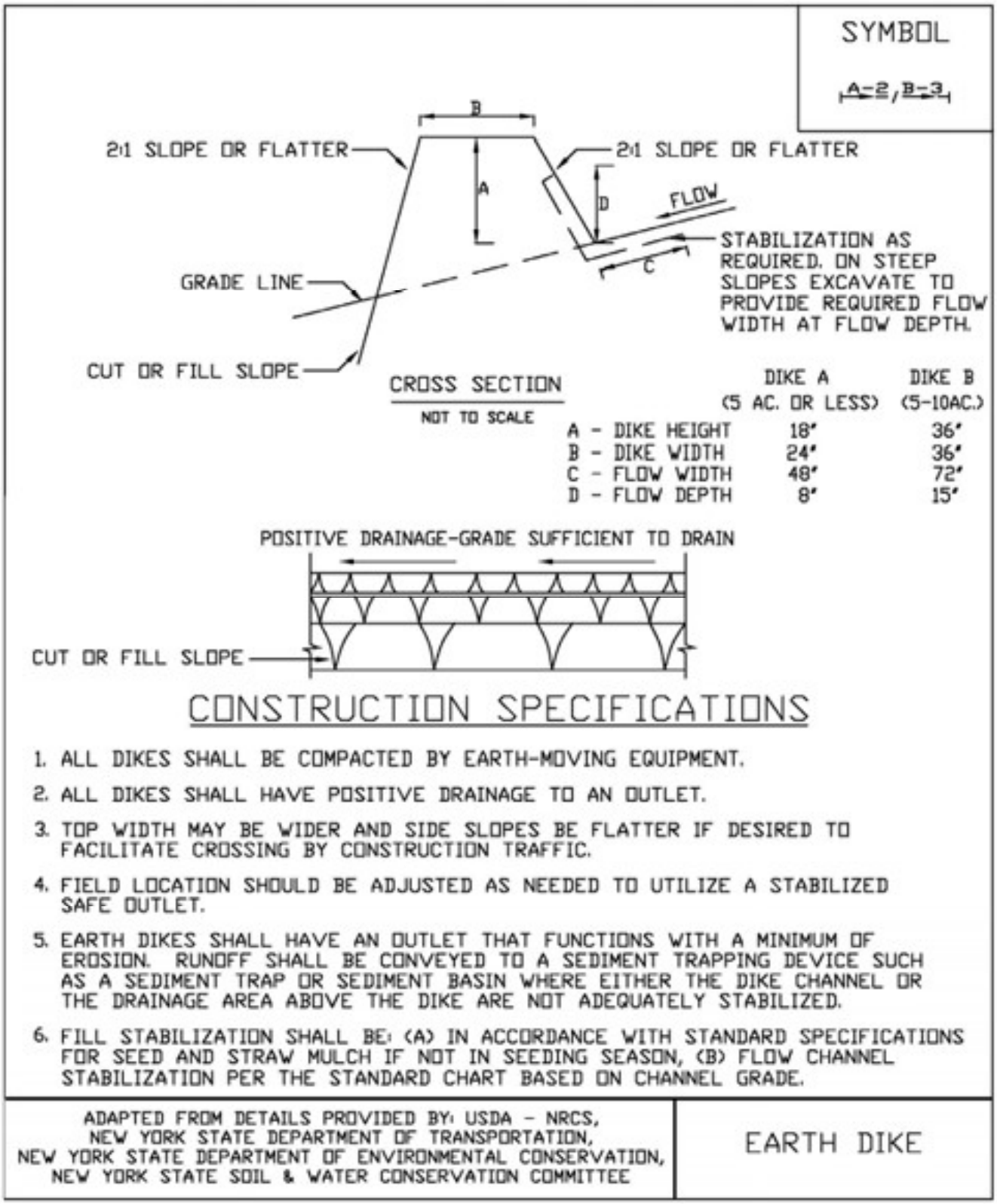
Outlet

Earth dikes shall have an outlet that functions with a minimum of erosion.

Runoff shall be conveyed to a sediment trapping device until the drainage area above the dike is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 3.5
Earth Dike Detail



STANDARD AND SPECIFICATIONS FOR LINED WATERWAY OR OUTLET

Definition

A waterway or outlet with a lining of concrete, stone, or other permanent material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

Purpose

To provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Scope

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

Conditions Where Practice Applies

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.

2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion.

3. The location is such that damage from use by people or animals precludes use of vegetated waterways or outlets.

4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.

5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

Lined Material	"n"
Concrete (Type):	
Trowel Finish	0.015
Float Finish	0.019
Gunite	0.019
Flagstone	0.022
Riprap	Determine from Figure 5B.11 on page 5B.19
Gabion	0.030

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Ree Road, Ann Arbor, Michigan 48016, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this

flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

Design Flow Depth (ft.)	Maximum Velocity (ft./sec.)
0.0 – 0.5	25
0.5 – 1.0	15
Greater than 1.0	10

2. Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

1. Non-Reinforced Concrete
   Hand-placed, formed concrete
   Height of lining, 1.5 ft or less……. Vertical
   Hand placed screened concrete or mortared
   In-place flagstone
   Height of lining, less than 2 ft…….. 1 to 1
   Height of lining, more than 2 ft…….. 2 to 1
2. Slip form concrete:
   Height of lining, less than 3 ft…… 1 to 1
3. Rock Riprap……. 2 to 1
4. Gabions…… Vertical
5. Pre-cast Concrete Sections…….. Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

1. Concrete……..4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing.)

2. Rock Riprap……1.5 x maximum stone size plus thickness of filter or bedding.
3. Flagstone……..4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

Velocity, f.p.s.	dmax, inches
5.0	6
8.5	12
10	18
12	24
15	36

A complete riprap gradations is provided in Table 5B.4, page 5B.38.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

Construction Specifications

1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.

2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

3. No abrupt deviations from design grade or horizontal alignment shall be permitted.

4. Concrete linings shall be placed to the thickness shown on the plans and finished in a workmanlike manner. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.

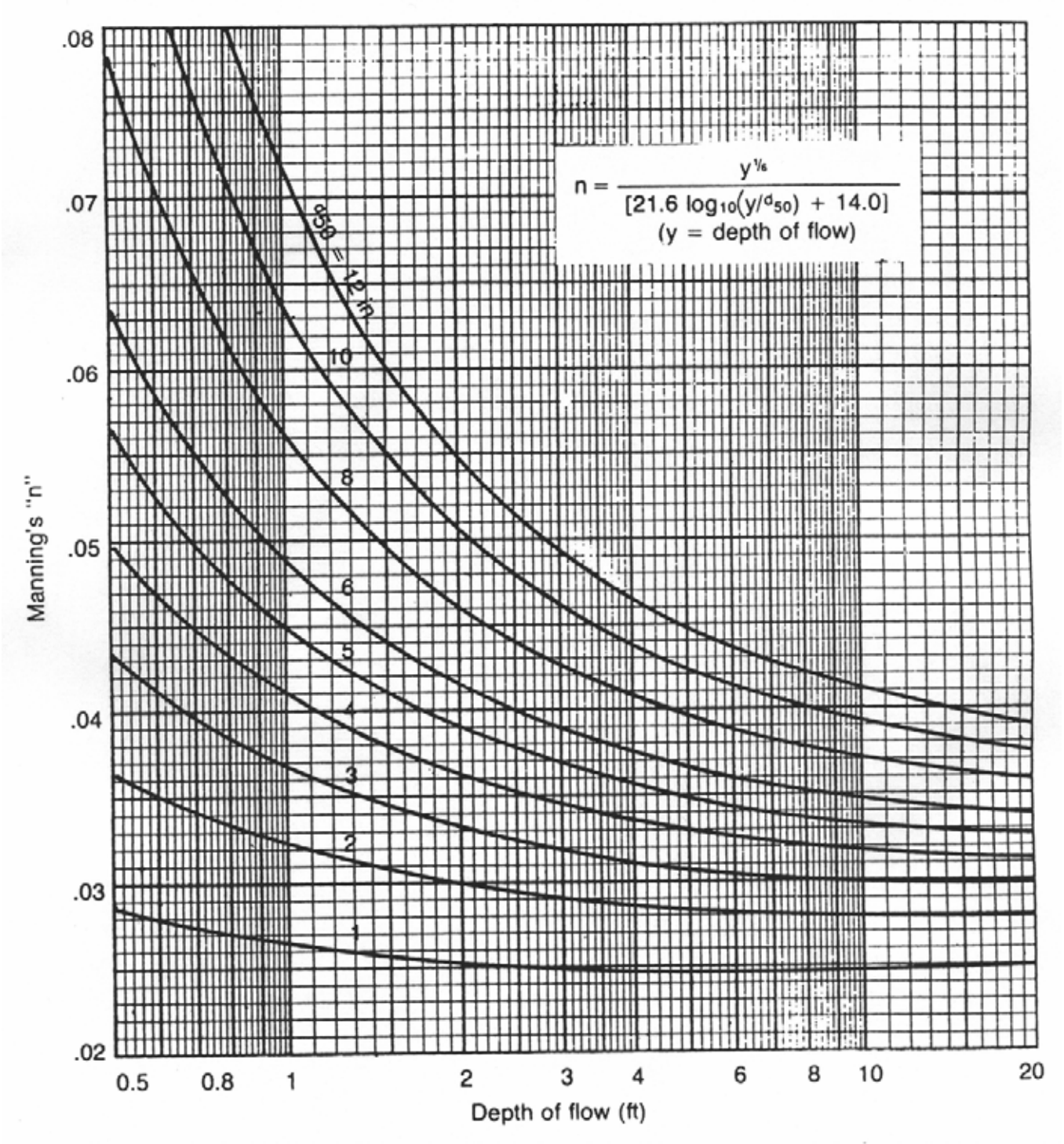
5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall present a workmanlike appearance. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage.

Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Critical Area Seeding on page 3.5.

Figure 5B.11
Determining "n" for Riprap Lined Channel using Depth of Flow
(USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR MULCHING

Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS
FOR
ROCK OUTLET PROTECTION

Definition

A section of rock protection placed at the outlet end of the culverts, conduits, or channels.

Purpose

The purpose of the rock outlet protection is to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Scope

This standard applies to the planning, design, and construction of rock riprap and gabions for protection of downstream areas. It does not apply to rock lining of channels or streams.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.

2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.

3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 5B.12 on page 5B.25 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 5B.13 on page 5B.26 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 5B.12 on page 5B.25 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 5B.12 on page 5B.25
Maximum Tailwater – Use Figure 5B.13 on page 5B.26

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions.

Riprap shall be composed of a well-graded mixture of stone size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A well-graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum stone diameter for d_{50} of 15 inches or less; and 1.2 times the maximum stone size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Stone Quality

Stone for riprap shall consist of field stone or rough unhewn quarry stone. The stone shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual stones shall be at least 2.5.

Recycled concrete equivalent may be used provided it has a density of at least 150 pounds per cubic foot, and does not have any exposed steel or reinforcing bars.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Riprap Slope Protection on page 5B.57.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturers recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged stones. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.
3. Enter the appropriate chart with the design discharge to

determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Examples

Example 1: Pipe Flow (full) with discharge to unconfined section.

Given: A circular conduit flowing full.

Q = 280 cfs, diam. = 66 in., tailwater (surface) is 2 ft. above pipe invert (minimum tailwater condition).

Find: Read d_{50} = 1.2 and apron length (L_a) = 38 ft.

Apron width = diam. + L_a = 5.5 + 38 = 43.5 ft.

Use: d_{50} = 15", d_{max} = 22", blanket thickness = 32"

Example 2: Box Flow (partial) with high tailwater

Given: A box conduit discharging under partial flow conditions. A concrete box 5.5 ft. x 10 ft. flowing 5.0 ft. deep,

Q = 600 cfs and tailwater surface is 5 ft. above invert (max. tailwater condition).

Since this is not full pipe and does not directly fit the nomograph assumptions of Figure 7B.13 substitute depth as the diameter, to find a discharge equal to full pipe flow for that diameter, in this case 60 inches.

Since, $Q = AV$ and $A = \frac{\pi D^2}{4}$

First, compute velocity:

V = (Q/A) = (600/(5) (10)) = 12 fps

Then substituting:

$$Q = \frac{\pi D^2}{4} \times V = \frac{3.14\ (5\ ft)^2}{4} \times 12\ fps = 236\ cfs$$

At the intersection of the curve d = 60 in. and Q = 236 cfs, read d_{50} = 0.4 ft.

Then reading the d = 60 in. curve, read apron length (L_a) = 40 ft.

Apron width, W = conduit width + (6.4)(L_a) = 10 + (0.4) (40) = 26 ft.

Example 3: Open Channel Flow with Discharge to Unconfined Section

Given: A trapezoidal concrete channel 5 ft. wide with 2:1 side slopes is flowing 2 ft. deep, Q = 180 cfs (velocity = 10 fps) and the tailwater surface downstream is 0.8 ft. (minimum tailwater condition).

Find: Using similar principles as Example 2, compute equivalent discharge for a 2 foot, using depth as a diameter, circular pipe flowing full at 10 feet per second.

Velocity:

$$Q = \frac{\pi\ (2ft)^2}{4} \times 10\ fps = 31.4\ cfs$$

At intersection of the curve, d = 24 in. and Q = 32 cfs, read d_{50} = 0.6 ft.

Then reading the d = 24 in. curve, read apron length (L_a) = 20 ft.

Apron width, W = bottom width of channel + L_a = 5 + 20 = 25 ft.

Example 4: Pipe flow (partial) with discharge to a confined section

Given: A 48 in. pipe is discharging with a depth of 3 ft. Q = 100 cfs, and discharge velocity of 10 fps (established from partial flow analysis) to a confined trapezoidal channel with a 2 ft. bottom, 2:1 side slopes, n = .04, and grade of 0.6%.

Calculation of the downstream channel (by Manning's Equation) indicates a normal depth of 3.1 ft. and normal velocity of 3.9 fps.

Since the receiving channel is confined, the maximum tailwater condition controls.

Find: discharge using previous principles:

$$Q = \frac{\pi\ (3ft)^2}{4} \times 10\ fps = 71\ cfs$$

At the intersection of d = 36 in. and Q = 71 cfs, read d_{50} = 0.3 ft.

Reading the d = 36" curve, read apron length (L_a) = 30 ft.

Since the maximum flow depth in this reach is 3.1 ft., that is the minimum depth of riprap to be maintained for the entire length.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

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)

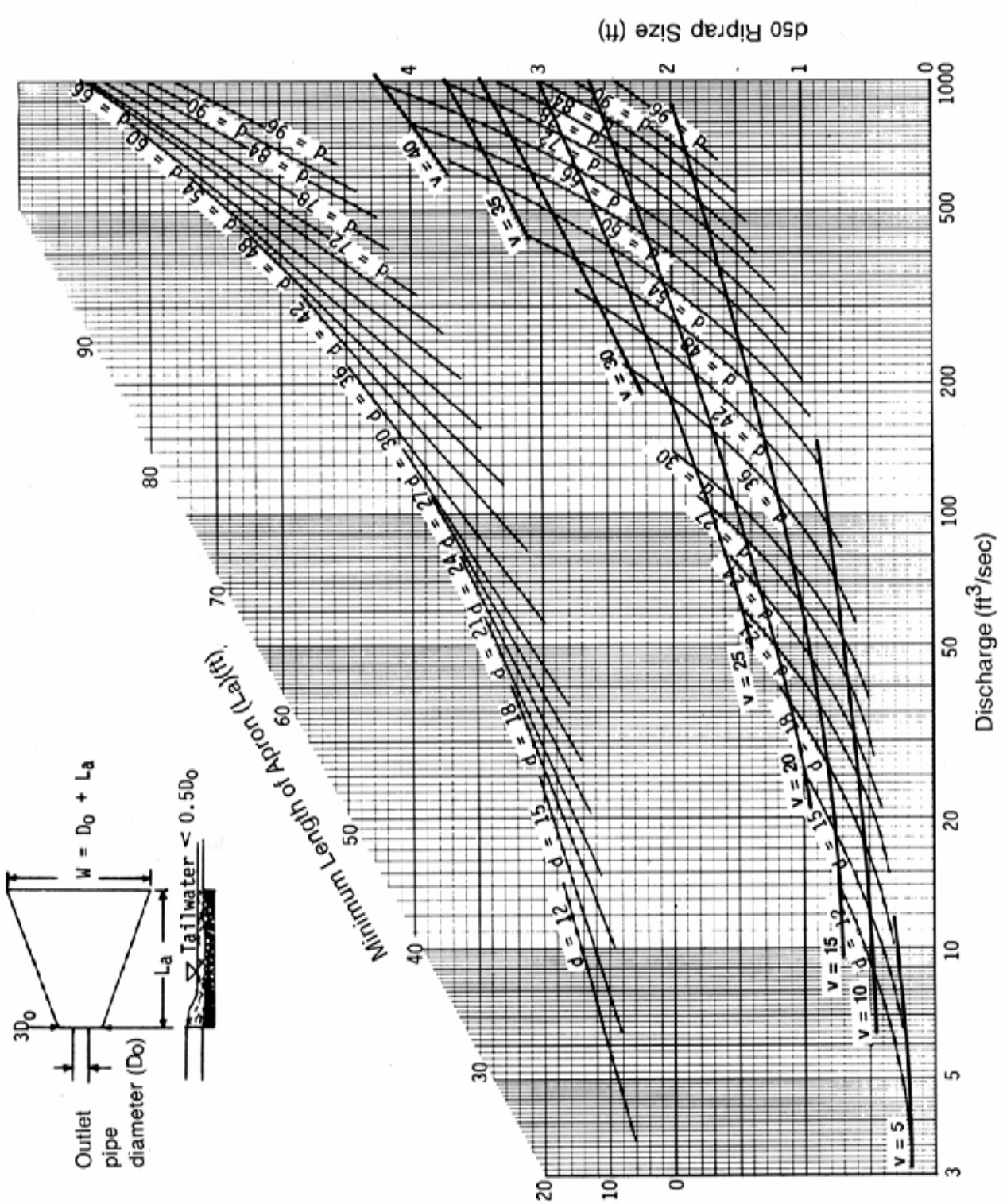


Figure 5B.13
Outlet Protection Design—Maximum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)

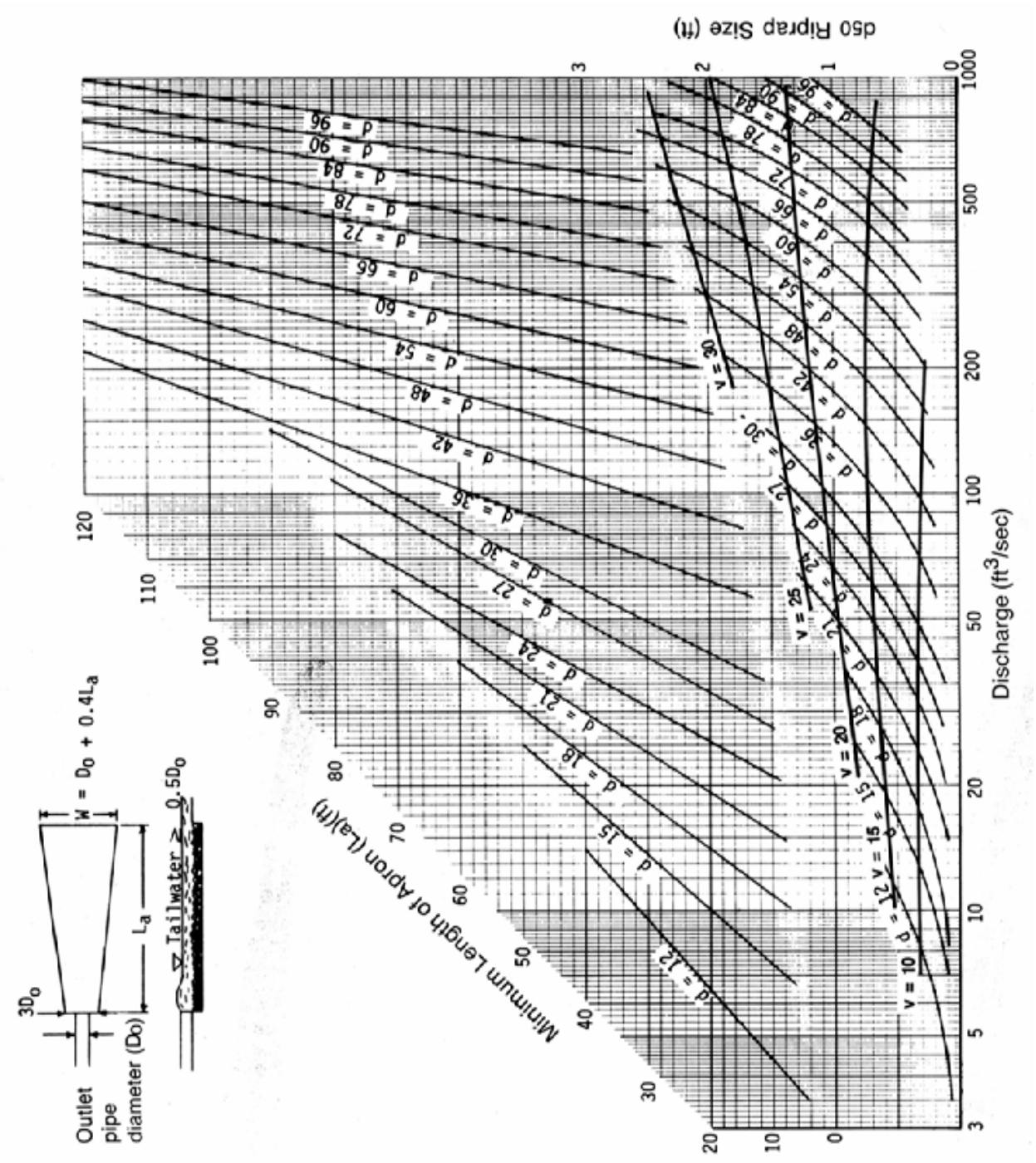


Figure 5B.14
Riprap Outlet Protection Detail (1)

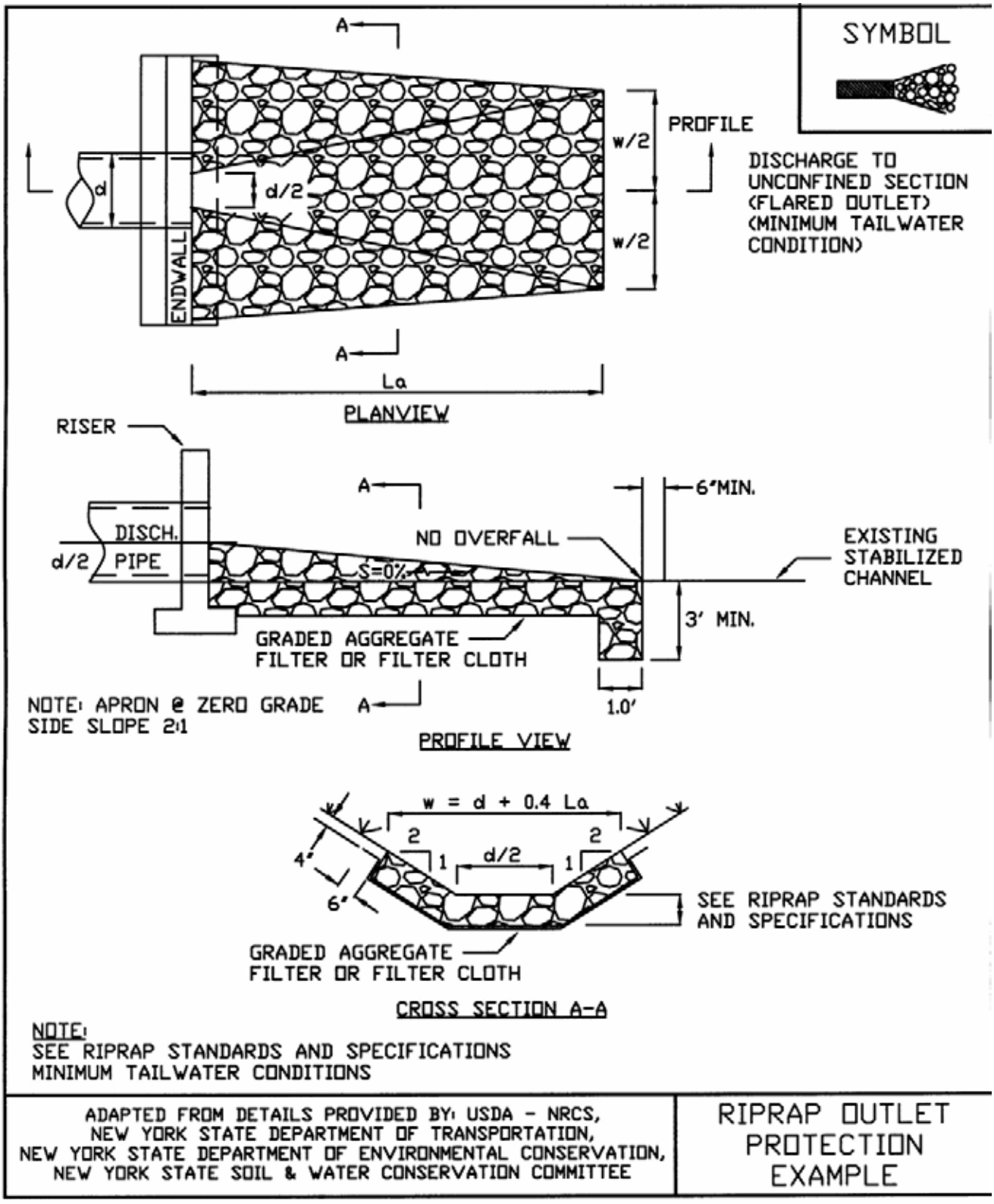


Figure 5B.15
Riprap Outlet Protection Detail (2)

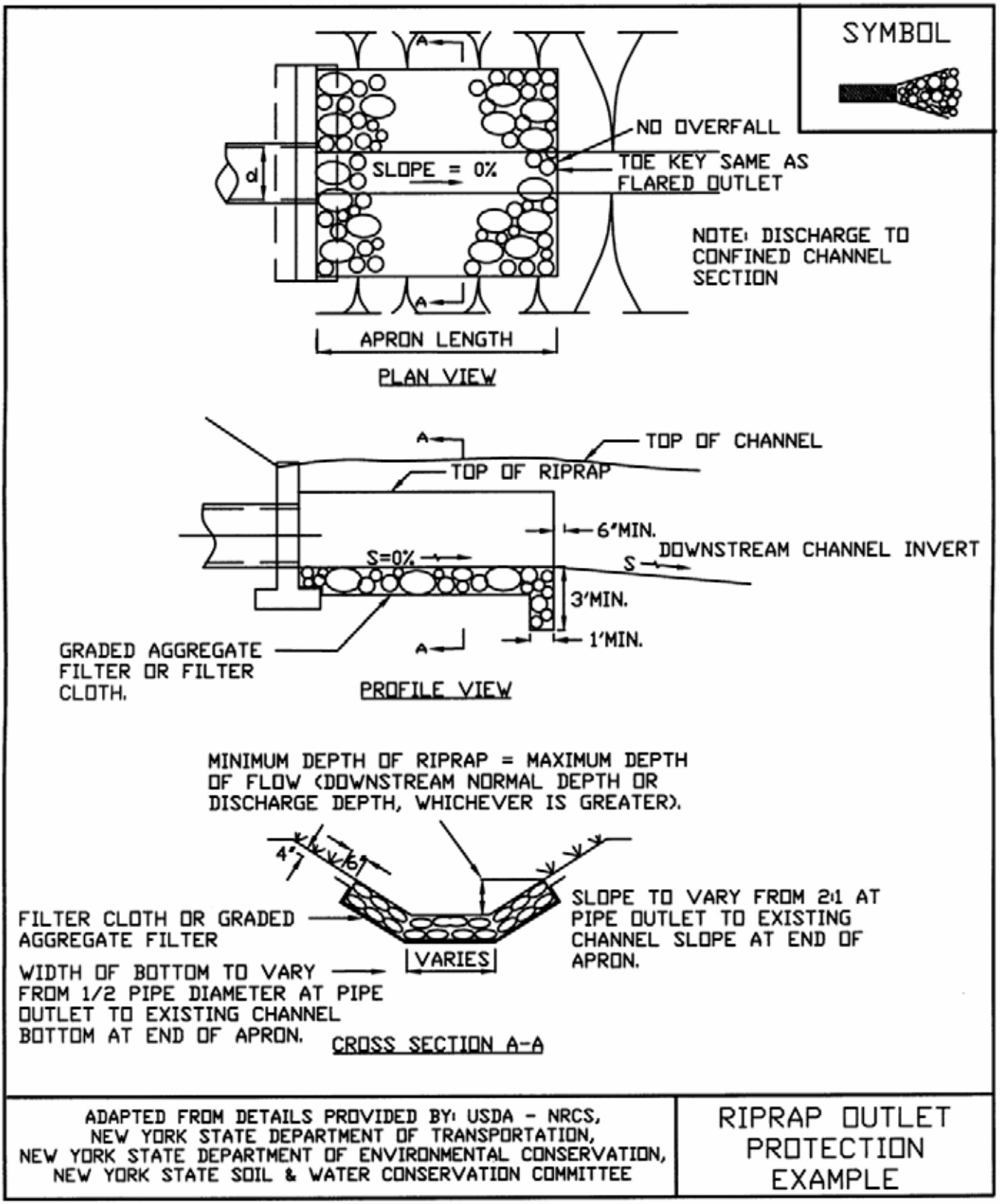
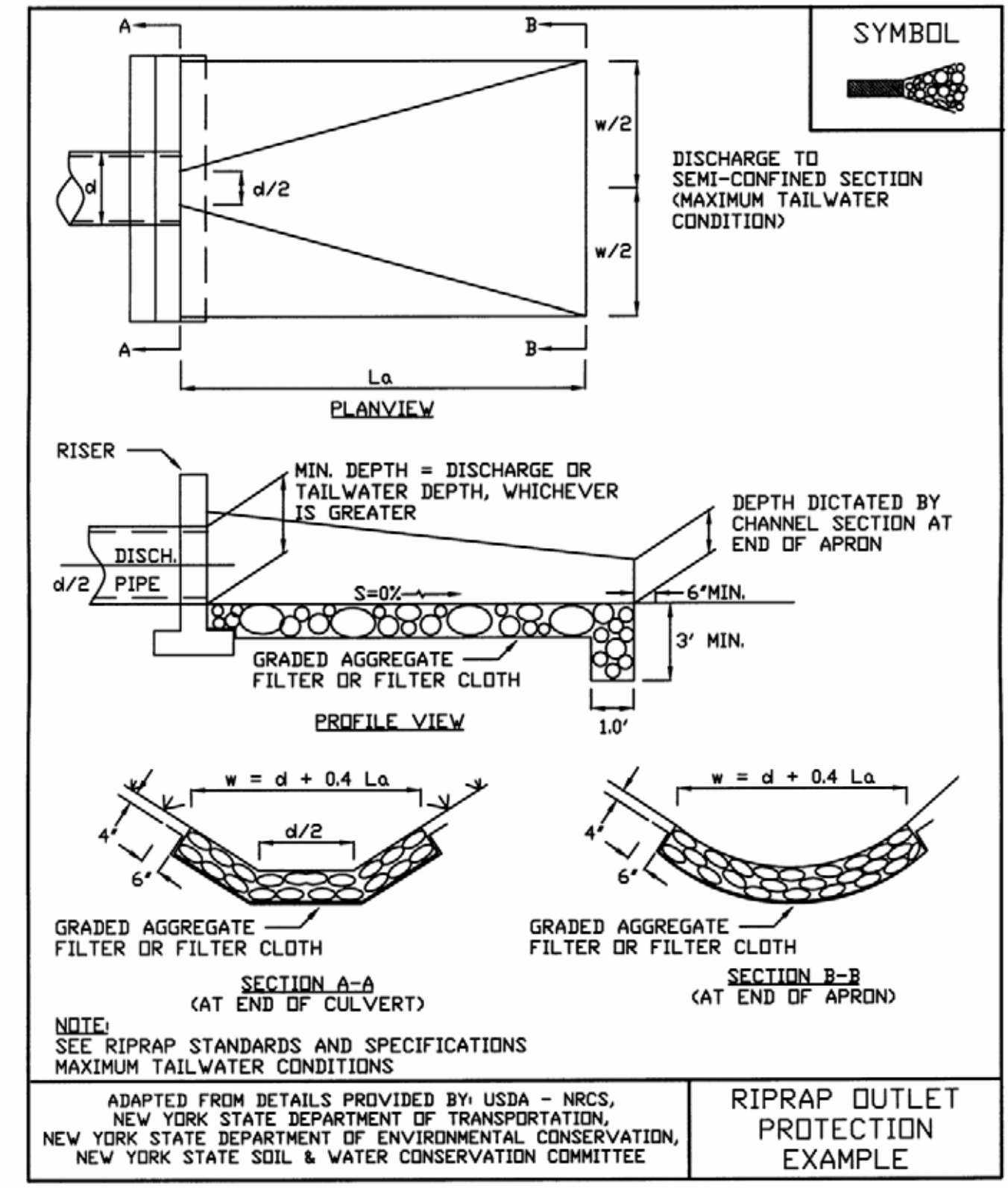


Figure 5B.16
Riprap Outlet Protection Detail (3)



STANDARD AND SPECIFICATIONS FOR SEDIMENT BASIN

Class	1	2
Max. Drainage Area (acres)	100	100
Max. Height[1] of Dam (ft.)	10	15
Min. Embankment Top Width	8	10
Embankment Side Slopes	2:1 or Flatter	2 ½:1 or Flatter
Anti-Seep Control Required	Yes	Yes

[1] Height is measured from the low point of original ground at the downstream toe of the dam to the top of the dam.

Definition

A temporary barrier or dam constructed across a drainage way or at other suitable locations to intercept sediment laden runoff and to trap and retain the sediment.

Scope

This standard applies to the installation of temporary sediment basins on sites where: (a) failure of the structure would not result in loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities; (b) the drainage area does not exceed 100 acres; and (c) the basin is to be removed within 36 months after the beginning of construction of the basin.

Permanent (to function more than 36 months) sediment basins, or temporary basins exceeding the classification requirements for class 1 and 2, or structures that temporarily function as a sediment basin but are intended for use as a permanent pool shall be classified as permanent structures and shall conform to criteria appropriate for permanent structures. These structures shall be designed and constructed to conform to NRCS Standard And Specification No. 378 for Ponds in the National Handbook of Conservation Practices and the New York State Department of Environmental Conservation, "Guidelines for the Design of Dams." The total volume of permanent sediment basins shall equal to or exceed the capacity requirements for temporary basins contained herein.

Classification of Temporary Sediment Basins

For the purpose of this standard, temporary sediment basins are classified as follows:

Purpose

The purpose of a sediment basin is to intercept sediment-laden runoff and reduce the amount of sediment leaving the disturbed area in order to protect drainage ways, properties, and rights-of-way below the sediment basin.

Conditions Where Practice Applies

A sediment basin is appropriate where physical site conditions or land ownership restrictions preclude the installation of other erosion control measures to adequately control runoff, erosion, and sedimentation. However, it is strongly encouraged to use a basin in addition to other ESC measures if practicable. It may be used below construction operations which expose critical areas to soil erosion. The basin shall be maintained until the disturbed area is protected against erosion by permanent stabilization.

Design Criteria

Compliance with Laws and Regulations

Design and construction shall comply with state and local laws, ordinances, rules and regulations, including permits.

Location

The sediment basin should be located to obtain the maximum storage benefit from the terrain and for ease of cleanout of the trapped sediment. It should be located to minimize interference with construction activities and

construction of utilities. Whenever possible, sediment basins should be located so that storm drains may outfall or be diverted into the basin. **Do not locate basins in perennial streams.**

Size and Shape of the Basin

The minimum sediment storage volume of the basin, as measured from the bottom of the basin to the elevation of the crest of the principal spillway shall be at least 3,600 cubic feet per acre draining to the basin. This 3,600 cubic feet is equivalent to one inch of sediment per acre of drainage area. The entire drainage area is used for this computation, rather than the disturbed area above, to maximize trapping efficiency. The length to width ratio shall be greater than 2:1, where length is the distance between the inlet and outlet. A wedge shape shall be used with the inlet located at the narrow end.

Surface Area

Recent studies (Barfield and Clar 1985; Pitt, 2003) indicate that the following relationship between surface area and peak inflow rate gives a trapping efficiency of 75% for silt loam soils, and greater than 90% for loamy sand soils:

A = 0.01 Qp or, A = 0.015x D.A.
(whichever is greater)
where,

A = the basin surface area, acres, measured at the service spillway crest; and

Qp = the peak inflow rate for the design storm.
(The minimum design storm will be a 10 year, 24 hour storm under construction conditions).

D.A. = contributing drainage area.

One half of the design sediment storage volume (67 cubic yards per acre drainage area) shall be in the form of a permanent pool, and the remaining half as drawdown volume.

Sediment basins shall be cleaned out when the permanent pool volume remaining as described above is reduced by 50 percent, except in no case shall the sediment level be permitted to build up higher than one foot below the principal spillway crest. At this elevation, cleanout shall be performed to restore the original design volume to the sediment basin.

The elevation corresponding to the maximum allowable sediment level shall be determined and shall be stated in the design data as a distance below the top of the riser and shall be clearly marked on the riser.

The basin dimensions necessary to obtain the required basin volume as stated above shall be clearly shown on the plans to facilitate plan review, construction, and inspection.

Spillway Design

Runoff shall be computed by the method outlined in: Chapter 2, Estimating Runoff, Engineering Field Handbook available in the Natural Resources Conservation Service offices or, by TR-55, Urban Hydrology for Small Watersheds. **Runoff computations shall be based upon the worst soil cover conditions expected to prevail in the contributing drainage area during the anticipated effective life of the structure.** The combined capacities of the principal and emergency spillway shall be sufficient to pass the peak rate of runoff from a ten-year frequency storm.

1. Principal spillway: A spillway consisting of a vertical pipe or box type riser joined (watertight connection) to a pipe (barrel) which shall extend through the embankment and outlet beyond the downstream toe of the fill. The minimum capacity of the principal spillway shall be 0.2 cfs per acre of drainage area when the water surface is at the emergency spillway crest elevation. For those basins with no emergency spillway, the principal spillway shall have the capacity to handle the peak flow from a ten-year frequency rainfall event. The minimum size of the barrel shall be 8 inches in diameter. See Figures 5A.25, 5A.26, and 5A.27 on pages 5A.60, 5A.61, and 5A.62 for principal spillway sizes and capacities.

A. Crest elevation: When used in combination with an emergency spillway, the crest elevation of the riser shall be a minimum one foot below the elevation of the control section of the emergency spillway.

B. Watertight riser and barrel assembly: The riser and all pipe connections shall be completely watertight except for the inlet opening at the top, or a dewatering opening. There shall not have any other holes, leaks, rips, or perforations in the structure.

C. Dewatering the basin: The drawdown volume will be discharged over a 10 hour period. The size of the orifice to provide this control can be approximated as follows:

$$A_o = \frac{A_s \times 2h^{0.5}}{T \times Cd \times 20{,}428} \quad \text{therefore,} \quad Ao = \frac{A_s \times 2h^{0.5}}{122{,}568}$$

where,
Ao = surface area of the dewatering orifice
As = surface area of the basin
h = head of water above orifice
Cd = coefficient of contraction for an orifice (0.6)
T = detention time needed to dewater the basin (10 hours)

D. Anti-vortex device and trash rack: An anti-vortex device and trash rack shall be securely installed on top of the riser and shall be the concentric type as shown in Figure 5A.29(1) and 5A.29(2) on pages 5A.64 and 5A.65.

E. Base: The riser shall have a base attached with a

watertight connection and shall have sufficient weight to prevent flotation of the riser. Two approved bases for risers ten feet or less in height are: 1) a concrete base 18 in. thick with the riser embedded 9 in. in the base, and 2) a ¼" minimum thickness steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or compacted earth placed on it to prevent flotation. In either case, each side of the square base shall be twice the riser diameter.

For risers greater than ten feet high, computations shall be made to design a base which will prevent flotation. The minimum factor of safety shall be 1.20 (Downward forces = 1.20 x upward forces). See Figure 5A.30 on page 5A.66 for details.

F. Anti-Seep Collars: Anti-seep collars shall be installed around all conduits through earth fills of impoundment structures according to the following criteria:

1) Collars shall be placed to increase the seepage length along the conduit by a minimum of 15 percent of the pipe length located within the saturation zone.

2) Collar spacing shall be between 5 and 14 times the vertical projection of each collar.

3) All collars shall be placed within the saturation zone.

4) The assumed normal saturation zone (phreatic line) shall be determined by projecting a line at a slope of 4 horizontal to 1 vertical from the point where the normal water (riser crest) elevation touches the upstream slope of the fill to a point where this line intersects the invert of the pipe conduit. All fill located within this line may be assumed as saturated.

When anti-seep collars are used, the equation for revised seepage length becomes:

$2(N)(P)=1.15(L_s)$ or,
$N=(0.075)(L_s)/P$

Where: Ls = Saturated length is length, in feet, of pipe between riser and intersection of phreatic line and pipe invert.

N = number of anti-seep collars.

P = vertical projection of collar from pipe, in feet.

5) All anti-seep collars and their connections shall be watertight.

See Figure 5A.31(1) and 5A.31(2) on pages 5A.67 and 5A.68 for anti-seep collar design and Figure 5A.32 on page 5A.69 for construction details. Seepage diaphragms may be used in lieu of anti-seep collars. They shall be designed in accordance to USDA NRCS Pond Standard 378.

G. Outlet: An outlet shall be provided, including a means of conveying the discharge in an erosion free manner to an existing stable channel. Where discharge occurs at the property line, drainage easements will be obtained in accordance with local ordinances. Adequate notes and references will be shown on the erosion and sediment control plan.

Protection against scour at the discharge end of the pipe spillway shall be provided. Measures may include basin, riprap, revetment, excavated plunge pools, or other approved methods. See Standard and Specification for Rock Outlet Protection, page 5B.21.

2. Emergency Spillways: The entire flow area of the emergency spillway shall be constructed in undisturbed ground (not fill). The emergency spillway cross-section shall be trapezoidal with a minimum bottom width of eight feet. This spillway channel shall have a straight control section of at least 20 feet in length; and a straight outlet section for a minimum distance equal to 25 feet.

A. Capacity: The minimum capacity of the emergency spillway shall be that required to pass the peak rate of runoff from the 10 year 24-hour frequency storm, less any reduction due to flow in the pipe spillway. Emergency spillway dimensions may be determined by using the method described in Figure 5A.33 on page 5A.70.

B. Velocities: The velocity of flow in the exit channel shall not exceed 5 feet per second for vegetated channels. For channels with erosion protection other than vegetation, velocities shall be within the non-erosive range for the type of protection used.

C. Erosion Protection: Erosion protection shall be provided for by vegetation as prescribed in this publication or by other suitable means such as riprap, asphalt or concrete.

D. Freeboard: Freeboard is the difference between the design high water elevation in the emergency spillway and the top of the settled embankment. If there is no emergency spillway, it is the difference between the water surface elevation required to pass the design flow through the pipe and the top of the settled embankment. Freeboard shall be at least one foot.

Embankment Cross-Section

Class 1 Basins: The minimum top width shall be eight feet. The side slopes shall not be steeper than 2:1.

Class 2 Basins: The minimum top width shall be ten feet. The side slopes shall not be steeper than 2 ½:1.

Entrance of Runoff into Basin

Points of entrance of surface runoff into excavated sediment basins shall be protected to prevent erosion. Considerable care should be given to the major points of inflow into basins. In many cases the difference in elevation of the inflow and the bottom of the basin is considerable, thus creating a potential for sever gullying and sediment generation. Often a riprap drop at major points of inflow would eliminate gullying and sediment generation.

Diversions, grade stabilization structures or other water control devices shall be installed as necessary to ensure direction of runoff and protect points of entry into the basin. Points of entry should be located so as to ensure maximum travel distance of entering runoff to point of exit (the riser) from the basin.

Disposal

The sediment basin plans shall indicate the method(s) of disposing of the sediment removed from the basin. The sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the basin, adjacent to a stream or floodplain. Disposal sites will be covered by an approved sediment control plan.

The sediment basis plans shall also show the method of disposing of the sediment basin after the drainage area is stabilized, and shall include the stabilization of the sediment basin site. Water contained within the storage areas shall be removed from the basin by pumping, cutting the top of the riser, or other appropriate method prior to removing or breaching the embankment. Sediment shall not be allowed to flush into a stream or drainage way.

Chemical Treatment

Precipitation of sediment is enhanced with the use of specific chemical flocculants that can be applied to the sediment basin in liquid, powder, or solid form. Flocculants include polyacrylimides, aluminum sulfate (alum), and polyaluminum chloride. Cationic polyelectrolytes have a greater toxicity to fish and other aquatic organisms than anionic polyelectrolytes because they bind to the gills of fish resulting in respiratory failure (Pitt, 2003).

Chemical treatment shall not be substituted for proper erosion and sediment control. To reduce the need for flocculants, proper controls include planning, phasing, sequencing and practice design in accordance to NY Standards. Chemical applications shall not be applied without written approval from the NYSDEC.

Safety

Sediment basins are attractive to children and can be very dangerous. Local ordinances and regulations must be adhered to regarding health and safety. The developer or owner shall check with local building officials on applicable safety requirements. If fencing of sediment basins is required, the location of and type of fence shall be shown on the plans.

Construction Specifications

Site Preparation

Areas under the embankment shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material. In order to facilitate cleanout and restoration, the pool area (measured at the top of the pipe spillway) will be cleared of all brush, trees, and other objectionable materials.

Cutoff-Trench

A cutoff trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be two feet. The cutoff trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be four feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for embankment. The trench shall be dewatered during the back-filling/compaction operations.

Embankment

The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW & SP) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of a ball, it is too wet for proper compaction. Fill material shall be placed in six to eight-inch thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

Pipe Spillway

The riser shall be securely attached to the barrel or barrel stub by welding the full circumference making a watertight structural connection. The barrel stub must be attached to the riser at the same percent (angle) of grade as the outlet conduit. The connection between the riser and the riser base shall be watertight. All connections between barrel sections must be achieved by approved watertight bank assemblies. The barrel and riser shall be placed on a firm, smooth foundation of impervious soil. Pervious materials such as sand, gravel, or crushed stone shall not be used as backfill around the pipe or anti-seep collars. The fill material around the pipe spillway shall be placed in four-inch layers and compacted under and around the pipe to at least the same density as the adjacent embankment.

A minimum depth of two feet of hand compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment. Steel base plates on risers shall have at least 2 ½ feet of compacted earth, stone, or gravel placed over it to prevent flotation.

Emergency Spillway

The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of +/- 0.2 feet.

Vegetative Treatment

Stabilize the embankment and emergency spillway in accordance with the appropriate vegetative standard and specification immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days.

Erosion and Pollution Control

Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. State and local laws shall be complied with concerning pollution abatement.

Safety

State and local requirements shall be met concerning fencing and signs, warning the public of hazards of soft sediment and floodwater.

Maintenance

1. Repair all damages caused by soil erosion and construction equipment at or before the end of each working day.

2. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser (shall not exceed 50 percent capacity). This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or floodplain.

Final Disposal

When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits are to be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments must be removed, safely disposed of, and backfilled with a structural fill. When the basin area is to remain open space, the pond may be pumped dry, graded, and back filled.

Information to be Submitted

Sediment basin designs and construction plans submitted for review to a local municipality, Soil and Water Conservation District, or other agency shall include the following:

1. Specific location of the basin.

2. Plan view of the storage basin and emergency spillway, showing existing and proposed contours.

3. Cross section of dam, principal spillway, emergency spillway, and profile of emergency spillway.

4. Details of pipe connections, riser to pipe connections, riser base, anti-seep control, trash rack cleanout elevation, and anti-vortex device.

5. Runoff calculations for 1 and 10-year frequency storms, if required.

6. Storage Computation
   A. Total required
   B. Total Available
   C. Level of sediment at which cleanout shall be required; to be stated as a distance from the riser crest to the sediment surface.

7. Calculations showing design of pipe and emergency spillway.

Note: Items 5 through 7 above may be submitted using the design data sheet on pages 7A.54 through 7A.59.

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by_____Date_____Checked by_____Date_____

Project_____Basin #_____

Location_____Total Area draining to basin _____Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x_____acres of drainage area = _____cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = _____cu. yds.
   b. Elevation corresponding to scheduled time to clean out_____
   c. Distance below top of riser_____feet
3. Minimum surface area is larger of 0.01 $Q_{(1)}$_____or, 0.015 DA = _____ use _____acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = _____cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x_____ac. Drainage = _____cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = _____cfs.
6. H = _____ft. Barrel length = _____ft
7. Barrel: Diam. _____inches; Q_{ps} = (Q)_____x (cor.fac.)_____=_____cfs.
8. Riser: Diam. _____inches; Length_____ft.; h = _____ft. Crest Elev. _____
9. Trash Rack: Diam._____inches; H = _____inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = _____ - _____ = _____cfs.
11. Width _____ft.; H_p_____ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope_____% ; Top of Dam Elev. _____
    Exit channel slope _____%

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = _____ft.; z = _____:1; pipe slope = _____%, L_s = _____ft.
    Use_____collars, _____ - _____inches square; projection = _____ft.

Diaphragms:

#_____ width_____ ft. height_____ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = _____sq. ft.; h = _____ ft.; therefore use, _____

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET
INSTRUCTIONS FOR USE OF FORM

1. Minimum required sediment storage volume is 134 cubic yards (3600 cubic feet) per acre from each acre of drainage area. Values larger than 134 cubic yards per acre may be used for greater protection. Compute volume using entire drainage area although only part may be disturbed.

2. The volume of a naturally shaped basin (no excavation in basin) may be approximated by the formula V = (0.4)(A)(d), where V is in cubic feet, A is the surface area of the basin, in square feet, and d is the maximum depth of the basin, in feet. Volume may be computed from contour information or other suitable methods.

3. If volume of basin is not adequate for required storage, excavate to obtain the required volume.

4. The minimum surface area of the basin pool at the storage volume elevation will be the larger of the two elevations shown.

5 USDA-NRCS TR-55 or the NRCS Engineering Field Handbook, Chapter 2, are the preferred methods for runoff computation. Runoff curve numbers will be computed for the drainage area that reflects the maximum construction condition.

6. Required minimum discharge from pipe spillway equals 0.2 cfs/ac. times total drainage area. (This is equivalent to a uniform runoff of 5 in. per 24 hours). The pipe shall be designed to carry Q_p if site conditions preclude installation of an emergency spillway to protect the structure.

7. Determine value of "H" from field conditions; "H" is the interval between the centerline of the outlet pipe and the emergency spillway crest, or if there is no emergency spillway, to the design high water.

8. See Pipe Spillway Design Charts, Figures 5A.26 and 5A.27 on pages 5A.61 and 5A.62.

9. See Riser Inflow Curves, Figure 5A.25 on page 5A.60.

10. Compute the orifice size required to dewater the basin over a 10 hour period.

11. See Trash Rack and Anti-Vortex Device Design, Figures 5A.29 on pages 5A.64 and 5A.65.

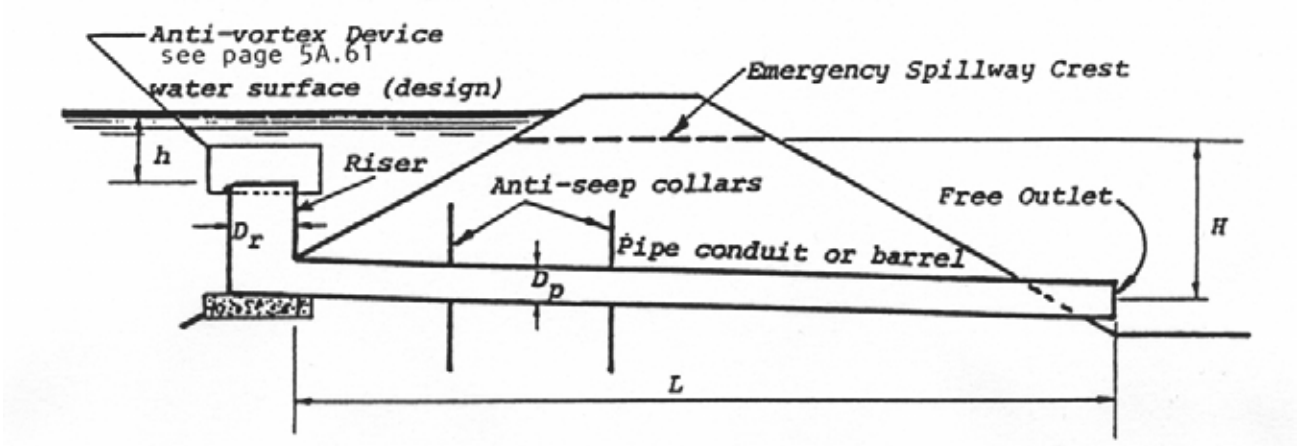
12. Compute Q_{es} by subtracting actual flow carried by the pipe spillway from the total inflow, Q_p.

13. Use appropriate tables to obtain values of H_p, bottom width, and actual Q_{es}. If no emergency spillway is to be used, so state, giving reason(s).

14. See Anti-Seep Collar / Seepage Diaphragm Design.

15. Fill in design elevations. The emergency spillway crest must be set no closer to riser crest than value of h, which causes pipe spillway to carry the minimum, required Q. Therefore, the elevation difference between spillways shall be equal to the value of h, or one foot, whichever is greater. Design high water is the elevation of the emergency spillway crest plus the value of H_p, or if there is no emergency spillway, it is the elevation of the riser crest plus h required to handle the 10-year storm. Minimum top of dam elevation requires 1.0 ft. of freeboard above design high water.

Pipe Spillway Design



H = Head on pipe spillway (pipe flow), ft. (centerline of outlet to emergency spillway crest or to design high water if no emergency spillway)

h = Head over riser crest, ft.

L = Length of pipe in ft.

D_p = Diameter of pipe conduit (barrel)

Dr = Diameter of riser

To use charts for pipe spillway design:

- Enter chart, Figures 5A.26 and 5A.27 on Pages 5A.61 and 5A.62 with H and required discharge.
- Find diameter of pipe conduit that provides equal or greater discharge
- Enter chart, Figure 5A.25 on Page 5A.60 with actual pipe discharge. Read across to select smallest riser that provides discharge within weir flow portion of rating curve. Read down to find corresponding h required. This h must be 1 foot or less.

Example:

Given: Q (required) = 5.8 cfs, L = 60 ft., H = 9 ft. to centerline of pipe = Free outlet
Find: Pipe size, actual Q and size of riser, use corrugated metal pipe, n = 0.025

Q of 12 in. pipe = 5.95 cfs x (correction factor) 1.07 = 6.4 cfs from the Pipe Flow Chart. From Riser Inflow Curves (Figures 5A.25 on page 5A .60), smallest riser = 18 in. (@ h = 0.60).

Design Example #1

Snooks Pond is a senior citizen assisted living center under construction. A sediment basin will be utilized as a component of the erosion and sediment control plan for the project. The Drainage area to the basin is 20 acres, the one year storm peak discharge is 32 cubic feet per second, and 88 cfs for the 10 year storm based on analysis of the site under maximum construction condition. Design the sediment basin when the overall head (H) is 10 feet and the smooth steel pipe spillway is used. An emergency spillway can be constructed on the site. Base the design volumes and elevations on the stage storage curve developed for the natural topography or as excavated

(see Page 5A.58).

Design Example # 2

Us the same data as example #1, but no emergency spillway is possible (see Page 7A. 59).

Notes:

1. Use a 1.0 foot minimum between riser crest and emergency spillway crest, thus riser crest = 1.0 ft.

2. To provide 50% of the storage as permanent pool, the dewatering orifice is set at the out elevation.

Figure 5A.23
Sediment Basin

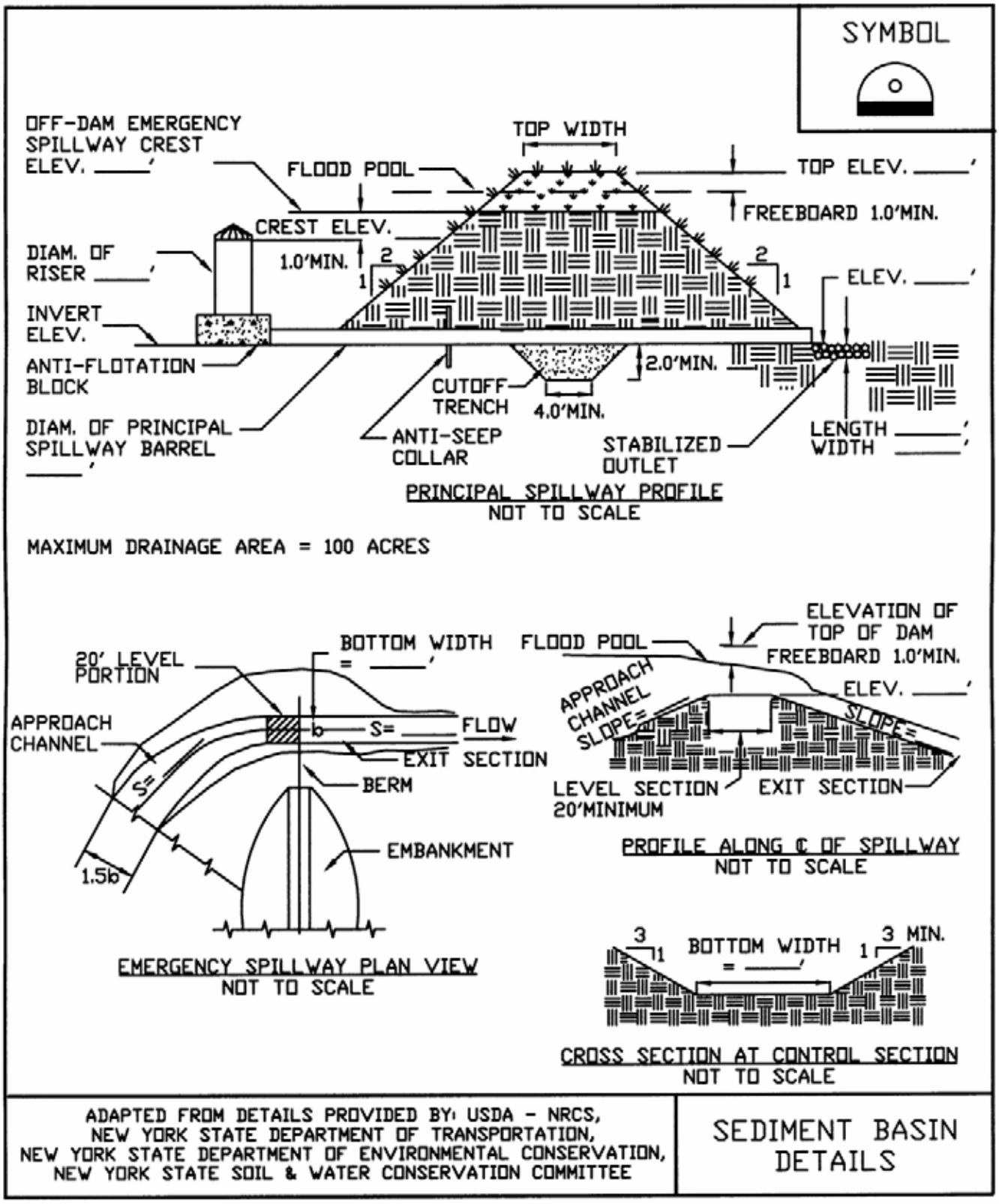


Figure 5A.24(1)
Sediment Basin Design Example #1

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04
Project SNOOKS POND Basin # 1
Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 Ft.
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 Acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd $Q_{ps} = Q_{p(10)}$ = ——— cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 12 inches; Q_{ps} = (Q) 10.2 x (cor.fac.) .945 = 9.6 cfs.
8. Riser: Diam. 21 inches; Length 9 ft.; h = 1.0 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 30 inches; H = 11 inches

Emergency Spillway Design

10. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = 88 - 10 = 78 cfs.
11. Width 20 ft.; H_p 1.4 ft Crest elevation 101.0 ; Design High Water Elev. 102.4
    Entrance channel slope 2 % ; Top of Dam Elev. 103.4
    Exit channel slope > 2.7 %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6" inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.24(2)
Sediment Basin Design Example #2

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04

Project SNOOKS POND Basin # 1

Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 feet
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = 88 cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 36 inches; Q_{ps} = (Q) 91.2 x (cor.fac.) .955 = 87.1 cfs.
8. Riser: Diam. 54 inches; Length 9 ft.; h = 1.7 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 78 inches; H = 25 inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = _____ - _____ = _____ cfs.
11. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6 inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.25
Riser Inflow Chart (USDA - NRCS)

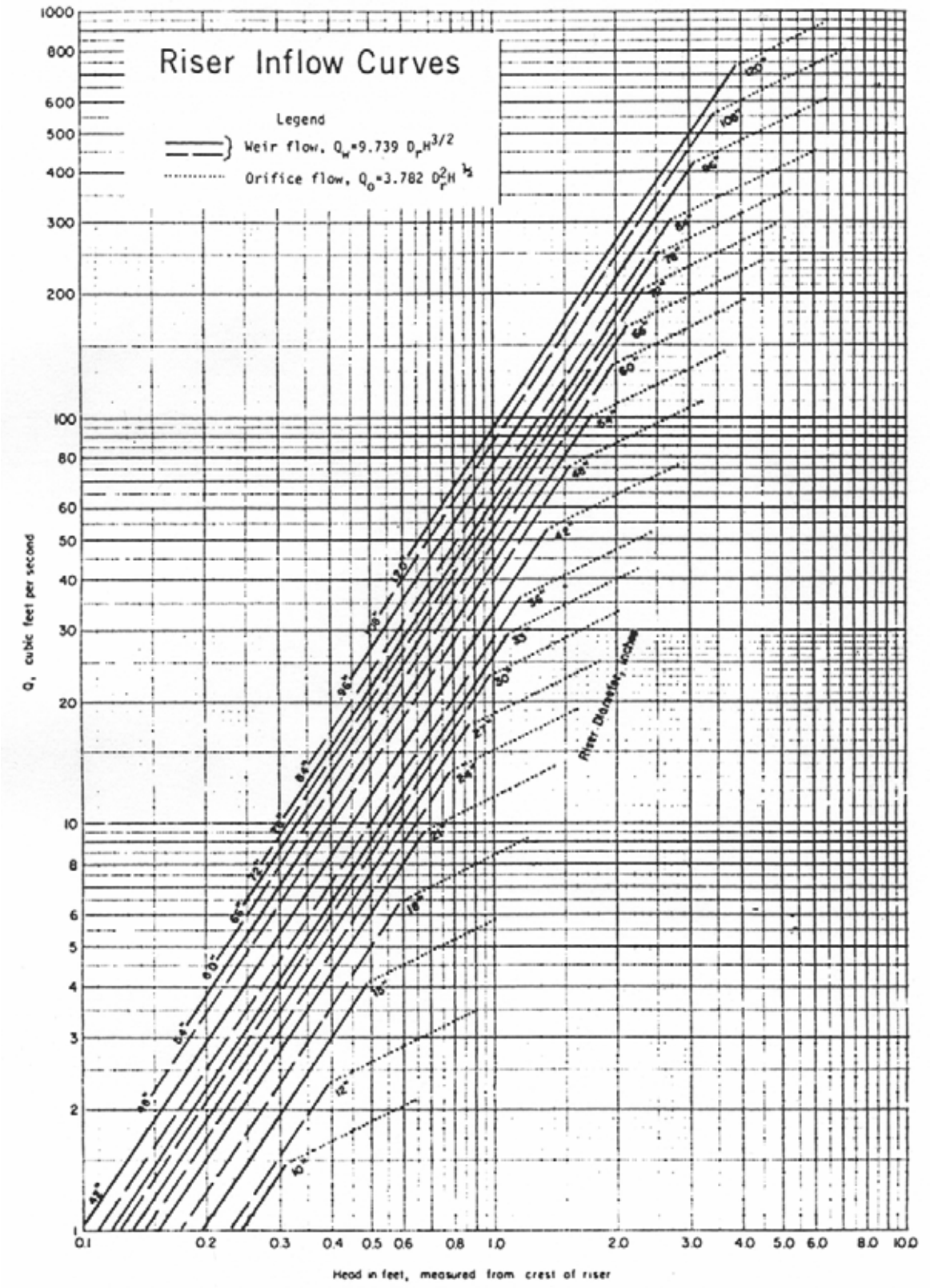


Figure 5A.26
Pipe Flow Chart; "n" = 0.025 (USDA - NRCS)

PIPE FLOW CHART n = 0.025

FOR CORRUGATED METAL PIPE INLET $K_m = K_e + K_b = 1.0$ AND 70 FEET OF CORRUGATED METAL PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

H, in feet	Diameter of pipe in inches																							
	6"	8"	10"	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	0.33	0.70	1.25	1.98	3.48	5.47	7.99	11.0	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290
2	0.47	0.99	1.76	2.80	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502
4	0.67	1.40	2.49	3.97	6.96	10.9	16.0	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92.0	125	162	205	253	306	365	428	496	570	648
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27.0	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710
7	0.88	1.86	3.30	5.25	9.20	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820
9	1.00	2.11	3.74	5.95	10.4	16.4	24.0	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870
10	1.05	2.22	3.94	6.27	11.0	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917
11	1.10	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962
12	1.15	2.43	4.32	6.87	12.1	19.0	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004
13	1.20	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045
14	1.25	2.63	4.66	7.42	13.0	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123
16	1.33	2.81	4.99	7.93	13.9	21.9	32.0	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160
17	1.37	2.90	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	229	378	467	565	672	789	915	1051	1195
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82.0	126	179	243	316	400	494	597	711	834	967	1111	1264
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329
22	1.56	3.29	5.85	9.30	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360
23	1.60	3.37	5.98	9.51	16.7	26.2	38.3	53.0	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390
24	1.63	3.44	6.11	9.72	17.0	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94.0	144	206	279	363	459	566	685	815	957	1110	1274	1450
26	1.70	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507
28	1.76	3.72	6.60	10.5	18.4	29.0	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534
29	1.79	3.78	6.71	10.7	18.7	29.5	43.0	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561
30	1.82	3.85	6.83	10.9	19.1	30.0	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588
L, in feet	Correction Factors For Other Pipe Lengths																				
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.20	1.18	1.16	1.14	1.13	1.11	1.10	1.10	1.09	1.08	1.08
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.07	1.06	1.06
40	1.26	1.27	1.25	1.23	1.21	1.20	1.18	1.17	1.14	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.04	1.03	1.03
60	1.07	1.07	1.06	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.94	.94	.95	.95	.95	.95	.96	.96	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99	.99	.99
90	.89	.89	.90	.90	.91	.91	.92	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97	.97	.97	.97	.94
100	.85	.85	.86	.86	.87	.88	.89	.89	.90	.91	.92	.93	.93	.94	.94	.95	.95	.95	.96	.96	.94
120	.78	.79	.79	.80	.81	.82	.83	.83	.85	.86	.87	.89	.89	.90	.91	.89	.92	.93	.93	.94	.92
140	.72	.73	.74	.75	.76	.77	.78	.79	.81	.82	.84	.85	.86	.87	.88	.86	.89	.90	.91	.91	.90
160	.68	.69	.69	.70	.71	.73	.74	.75	.77	.79	.80	.82	.83	.84	.85	.92	.87	.88	.89	.89	

Figure 5A.27
Pipe Flow Chart; "n" = 0.013 (USDA - NRCS)

PIPE FLOW CHART n = 0.013

FOR REINFORCED CONCRETE PIPE INLET $K_m = K_e + K_b = (1.00$ AND 70 FEET OF REINFORCED CONCRETE PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

H, in feet	diameter of pipe in inches																	
	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	3.22	5.44	8.29	11.8	15.9	26.0	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76.0	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45.0	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52.0	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42.0	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.10	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78.0	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18.0	27.5	39.0	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55.0	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12.0	20.4	31.0	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14.0	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71.0	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38.0	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60.0	81.0	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17.0	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87.0	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871
L, in feet	Correction Factors For Other Pipe Lengths																	
20	1.30	1.24	1.21	1.18	1.15	1.12	1.10	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.10	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.96	.97	.97	.97	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
90	.93	.94	.94	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.99	.99	.99	.99	.99
100	.90	.91	.92	.93	.93	.95	.95	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99
120	.84	.86	.87	.89	.90	.91	.93	.94	.94	.95	.96	.96	.96	.97	.97	.97	.97	.98
140	.80	.82	.83	.85	.86	.88	.90	.91	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97
160	.76	.78	.80	.82	.83	.86	.88	.89	.90	.91	.92	.93	.94	.94	.95	.95	.95	.96

Figure 5A.28
Optional Sediment Basin Dewatering Methods

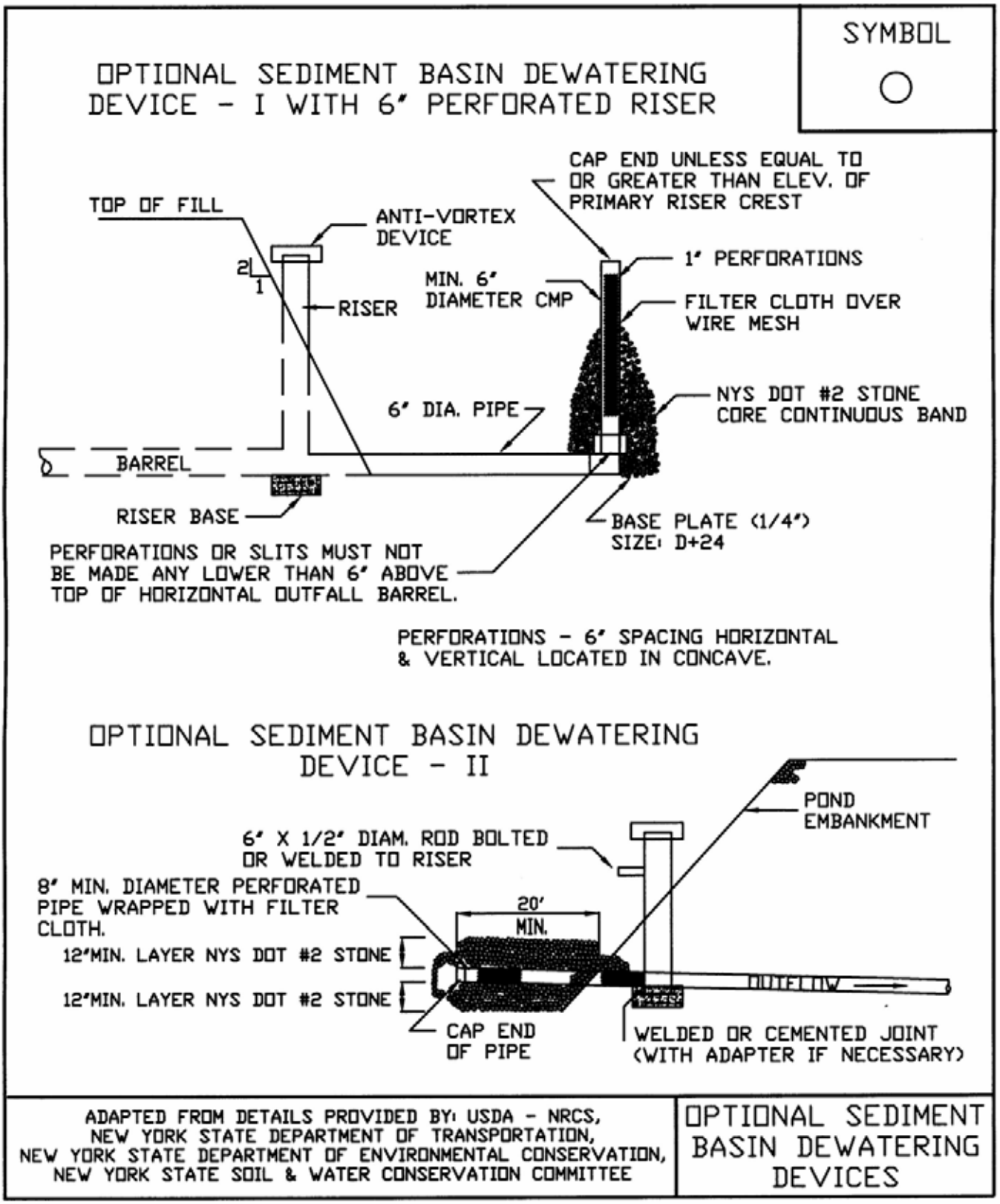
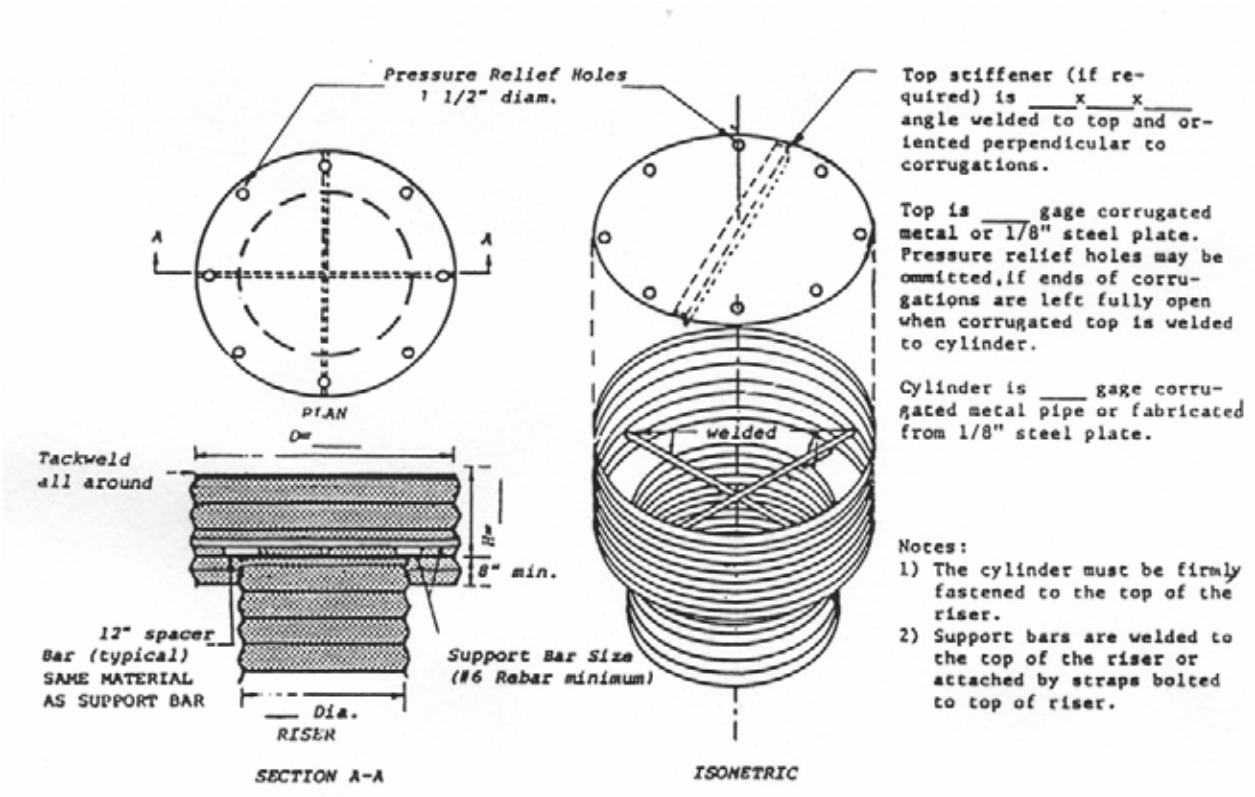


Figure 5A.29(1)
Concentric Trash Rack and Anti-Vortex Device
(USDA - NRCS)



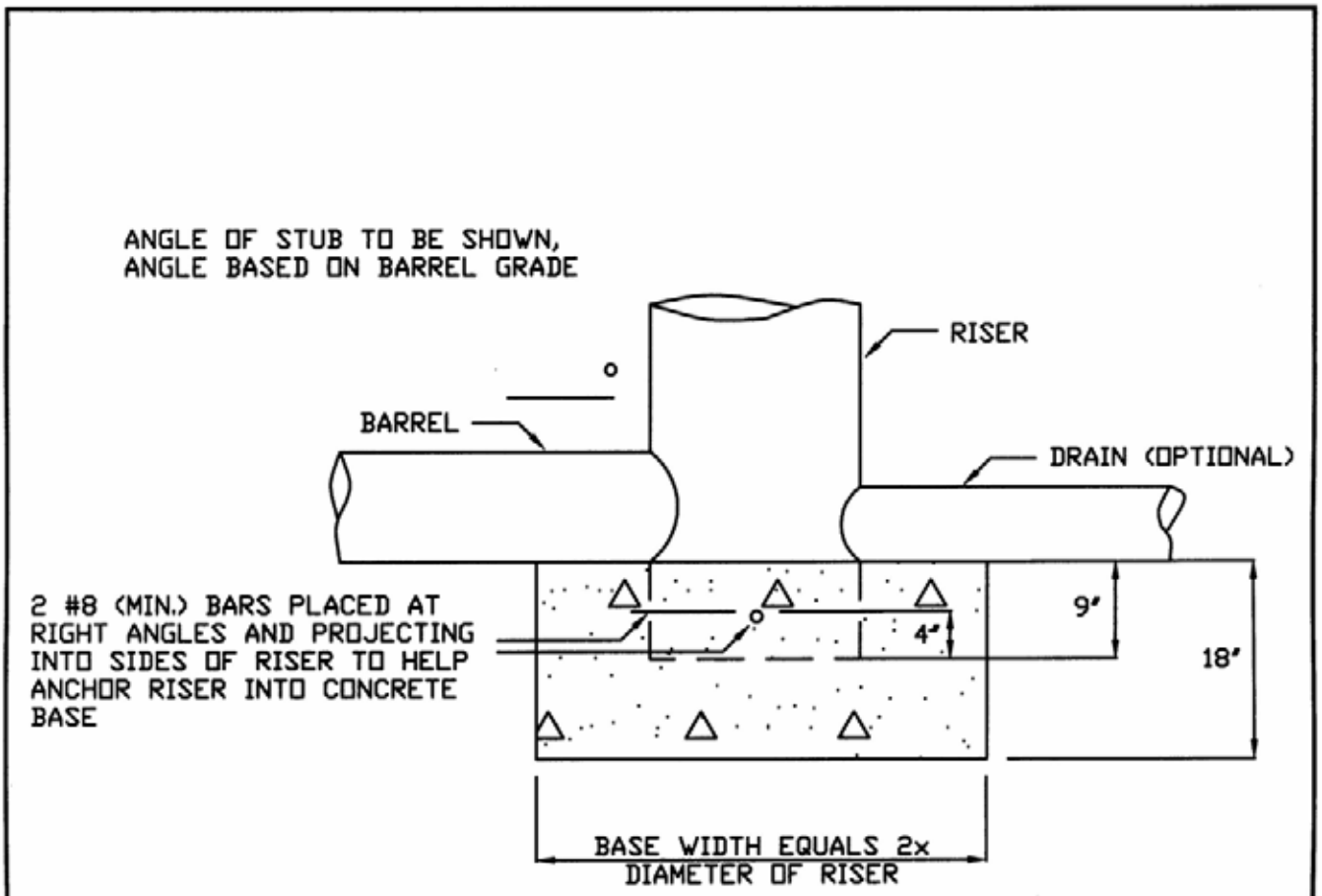
CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE
(not to scale)

Figure 5A.29(2)
Concentric Trash Rack and Anti-Vortex Device Design Table
(USDA - NRCS)

Riser Diam.(in)	Cylinder Diam (in.)	Thick. Gage	H (in.)	Minimum Size Support Bar	Minimun Top Thickness	Minimun Top Stiffener
12	18	16	6	#6 Rebar	16 ga.	—
15	21	16	7	#6 Rebar	16 ga.	—
18	27	16	8	#6 Rebar	16 ga.	—
21	30	16	11	#6 Rebar	16 ga.	—
24	36	16	13	#6 Rebar	14 ga.	—
27	42	16	15	#6 Rebar	14 ga.	—
36	54	14	17	#8 Rebar	12 ga.	—
42	60	14	19	#8 Rebar	12 ga.	—
48	72	12	21	1 1/4" pipe or 1 1/4x1 1/4x1/4 angle	10 ga.	—
54	78	12	25	See 48" Riser	10 ga.	—
60	90	12	29	1 1/2" pipe or 1 1/2x1 1/2x1/2 angle	8 ga.	—
66	96	10	33	2" pipe or 2x2x3/16 angle	8 ga. w/stiffener	2x2xl/4 angle
72	102	10	36	———See 66" Riser——		2 1/2x2 1/2x1/4 angle
78	114	10	39	2 1/2" pipe or 2x2x1/4 angle	See 72" Riser	See 72" Riser
84	120	10	42	2 1/2" pipe or 2 1/2x2 1/2x1/4 angle	See 72" Riser	2 1/2x 2 1/2x 5/16 angle

Note: The criteria for sizing the cylinder is that the area between the inside of the cylinder and the outside of the riser is equal to or greater than the area inside the riser. Therefore, the above table is invalid for use with concrete pipe risers.

Figure 5A.30
Riser Base Details



CONSTRUCTION SPECIFICATIONS

1. THE CONCRETE BASE SHALL BE POURED IN SUCH A MANNER TO INSURE THAT THE CONCRETE FILLS THE BOTTOM OF THE RISER TO THE INVERT OF THE OUTLET PIPE TO PREVENT THE RISER FROM BREAKING AWAY FROM THE BASE.
2. WITH ALUMINUM OR ALUMINIZED PIPE, THE EMBEDDED SECTION MUST BE PAINTED WITH CHROMATE OR EQUIVALENT.
3. RISER BASE MAY BE SIZED AS COMPUTED USING FLOATATION WITH A FACTOR OF SAFETY OF 1.2.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	RISER BASE DETAIL SEDIMENT BASIN

Figure 5A.31(1)
Anti-Seep Collar Design

This procedure provides the anti-seep collar dimensions for only temporary sediment basins to increase the seepage length by 15% for various pipe slopes, embankment slopes and riser heights.

The first step in designing anti-seep collars is to determine the length of pipe within the saturated zone of the embankment. This can be done graphically or by the following equation, assuming that the upstream slope of the embankment intersects the invert of the pipe at its upstream end. (See embankment-invert intersection on the drawing below:

$$L_s = y\,(z + 4)\left[1 + \frac{\text{pipe slope}}{0.25 - \text{pipe slope}}\right]$$

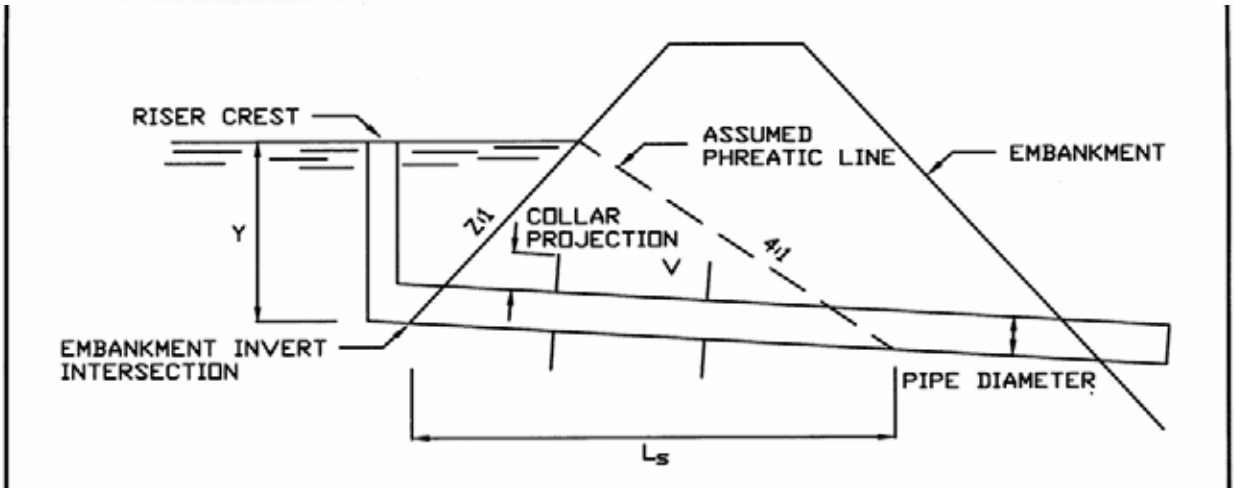
Where: L_s = length of pipe in the saturated zone (ft.)

y = distance in feet from upstream invert of pipe to highest normal water level expected to occur during the life of the structure, usually the top of the riser.

z = slope of upstream embankment as a ratio of z ft. horizontal to one ft. vertical.

pipe slope = slope of pipe in feet per foot.

This procedure is based on the approximation of the phreatic line as shown in the drawing below:



ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

ANTI-SEEP COLLAR DESIGN

Figure 5A.31(2)
Anti-Seep Collar Design Charts (USDA - NRCS)

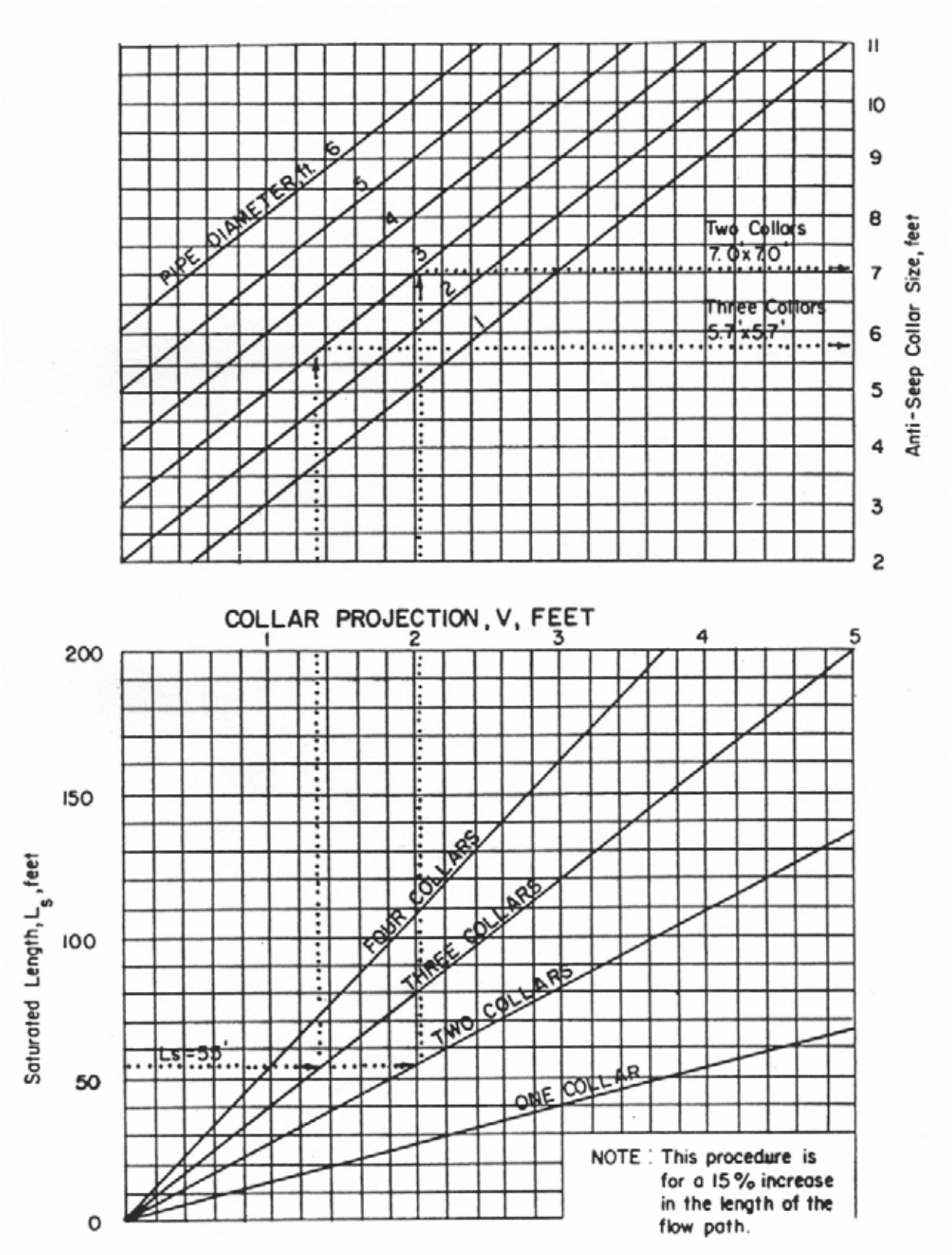


Figure 5A.32
Anti-Seep Collar Design

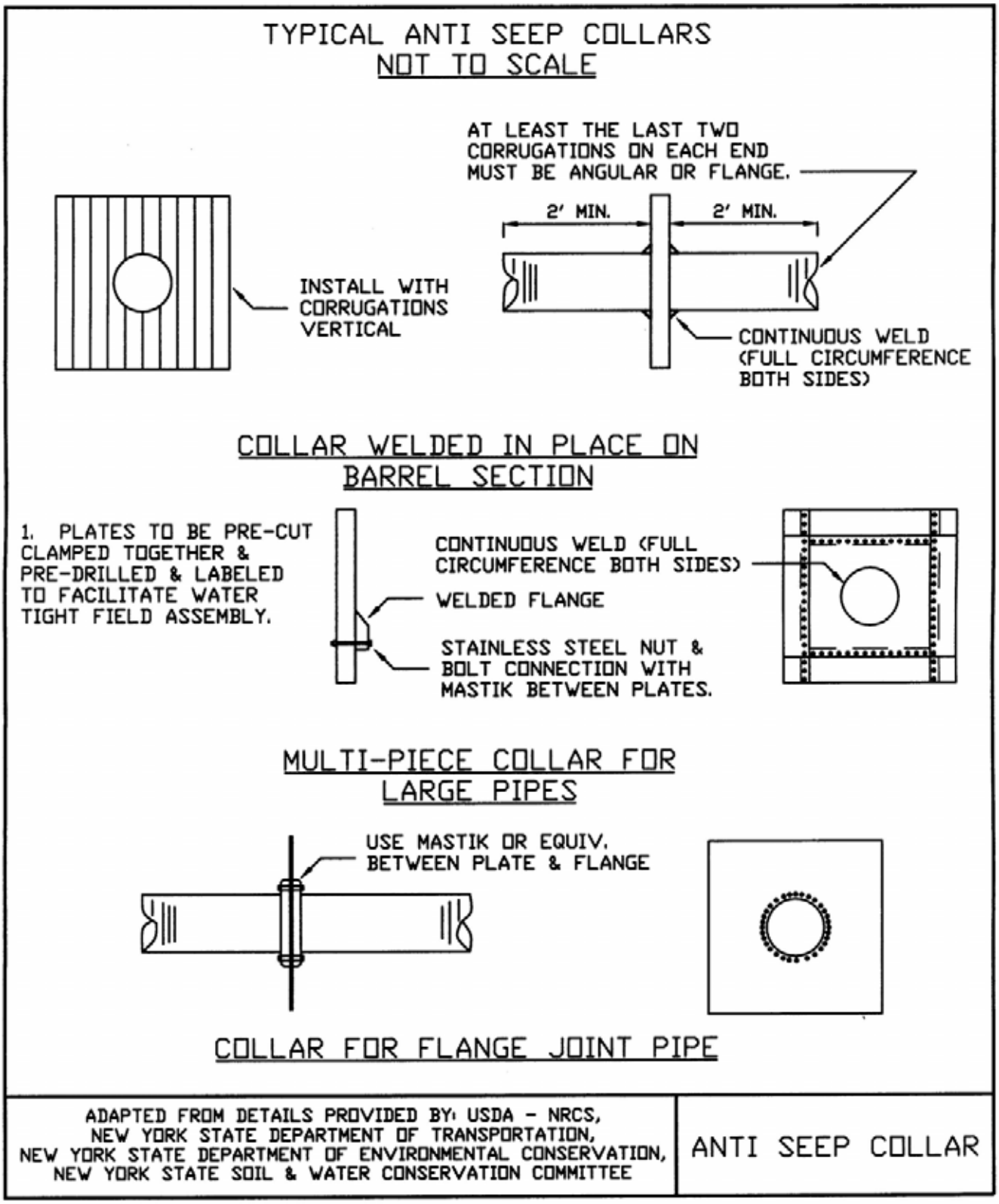
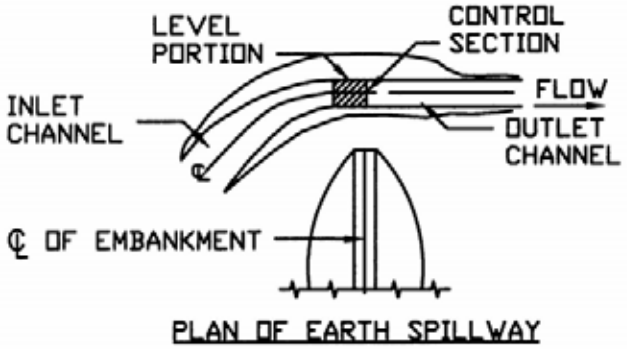
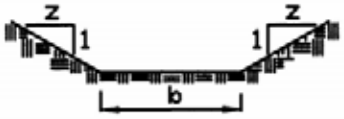


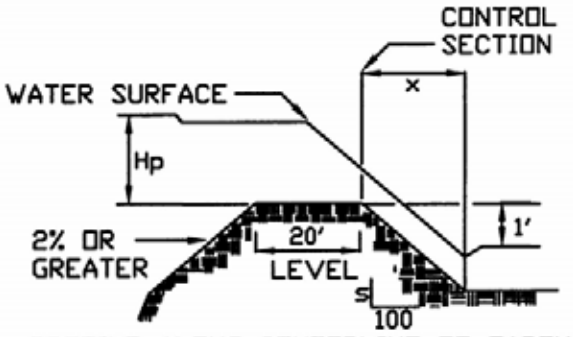
Figure 5A.33(1)
Design Data for Earth Spillways



PLAN OF EARTH SPILLWAY



CROSS SECTION OF EARTH SPILLWAY AT CONTROL SECTION



PROFILE ALONG CENTERLINE OF EARTH SPILLWAY

LEGEND

n = MANNING'S COEFFICIENT OF ROUGHNESS.

Hp = DIFFERENCE IN ELEVATION BETWEEN CREST OF EARTH SPILLWAY AT THE CONTROL SECTION AND WATER SURFACE IN RESERVOIR, IN FEET.

b = BOTTOM WIDTH OF EARTH SPILLWAY AT THE CONTROL SECTION, IN FEET.

Q = TOTAL DISCHARGE, IN cfs.

V = VELOCITY, IN FEET PER SECOND, THAT WILL EXIST IN CHANNEL BELOW CONTROL SECTION, AT DESIGN Q, IF CONSTRUCTED TO SLOPE (S) THAT IS SHOWN.

S = FLATTEST SLOPE (S), IN %, ALLOWABLE FOR CHANNEL BELOW CONTROL SECTION.

X = MINIMUM LENGTH OF CHANNEL BELOW CONTROL SECTION, IN FEET.

z = SIDE SLOPE RATIO.

NOTES:

1) FOR A GIVEN Hp A DECREASE IN THE EXIT SLOPE FROM S AS GIVEN IN THE TABLE DECREASES SPILLWAY DISCHARGE BUT INCREASING THE EXIT SLOPE FROM S DOES NOT INCREASE DISCHARGE. IF AN EXIT SLOPE (Se) STEEPER THAN S IS USED, THEN VELOCITY (Ve) IN THE EXIT CHANNEL WILL INCREASE ACCORDING TO THE FOLLOWING RELATIONSHIP:

$$Ve = V\left(\frac{Se}{S}\right)^{0.3}$$

2) DATA TO RIGHT OF HEAVY VERTICAL LINES ON DRAWINGS SHOULD BE USED WITH CAUTION, AS THE RESULTING SECTIONS WILL BE EITHER POORLY PROPORTIONED OR HAVE VELOCITIES IN EXCESS OF 6 FT/SEC.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

DESIGN DATA FOR EARTH SPILLWAYS

Figure 5A.33(2)
Design Table for Vegetated Spillways Excavated in Erosion Resistant Soils (side slopes—3 horizontal : 1 vertical)

(USDA - NRCS)

Discharge Q CFS	Slope Range Minimum Percent	Slope Range Maximum Percent	Bottom Width Feet	Stage Feet
15	3.3	12.2	8	.83
	3.5	18.2	12	.69
20	3.1	8.9	8	.97
	3.2	13.0	12	.81
	3.3	17.3	16	.70
25	2.9	7.1	8	1.09
	3.2	9.9	12	.91
	3.3	13.2	16	.79
	3.3	17.2	20	.70
30	2.9	6.0	8	1.20
	3.0	8.2	12	1.01
	3.0	10.7	16	.88
	3.3	13.8	20	.78
35	2.8	5.1	8	1.30
	2.9	6.9	12	1.10
	3.1	9.0	16	.94
	3.1	11.3	20	.85
	3.2	14.1	24	.77
40	2.7	4.5	8	1.40
	2.9	6.0	12	1.18
	2.9	7.6	16	1.03
	3.1	9.7	20	.91
	3.1	11.9	24	.83
45	2.6	4.1	8	1.49
	2.8	5.3	12	1.25
	2.9	6.7	16	1.09
	3.0	8.4	20	.98
	3.0	10.4	24	.89
50	2.7	3.7	8	1.57
	2.8	4.7	12	1.33
	2.8	6.0	16	1.16
	2.9	7.3	20	1.03
	3.1	9.0	24	.94
60	2.6	3.1	8	1.73
	2.7	3.9	12	1.47
	2.7	4.8	16	1.28
	2.9	5.9	20	1.15
	2.9	7.3	24	1.05
	3.0	8.6	28	.97
70	2.5	2.8	8	1.88
	2.6	3.3	12	1.60
	2.6	4.1	16	1.40
	2.7	5.0	20	1.26
	2.8	6.1	24	1.15
	2.9	7.0	28	1.05
80	2.5	2.9	12	1.72
	2.6	3.6	16	1.51
	2.7	4.3	20	1.35
80	2.8	5.2	24	1.24
	2.8	5.9	28	1.14
	2.9	7.0	32	1.06
90	2.5	2.6	12	1.84
	2.5	3.1	16	1.61
	2.6	3.8	20	1.45
	2.7	4.5	24	1.32
	2.8	5.3	28	1.22
	2.8	6.1	32	1.14
100	2.5	2.8	16	1.71
	2.6	3.3	20	1.54
	2.6	4.0	24	1.41
	2.7	4.8	28	1.30
	2.7	5.3	32	1.21
	2.8	6.1	36	1.13
120	2.5	2.8	20	1.71
	2.6	3.2	24	1.56
	2.7	3.8	28	1.44
	2.7	4.2	32	1.34
	2.7	4.8	36	1.26
140	2.5	2.7	24	1.71
	2.5	3.2	28	1.58
	2.6	3.6	32	1.47
	2.6	4.0	36	1.38
	2.7	4.5	40	1.30
160	2.5	2.7	28	1.70
	2.5	3.1	32	1.58
	2.6	3.4	36	1.49
	2.6	3.8	40	1.40
	2.7	4.3	44	1.33
180	2.4	2.7	32	1.72
	2.4	3.0	36	1.60
	2.5	3.4	40	1.51
	2.6	3.7	44	1.43
200	2.5	2.7	36	1.70
	2.5	2.9	40	1.60
	2.5	3.3	44	1.52
	2.6	3.6	48	1.45
220	2.4	2.6	40	1.70
	2.5	2.9	44	1.61
	2.5	3.2	48	1.53
240	2.5	2.6	44	1.70
	2.5	2.9	48	1.62
	2.6	3.2	52	1.54
260	2.4	2.6	48	1.70
	2.5	2.9	52	1.62
280	2.4	2.6	52	1.70
300	2.5	2.6	56	1.69

Figure 5A.33(3)
Design Table for Vegetated Spillways Excavated in Very Erodible Soils (side slopes—3 horizontal : 1 vertical)

(USDA - NRCS)

Discharge Q CFS	Slope Range		Bottom Width Feet	Stage Feet
	Minimum Percent	Maximum Percent		
10	3.5	4.7	8	.68
15	3.4	4.4	12	.69
	3.4	5.9	16	.60
20	3.3	3.3	12	.80
	3.3	4.1	16	.70
	3.5	5.3	20	.62
25	3.3	3.3	16	.79
	3.3	4.0	20	.70
	3.5	4.9	24	.64
30	3.3	3.3	20	.78
	3.3	4.0	24	.71
	3.4	4.7	28	.65
	3.4	5.5	32	.61
35	3.2	3.2	24	.77
	3.3	3.9	28	.71
	3.5	4.6	32	.66
	3.5	5.2	36	.62
40	3.3	3.3	28	.76
	3.4	3.8	32	.71
	3.4	4.4	36	.67
	3.4	5.0	40	.64
45	3.3	3.3	32	.76
	3.4	3.8	36	.71
	3.4	4.3	40	.67
	3.4	4.8	44	.64
50	3.3	3.3	36	.75
	3.3	3.8	40	.71
	3.3	4.3	44	.68
60	3.2	3.2	44	.75
	3.2	3.7	48	.72
70	3.3	3.3	52	.75
80	3.1	3.1	56	.78

Procedure for Determining or Altering Sediment Basin Shape

As specified in the Standard and Specification, the pool area at the elevation of the crest of the principal spillway shall have a length to width ratio of at least 2.0 to 1. The purpose of this requirement is to minimize the "short circuiting" effect of the sediment laden inflow to the riser and thereby increase the effectiveness of the sediment basin. The purpose of this procedure is to prescribe the parameters, procedures, and methods of determining and modifying the shape of the basin.

The length of the flow path (L) is the distance from the point of inflow to the riser (outflow point). The point of inflow is the point that the stream enters the normal pool (pool level at the riser crest elevation). The pool area (A) is the area of the normal pool. The effective width (W_e) is found by the equation:

$$W_e = A/L \text{ and L:W ratio} = L/W_e$$

In the event there is more than one inflow point, any inflow point that conveys more than 30 percent of the total peak inflow rate shall meet the length to width ratio criteria.

The required basin shape may be obtained by proper site selection by excavation or by constructing a baffle in the basin. The purpose of the baffle is to increase the effective flow length from the inflow point to the riser. Baffles (see Figure 5A.34 on following page) shall be placed midway between the inflow point around the end of the baffle to the outflow point. Then:

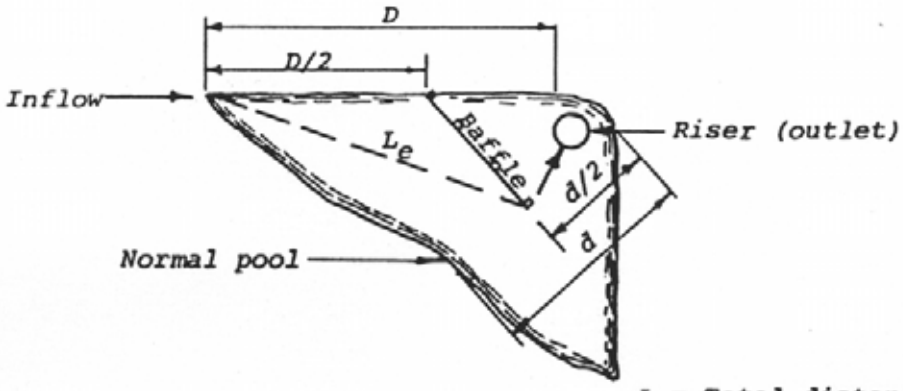
$$W_e = A/L_e \text{ and L:W ratio} = L_e/W_e$$

Three examples are shown on the following page. Note that for the special case in example C the water is allowed to go around both ends of the baffle and the effective length, $L_e = L_1 + L_2$. Otherwise, the length to width ratio computations are the same as shown above. This special case procedure for computing L_e is allowable only when the two flow paths are equal, i.e., when $L_1 = L_2$. A baffle detail is also shown in Figure 5A.37 on page 5A.72.

Figure 5A.34
Sediment Basin Baffle Details (USDA - NRCS)

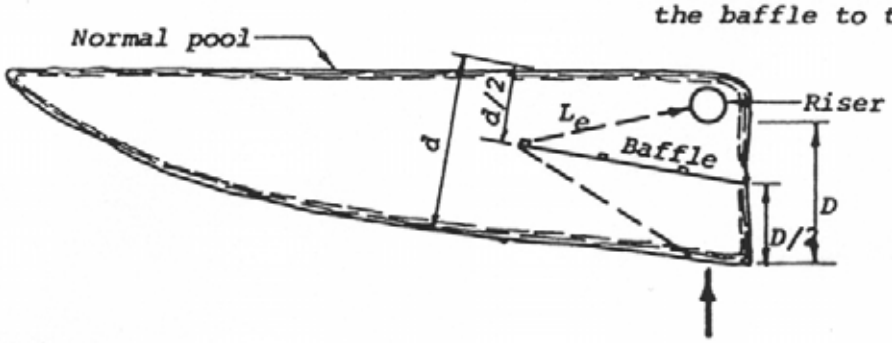
Examples: Plan Views - not to scale

A.

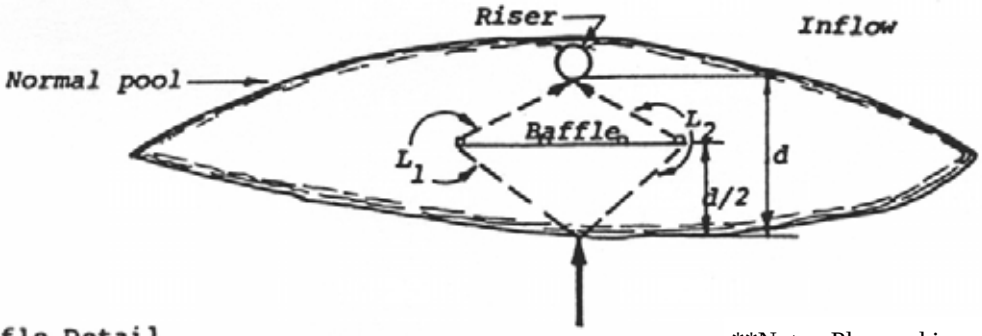


L_e = Total distance from the point of inflow around the baffle to the riser.

B.

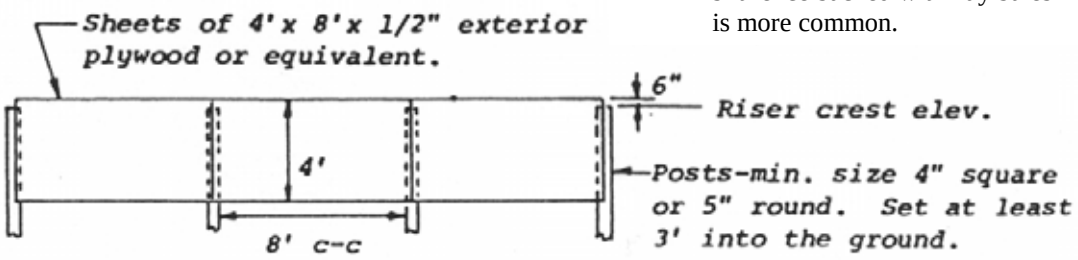


C.



$L_e = L_1 + L_2$

Baffle Detail



**Note: Plywood is not very practical, silt fence backed with hay bales is more common.

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING

Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas.

Purpose

To provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established.

3. Refer to USDA Soil Conservation Service (presently Natural Resource Conservation Service) soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted to a minimum depth of 12 inches with a deep ripper or chisel plow prior to topsoiling.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the following amounts:

Site Conditions	Intended Use	Minimum Topsoil Depth
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

APPENDIX D

SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (Permit No. GP-0-23-001)

NEW YORK STATE | Department of Environmental Conservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES MULTI-SECTOR GENERAL PERMIT

FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Permit No. GP-0-23-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: March 8, 2023
Expiration Date: March 7, 2028

Scott E. Sheeley
Chief Permit Administrator

Scott E. Sheeley March 8, 2023

Authorized Signature Date

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

Table of Contents

Part I – Coverage under this Permit

A. Applicability

1. Coverage under this permit can be obtained in all areas of New York State where the *Department* implements CWA §402, where facilities:

   a. Conduct industrial activities identified within 40 CFR 122.26(b)(14)(i) through (ix) and (xi);

   b. Have a *primary industrial activity* that has a Standard Industrial Classification (SIC) code listed in Appendix B; and

   c. Have *stormwater discharges* to *surface waters of the State* from a *point source*.

2. This permit does not apply, when all *stormwater discharges* are conveyed to a sanitary sewer, treatment works or a combined sewer system and the *owner or operator* of such system has accepted responsibility or approved connection for the *discharge*;

B. Eligibility

The following *discharges* are eligible for coverage under this permit.

1. *Stormwater Discharges:*

a. Whose primary *industrial activity* has a Standard Industrial Classification (SIC) code listed in Appendix B, including those:

   (1) Subject to numeric effluent limitations listed in Part IV.F.3.e or Appendix D.

   (2) Discharging to impaired waterbodies that meet the requirements of Part II.C.2.

   (3) From construction activity for facilities in Sectors J and L pursuant to 40 CFR 122.26(b)(14)(x).

b. That are mixed with *stormwater discharges* authorized under a different *SPDES* general permit or an *individual SPDES permit*, provided that all *discharges* are in compliance with the terms and conditions of the various permits;

c. Which are authorized by this permit, may be combined with other sources of stormwater, which are not classified as associated with *industrial activity* pursuant to 40 CFR 122.26(b)(14), provided that the combined

discharge is in compliance with this permit and has not been designated by the Department as requiring an individual SPDES Permit.

d. Listed in Part I.C.2, if the Department makes a determination that coverage under this general permit will not result in backsliding as specified in 6 NYCRR 750-1.10.

2. *Non-Stormwater Discharges:*

a. 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.

b. Incidental windblown mist from cooling towers that collect on rooftops or adjacent portions of the facility, but not intentional *discharges* from cooling tower (e.g.; "piped" cooling tower blowdown or drains).

C. Activities which are Ineligible for Coverage under this General Permit

Any *stormwater discharges* that are ineligible for coverage are not authorized by this permit and the *owner or operator* must either apply for a separate SPDES permit to cover those ineligible *discharges* or take steps necessary to make the *discharges* eligible for coverage under this permit. The following discharges are ineligible for coverage under this permit:

1. *Discharges* from *industrial activity* that are mixed with sources of non-*stormwater* other than those expressly authorized under this permit.

2. Unless otherwise determined by the Department to be eligible under Part I.B.g, *stormwater discharges from industrial activity* where:

   a. an *individual SPDES permit* authorizing such *discharges* has been revoked, suspended or denied;

   b. the facility has failed to renew an expired *individual SPDES permit* which authorized such *discharges*; or

   c. the *discharge* is covered by another SPDES permit.

3. *Discharges* from *industrial activity* which are subject to an *effluent limitation guideline* addressing *stormwater* which is not specifically listed in Table IV-3 or Appendix D (or a combination of *stormwater* and process water);

4. *Discharges* from *industrial activity* from *construction activities*, except *stormwater discharges* from portions of a construction site at facilities covered under Sectors J & L or that can be classified as an *industrial activity* under 40 CFR 122.26(b)(14)(i) through (ix) or (xi).

5. *Discharges from industrial activities* that may adversely affect an endangered or threatened species, or its designated critical habitat, unless the *owner or operator* has obtained a permit issued pursuant to 6 NYCRR Part 182 for the facility or the *Department* has issued a letter of non-jurisdiction for the facility.

6. *Discharges* occurring on federal lands from *industrial activity* from either: inactive mining, inactive landfills, or inactive oil and gas operations where an *owner or operator* cannot be identified.

7. *Discharges* from *industrial activity* to impaired waterbodies at facilities that fail to maintain eligibility in accordance with Part II.C.2.

8. *Discharges* of hazardous substances (as listed in 6 NYCRR Part 597) or petroleum.

9. *Discharges* of *industrial waste* and *other wastes* to *Surface Waters of the State* that are classified as AA-Special fresh surface waters as defined in 6 NYCRR Part 800 to 941.

D. Permit Authorization

An owner or operator who submits a complete NOI will be authorized to discharge stormwater under the terms and conditions of this permit, unless otherwise notified by the Department, thirty (30) calendar days after the date the Department receives a complete NOI.

1. *Authorization of MSGP coverage*

a. To obtain authorization under this permit, the *owner or operator* of an eligible facility must (in the order given below):

   (1) Develop and implement a *Stormwater* Pollution Prevention Plan (SWPPP) or update and implement the existing SWPPP, in accordance with the requirements in Part III and applicable sections of Part VII prior to submitting the NOI; and

   (2) Submit a complete electronic Notice of Intent (NOI) in accordance with Part I.D.2, signed in accordance with Appendix G.8. The NOI certifies that the facility is eligible for coverage according to Part I.B, and provides information on the facility's industrial activities and related *stormwater discharges*.

   - If more than one industrial activity listed in Appendix B is being performed at a facility, all SIC codes must be included in the NOI submitted to the *Department*.

b. New dischargers must:

(1) Satisfy any project review pursuant to the State Environmental Quality Review Act ("SEQRA"), when SEQRA is applicable See the Department's website (http://www.dec.ny.gov/) for more information;

(2) Obtain all necessary Department permits subject to the Uniform Procedures Act ("UPA") (see 6 NYCRR Part 621), unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4).

2. How to Submit the NOI

The owner or operator must submit the NOI electronically using a Department approved electronic NOI form. (see Appendix G.19).

3. Modifying the Notice of Intent

An owner or operator, with authorization to discharge under this permit, must promptly notify the Department of all corrections or updates to the information provided in the original NOI when they become aware that the information on the original NOI is not valid. *Stormwater discharges from industrial activities* or *outfalls* not included in previously submitted NOIs are not authorized until a complete NOI is received.

a. In order to modify the original NOI, an *owner or operator* must submit corrections or updated information, by submitting the changes electronically using a Department approved electronic NOI form (see Appendix G.19).

b. Modifications to the original NOI become effective on the date the Department receives the complete electronic NOI.

4. Change of Owner or Operator

When the *owner or operator* of a facility changes, the original *owner or operator* should notify the new *owner or operator* in writing of the possible requirement to have coverage under this permit.

a. The original owner or operator must submit the Notice of Termination (NOT) to end coverage under this permit for their facility in accordance with Part I.E by submitting the NOT electronically using a Department approved electronic NOT form (see Appendix G.19); and,

b. The new owner or operator must refer to Part I of this permit to determine if they need coverage under this permit.

c. The original owner or operator will continue to be responsible for compliance with all permit conditions and fees until the NOT has been received.

5. Conditional Exclusion for No Exposure

a. Facilities may qualify for a "Conditional Exclusion for No Exposure" when all industrial activities and materials are completely sheltered from exposure to rain, snow, snowmelt and/or runoff. Facilities qualifying for this exclusion are not required to obtain coverage under this permit.

(1) Facilities with uncovered parking areas for vehicles awaiting maintenance may be eligible for this waiver if only routine maintenance is performed inside and the criteria in Part I.D.5.a are met.

(2) Facilities accepting or repairing disabled vehicles and/or vehicles that have been involved in accidents are not eligible for the Conditional Exclusion for *No Exposure*.

b. To obtain the "Conditional Exclusion of No Exposure", the *owner or operator* must submit the No Exposure Certification (NEC) electronically using a Department approved electronic NEC form (see Appendix G.19). This certification must be submitted once every 5 years and is non-transferable.

c. Facilities must maintain the condition of *no exposure*. The facility must apply for MSGP coverage when the no exposure exclusion ceases to apply.

E. Termination of Permit Coverage

To terminate permit coverage, the *owner or operator* must submit a complete NOT which is signed in accordance with Appendix G.8. The owner or operator must submit the NOT electronically using a Department approved electronic NOT form. (see Appendix G.19). The *owner or operator* continues to be responsible for meeting permit requirements and payment of annual fees until a complete NOT is received by the *Department*.

1. The *owner or operator* must submit an NOT to terminate coverage under this permit when one or more of the following conditions are met:

a. When all *stormwater discharges* associated with *industrial activity* authorized by this permit are eliminated;

b. If all *stormwater discharges* are conveyed to a sanitary sewer, treatment works or a combined sewer system and the *owner or operator* of such system has accepted responsibility or approved connection for the *discharge*;

c. All industrial activities covered under this *SPDES* permit cease AND all materials, equipment or other potential *pollutants*, including but not limited to, residue in soils are removed;

d. When a different *SPDES* authorization for all *discharges* covered under this permit becomes effective; or

e. When the *owner or operator* of the *stormwater discharges* associated with *industrial activity* at a facility changes. (See Part I.D.4)

2. Facilities that meet the requirements for no exposure as specified in Part.I.D.5 are not required to submit an NOT form to terminate MSGP coverage.

3. The Department reserves the right to terminate permit coverage upon discovery of the facility being closed or otherwise no longer in operation.

F. Deadlines for submittal of NOIs and NOTs and Changes to the NOI

1. New *dischargers* or other *owners or operators* of facilities who intend to obtain coverage under this general permit must submit a complete Department approved electronic NOI at least thirty (30) calendar days before *industrial activity* begins at the facility.

2. Facilities with effective coverage on February 28, 2023, under the *SPDES* General Permit for *Stormwater Discharges Associated with Industrial Activity* (GP-0-17-004), are eligible for continued coverage under this permit (GP-0-23-001) on an interim basis for up to one-hundred twenty (120) calendar days from the effective date of the permit. During this interim period, an *owner or operator* must:

a. Update and implement the facility's SWPPP to comply with the requirements of this permit prior to submitting the NOI; and,

b. Submit a complete Department approved electronic NOI, signed in accordance with Appendix G.10. The complete NOI must be received within ninety (90) calendar days from the date this permit becomes effective.

Part II – Effluent Limitations

Effluent limitations are required to *minimize* the *discharge* of *pollutants*. *Control measures* are selected to meet the effluent limitations (non-numeric, numeric and water quality based) contained in this Part.

A. Non-Numeric Technology Based Effluent Limitations (TBELs)

It is the responsibility of the Owner or Operator to ensure all applicable non-numeric TBELs as well as any sector-specific non-numeric TBELs in Part VII are implemented. The *Owner or Operator may* designate a *Qualified Person* to implement all applicable non-numeric TBELs to ensure compliance with the permit.

1. Minimize Exposure

Minimize the exposure of manufacturing, processing, and material storage areas to rain, snow, snowmelt, and runoff in order to *minimize* the *discharge* of *pollutants* by either locating these industrial materials and activities inside or protecting them with storm resistant coverings. This includes areas used for loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations. Unless not technologically possible or not economically practicable and achievable in light of best industry practices,the following must also be implemented:

a. Use grading, berming, or curbing to prevent runoff of contaminated flows and divert run-on away from these areas;

b. Locate materials, equipment, and activities so that leaks and spills are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas);

c. Clean up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the *discharge* of *pollutants*;

d. Store leaky vehicles and equipment indoors or, if stored outdoors, use drip pans and absorbents;

e. Use spill/overflow protection equipment;

f. Perform all vehicle and/or equipment cleaning operations indoors, under cover, or in bermed areas that prevent runoff and run-on and also that capture any overspray; and ensure that all washwater drains to a proper collection system (i.e., not the *stormwater* drainage system);

g. Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least monthly for leaks; and

h. *Minimize* exposure of chemicals by replacing with a less toxic alternative.

Note: The *discharge* of vehicle and equipment washwater, including tank cleaning operations, is not authorized by this permit. These wastewaters must be covered under a separate *SPDES* permit, *discharged* to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or disposed of otherwise in accordance with applicable law.

2. *Good Housekeeping*

Keep clean all exposed areas that are potential sources of *pollutants*. Good housekeeping measures must be performed in order to *minimize pollutant discharges*, including but not limited to, the following:

a. Sweep or vacuum at regular intervals or, alternatively, wash down the area and collect and/or treat, and properly dispose of the washdown water;

b. Store materials in appropriate containers;

c. Keep all dumpster lids closed when not in use. For dumpsters and roll off boxes that do not have lids and could leak, ensure that *discharges* have a control (e.g., secondary containment, treatment); and,

d. Prevent the discharge of waste, garbage and floatable debris by keeping exposed areas free of such materials, or by intercepting them before they are *discharged*;

- Plastic Materials Requirements: Facilities that handle pre-production plastic must implement *Best Management Practices* to eliminate *discharges* of plastic in *stormwater*. Examples of plastic material required to be addressed as *stormwater pollutants* include plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling.

3. *Maintenance*

a. In order to *minimize pollutant discharges* and achieve the effluent limitations in this permit, all industrial equipment and systems and *control measures* must be maintained in effective operating condition. This includes:

(1) Performing inspections and preventive maintenance of *stormwater* drainage, source controls, treatment systems, and plant equipment and systems that could fail and result in contamination of *stormwater*;

(2) Maintaining non-structural *control measures* (e.g., keep spill response supplies available, personnel appropriately trained);

(3) Inspecting and maintaining baghouses quarterly during periods of operation, or in accordance with manufacturers recommendations, to prevent the escape of dust from the system and immediately removing any accumulated dust at the base of the exterior baghouse; and,

(4) Cleaning catch basins when the depth of debris reaches two-thirds of the sump depth and keeping the debris surface at least six inches below the lowest outlet pipe.

b. Routine maintenance must be performed to ensure BMPs are operating properly. When a BMP is not functioning to its designed effectiveness and is in need of repair or replacement:

(1) Maintenance must be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of stormwater controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable, but not more than 12 weeks after completion of the most recent routine facility inspection or the comprehensive site inspection, unless permission for a later date is granted in writing by the Department; and,

(2) All reasonable steps must be taken to prevent or minimize the discharge of pollutants until the final repair or replacement is implemented, including cleaning up any contaminated surfaces so that the material will not be discharged during subsequent storm events.

4. *Spill Prevention and Response Procedures*

a. *Minimize* the potential for leaks, spills and other releases that may be exposed to *stormwater* and develop plans for effective response to such spills if or when they occur in order to *minimize pollutant discharges*. At a minimum:

(1) Plainly label containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides") that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

(2) Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the *discharge* of *pollutants* from these areas;

(3) Where practicable, protect industrial materials and activities with a storm resistant shelter to prevent exposure to rain, snow, snowmelt, or runoff;

(4) Develop training on the procedures for stopping, containing, and cleaning up leaks, spills, and other releases. As appropriate, execute such procedures as soon as possible;

(5) Keep spill kits on-site, located near areas where spills may occur or where a rapid response can be made; and

(6) Develop procedures for notification of the appropriate facility personnel, emergency response agencies, and regulatory agencies when a leak, spill, or other release occurs. If possible, one of these individuals should be a member of the *stormwater* pollution prevention team (see Part III.A.1). Any spills must be reported in accordance with Part VI.A.3.

b. Measures for cleaning up spills or leaks must be consistent with applicable petroleum bulk storage, chemical bulk storage or hazardous waste management regulations at 6 NYCRR Parts 596-599, 613 and 370-373.

c. This permit does not relieve the *owner or operator* of any reporting or other requirements related to spills or other releases of petroleum or hazardous substances. Any spill of a hazardous substance must be reported in accordance with 6 NYCRR 597.4. Any spill of petroleum must be reported in accordance with 6 NYCRR 613.6 or 17 NYCRR 32.3.

5. *Erosion and Sediment Controls*

Exposed areas must be stabilized and stormwater runoff controlled using structural and/or non-structural *control measures* to *minimize* onsite erosion and sedimentation. Erosion and Sediment Controls must be in accordance with the New York State Standards & Specification for Erosion & Sediment Control (2016). The *owner or operator* must demonstrate equivalence where erosion and sediment control practices are not designed in conformance with the design criteria included in the New York State Standards & Specification for Erosion & Sediment Control, .

6. *Management of Runoff*

Divert, infiltrate, reuse, contain, or otherwise reduce *stormwater* runoff, to *minimize pollutants* in the *discharges*.

7. *Salt Storage Piles or Piles Containing Salt (at the Facility)*

In order to *minimize pollutant discharges*, enclose or cover storage piles of salt, or piles containing salt, used for deicing, maintenance of paved surfaces at the facility property, or for other commercial or industrial purposes at the facility. Implement appropriate measures (e.g., good housekeeping,

diversions, containment) to *minimize* exposure resulting from adding to or removing materials from the pile.

8. *Employee Training*

a. All employees who work in areas where industrial materials or activities are exposed to *stormwater*, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of the *Stormwater* Pollution Prevention Team must be trained.

b. At a minimum, all training must be conducted annually.

c. The *owner or operator* must ensure the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:

(1) Personnel who are responsible for the design, installation, maintenance, and/or repair of *control measures*;

(2) Personnel responsible for the storage and handling of chemicals and materials that could become contaminants found in *stormwater discharges*;

(3) Personnel who are responsible for conducting and documenting monitoring and inspections as required in Part IV; and,

(4) Personnel who are responsible for taking and documenting corrective actions as required in Part V.

d. Personnel identified in Part II.A.8.c must be trained in the following subjects if the subject is appropriate to the scope of their SWPPP responsibilities.

(1) An overview of what is in the SWPPP and the purpose of the SWPPP;

(2) Spill response procedures, good housekeeping, maintenance requirements and material management practices;

(3) How to recognize unauthorized *discharges;*

(4) The location of all controls on the site required by this permit, and how to evaluate their condition and maintenance needs;

(5) The proper procedures to follow with respect to permit's pollution prevention requirements, including sampling and reporting; and

(6) When and how to conduct inspections, record applicable findings, and take corrective actions.

9. *Non-Stormwater Discharges*

Eliminate non-*stormwater discharges* not authorized by a *SPDES* permit in accordance with Part I.B.2.

10. *Waste, Garbage and Floatable Debris*

Ensure that waste, garbage, and floatable debris are not *discharged* to *surface waters of the state* by keeping exposed areas free of such materials or by intercepting them before they are *discharged*.

11. *Dust Generation and Vehicle Tracking of Industrial Materials*

Minimize generation of dust and off-site tracking of raw, final, or waste materials in order to *minimize* the *pollutant discharges*.

12. *Secondary Containment*

Ensure that compliance is maintained with all applicable regulations including, but not limited to, those involving releases, registration, handling and storage of petroleum, chemical bulk and hazardous waste storage facilities (6 NYCRR Parts 596-599, 613 and 370-373).

Where it is not feasible to eliminate *discharges* from handling and storage areas, the following BMPs must be implemented:

a. Loading and unloading areas must be operated to *minimize* spills, leaks or the *discharge* of *pollutants* in *stormwater*. Protection such as roofs, overhangs or door skirts to enclose trailer ends at truck loading/unloading docks must be provided as appropriate.

(1) During deliveries, have staff familiar with spill prevention and response procedures present to ensure that any leaks/spills are immediately contained and cleaned up; and

b. Use of spill and overflow protection (e.g., drip pans, and/or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).

c. All spilled or leaked substances must be removed from secondary containment systems as soon as practical and for Chemical Bulk Storage (CBS) storage areas within 24 hours of the *owner or operator* discovering the spill, unless authorization is received from the *Department*.

(1) The containment system must be thoroughly cleaned to remove any residual contamination which could cause contamination of *stormwater* and the resulting *discharge* of *pollutants* to *waters of the State*.

(2) Following spill cleanup the affected area must be completely flushed with clean water three times and the water removed after each flushing for proper disposal in an on-site or off-site wastewater treatment plant designed to treat and permitted to *discharge* such wastewater.

(3) The *qualified person* must test the first batch of *stormwater* following the spill cleanup to determine *discharge* acceptability. If the water contains no *pollutants* it may be *discharged*, otherwise it must be disposed of as noted above. (See Part IV.F.1.e for the list of parameters to be sampled.)

d. *Stormwater* must be removed from a secondary containment system before it compromises the system's capacity. Each *discharge* may only proceed with the prior approval of the facility representative responsible for ensuring *SPDES* permit compliance. Bulk storage secondary containment drainage systems must be locked in a closed position except when the *qualified person* is in the process of draining accumulated *stormwater*. Transfer area secondary containment drainage systems must be locked in a closed position during all transfers and must not be reopened unless the transfer area is clean of contaminants. *Stormwater discharges* from secondary containment systems should be avoided during periods of precipitation. A logbook must be maintained on site noting, for each *discharge*:

- Screening method;
- Results of screening;
- Date time and volume; and,
- Supervising personnel.

B. Numeric Effluent Limitations

The *owner or operator* of facilities listed in an industrial category subject to one or more of the *effluent limitations guidelines* identified in Appendix D, must meet the numeric effluent limitations specified in the referenced Sector in Part VII. Exceedance of a Numeric effluent limitation is a violation of the permit.

C. Water Quality Based Effluent Limitations

1. *Maintaining Water Quality Standards*

a. The *Department* expects that compliance with the other conditions of this permit will control *discharges* necessary to meet applicable water quality standards. It must be a violation of the *Environmental Conservation Law (ECL)* for any *discharge* authorized by this general permit to either cause or contribute to a violation of water quality standards as contained in 6 NYCRR Parts 700-705.

b. 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 V of this permit. Failure to complete the required corrective action is a violation of this permit.

2. *Impaired Waters*

a. *Discharges* to an *impaired waterbody* are not eligible for coverage under this permit if the cause of impairment is a *pollutant* of concern included in the *benchmarks* and/or numeric *effluent limitations* to which the facility is subject unless the facility:

(1) Prevents all exposure to *stormwater* of the *pollutant(s)* for which the waterbody is impaired; or

(2) Documents that the *pollutant* for which the waterbody is impaired is not present on-site; or

(3) Provides additional information in the SWPPP to *minimize* the *pollutant* of concern causing the impairment as specified in Part III.D.2.

b. If conditions at the facility conform with Part II.C.2.a(1) or (2) all analysis and documentation that supports eligibility must be maintained with the SWPPP.

D. Best Management Practices Selection and Design Considerations

The owner or operator must consider Parts II.D.1 through Part II.D.9 when selecting and designing BMPs to minimize stormwater pollutant discharges. This Part does not require nor prescribe specific BMPs to be implemented; however, consideration of all BMPs, whether determined to be appropriate or not, must be documented in the SWPPP per Part III.A.7.

1. How to prevent *stormwater* from interacting with, and contacting, *pollutants* and *pollutant* sources;

2. The use of *BMPs* in series or combination;

3. Assessment of the type of *pollutant*, the quantity and nature of the *pollutant(s)*, and their potential to impact the water quality of receiving waters;

4. Opportunities to combine the dual purposes of water quality protection and local flood control benefits, including physical impacts of high flows on streams (e.g., bank erosion, impairment of aquatic habitat, etc.);

5. Opportunities to offset the impact of *impervious areas* of the facility on groundwater recharge and base flows in local streams, taking into account the potential for groundwater contamination (i.e., *hotspots*);

6. Opportunities to attenuate flow using open vegetated swales and natural depressions;

7. Conservation and/or restoration of the riparian buffers of streams and rivers; and,

8. The use of treatment interceptors (e.g., swirl separators and sand filters).

9. Opportunities to implement enhanced BMPs for facilities that have the potential to be impacted by future physical climate risks due to major storm events, stormsurge, seiche, sea-level rise and flood events pursuant to the Community Risk and Resiliency Act (CRRA), 6 NYCRR Part 490, and associated guidance (e.g., "State Flood Risk Management Guidance" (SFRMG) and "Estimating Guideline Elevations"). These enhanced BMPs are:

a. Reinforcement of interior and exterior material storage structures to withstand flooding;

b. Prevent floating of semi-stationary structures by elevating or securing;

c. Delay delivery of raw materials when a major storm event is expected within 48 hours;

d. Permanently store materials and waste above expected flood level;

e. Permanently reduce or eliminate exterior storage;

f. Relocate company vehicles to higher ground; and

g. Conduct staff training on implementation of emergency procedures.

Part III – Stormwater Pollution Prevention Plans

The SWPPP documents the practices and procedures to ensure compliance with the conditions of this permit, including the selection, design, installation and maintenance of *control measures* selected to meet *effluent limitations* in Parts II and VII. The *owner or operator* is responsible for the documentation and implementation of the SWPPP. The SWPPP must be in writing and can either be stored physically or digitally, but in either case, it must be readily available to the Pollution Prevention Team.

The SWPPP requirements of this general permit may be fulfilled by incorporating by reference other plans or documents such as: an Erosion and Sediment Control (ESC) plan, a Mined Land Use Plan, a Spill Prevention Control and Countermeasure (SPCC) plan developed for the facility, or *BMP* programs otherwise required for the facility. The incorporated plan(s) must meet or exceed the SWPPP content requirements of Part III.A and the applicable activity-specific requirements in Part VII. All plans incorporated by reference into the SWPPP become enforceable under this permit; however, this enforcement is limited only to those aspects of these other plans that are specifically referenced to provide information or practices required for the SWPPP.

A. Contents of the SWPPP

All SWPPPs must include, at a minimum:

1. *Pollution Prevention Team*

Identify the individuals (by name or title) and their role, in assisting the *owner or operator* in developing, implementing, maintaining and revising the facility's SWPPP.

2. *General Site Description*

A written description of:

a. Industrial activities occurring in each drainage area.

b. The name of the nearest receiving water(s), including intermittent streams and wetlands (mapped and federally regulated wetlands) that may receive *discharges* from the facility.

c. If *stormwater* is *discharged* to an *MS4*, the SWPPP must identify the *MS4* operator and the receiving water to which the *MS4 discharges*.

d. The flow path of *stormwater* within the facility, and the general path of *stormwater* flows between the facility and the nearest surface waterbody(ies) and/or location(s) where *stormwater* enters an *MS4*, if applicable.

e. The run-on from adjacent properties, if present. The *owner or operator* may include an evaluation of how the quantity or quality of the *stormwater* running onto the facility impacts the facility's *stormwater discharges*.

f. Any *discharges* that are currently covered by another *SPDES* permit at the facility (e.g., process wastewater, sanitary wastewater, non-contact cooling water, etc.)

g. Size of the property in acres.

h. Provide an estimate of the percent imperviousness of the site using the following formula:

$$\frac{\text{(Area of Roofs + Area of Paved and Other Impervious Surfaces) x100}}{\text{Total Area of Facility}}$$

i. Locations of sensitive areas (at a minimum *impaired waters*; floodplains; listed threatened & endangered species or their critical habitat).

3. *Potential Pollutant Sources*

The SWPPP must identify each area at the facility where industrial materials or activities are exposed to *stormwater* or from which authorized non-*stormwater discharges* originate, including any potential *pollutant* sources for which the facility has reporting requirements under the Emergency Planning and Community Right-To-Know Act (EPCRA), Section 313.

a. Industrial materials or activities include: industrial machinery; raw materials; intermediate products; byproducts; final products or waste products; and, material handling activities which includes storage, loading and unloading, transportation or conveyance of any raw material, intermediate product, final product or waste product.

b. For each separate area identified, the description must include:

(1) Activities - A list of the activities occurring in the area (e.g., material storage, equipment fueling and cleaning, cutting steel beams, etc.); and

(2) *Pollutants* - A list of the associated *pollutant(s)* or *pollutant* parameter(s) (e.g., crankcase oil, iron, biochemical oxygen demand, pH, etc.) for each activity. The *pollutant* list must include all *significant materials* that have been handled, treated, stored or disposed in a manner to allow exposure to *stormwater* for a period of three years before being covered under this permit.

(3) Potential for presence in *stormwater* - A prediction of the direction of flow, and the likelihood of the *industrial activity* to contaminate the *stormwater discharge*. Factors to consider include the toxicity of chemicals; quantity of chemicals used, produced or *discharged*; the likelihood of contact with *stormwater*; and history of *reportable* leaks or spills of toxic or hazardous *pollutants*.

4. *Spills and Releases*

a. The SWPPP must clearly identify areas where potential spills or releases can contribute to *pollutants* in *stormwater discharges* and their accompanying outfalls.

b. For areas that are exposed to precipitation or that otherwise drain to a *stormwater* conveyance to be covered under this permit, the SWPPP must include a list of *reportable* spills or releases [1] of petroleum and hazardous substances or other *pollutants*, including unauthorized *non-stormwater discharges*, that may adversely affect water quality that occurred during the three-year period prior to the date of the submission of a NOI. The list must be updated when *reportable* spills or releases occur.

c. Following any spill or release, the *owner or operator* must evaluate the adequacy of the BMPs identified in the facility's SWPPP. If the BMPs are inadequate, the SWPPP must be updated to identify new BMPs that will prevent reoccurrence and improve the emergency response to such releases.

d. Document when training occurs on the procedures for stopping, containing, and cleaning up leaks, spills, and other releases.

e. Define and document the appropriate facility personnel, emergency response agencies, and regulatory agencies to be notified when a leak, spill, or other release occurs.

5. *General Location Map*

A general location map (e.g., USGS quadrangle or other map) with enough detail to identify the location of the facility and the receiving waters and locations where *stormwater* enters an *MS4*, if applicable, within one mile of the facility.

6. *Site Map*

A site map identifying the following:

a. North arrow and scale

b. Property boundaries and size in acres;

c. Location and extent of significant structures (including materials shelters), and impervious surfaces;

[1] This may also include releases of petroleum or hazardous substances that are not in excess of reporting quantities but which may still cause or contribute to significant water quality impairment. For example, the reportable quantity for ammonia is listed to be 100 pounds and releases well below this threshold will cause water quality impairment and must be addressed.

d. Location of each *outfall* labeled with the *outfall* identification, including *outfalls* with *discharges* authorized under other *SPDES* permits. Outfall labels should be 3-digits (e.g. 001,002,003,etc);

e. The approximate outline of the drainage area to each *outfall*;

f. Locations of haul and access roads;

g. Rail cars and tracks;

h. Arrows showing direction of *stormwater* flow;

i. Location of all receiving waters in the immediate vicinity of the facility, indicating if any of the waters are impaired and, if so, whether the waters have *TMDLs* established for them;

j. Location of *MS4s* and where the *stormwater discharges* to them;

k. Location of all *stormwater* conveyances including ditches, pipes, and swales;

l. Locations where *stormwater* flows have significant potential to cause erosion;

m. Location and source of run-on from adjacent property containing significant quantities of *pollutants* and/or volume of concern to the facility;

n. Locations of the following areas where such areas are exposed to precipitation or *stormwater* run-on:

- Fueling stations;
- Vehicle and equipment maintenance and/or cleaning areas;
- Loading/unloading areas;
- Locations used for the treatment, storage or disposal of wastes;
- Liquid storage tanks;
- Processing and storage areas;
- Locations where significant materials, fuel or chemicals are stored and transferred;
- Locations where vehicles and/or machinery are stored when not in use
- Transfer areas for substances in bulk;
- Locations of potential *pollutant* sources identified under Part III.A.3;
- Location and description of non-*stormwater discharges* listed in Part I.B.2;
- Locations where major spills or leaks identified under Part III.A.4 have occurred;
- Locations of all *stormwater* monitoring points;

- Locations of all existing structural *BMPs*.

7. ***Stormwater Controls***

The SWPPP must document the location and type of *BMPs* installed and implemented at the facility to achieve the non-numeric effluent limitations in Part II.A and where applicable in Part VII, and the sector specific numeric *effluent limitations* in Part VII. The SWPPP must describe how each *BMP* is being implemented for all the potential *pollutant* sources identified in Part III.A.3.

If the *owner or operator* determines that any of the BMPs described in Part II.A, or any sector-specific BMPs in Part VII, are not appropriate for the facility, an explanation of why they are not appropriate must be included in the SWPPP per Part II.D. If new or innovative BMPs not listed in this permit are being used, this section of the SWPPP must include descriptions of those BMPs and how they are *equivalent* to the BMPs in this section.

a. **Good Housekeeping** - The SWPPP must describe all good housekeeping practices that are being implemented by the *owner or operator* including those described in Part II.A.2 to *minimize pollutant discharges* from all exposed areas that are potential sources of *pollutants*.

b. **Facility inspections** - The SWPPP must describe procedures for scheduling, completing and recording results of routine and comprehensive site inspections at frequencies meeting or exceeding those specified in Part IV of this permit.

c. **Maintenance and Repair**

(1) The SWPPP must describe a preventative maintenance program that includes timely inspection, maintenance and repairs of all industrial equipment and systems.

(2) The SWPPP must describe a preventative maintenance program that includes timely inspection, maintenance and repairs of structural and non-structural BMPs.

(3) The SWPPP must describe inspection and maintenance procedures for baghouses to prevent the escape of dust from the system and the immediate removal of accumulated dust at the base of the exterior baghouse.

(4) The SWPPP must include procedures for catch basin cleaning.

d. Spill Prevention and Response Procedures

(1) The SWPPP must describe the procedures that will be followed for cleaning up spills or leaks. The procedures and necessary spill

response equipment must be made available to those employees who may cause or detect a spill or leak.

(2) The SWPPP must describe procedures for notification of the appropriate facility personnel, emergency response agencies, and regulatory agencies when a leak, spill, or other release occurs. If possible, one of these individuals should be a member of the *stormwater* pollution prevention team (see Part III.A.1).

e. **Employee Training and Education** - The SWPPP must describe the *stormwater* training program required for individuals conducting *industrial activity* at the facility. The description must include:

(1) The specific training given (see Part II.A.8.d)

(2) Identify periodic dates for such training (e.g., annually, every six months during the months of July and January). An annual signed and dated employee training log must be kept in the SWPPP.

f. **Document Non-*Stormwater Discharges***

(1) ***Discharge* Certification** - The Owner or Operator must certify that all *outfalls* have been tested or evaluated for the presence of non-*stormwater discharges*. A copy of the certification must be included in the SWPPP. The certification must include:

(a) The date of any testing and/or evaluation;

(b) Identification of potential significant sources of non-*stormwater discharges* at the site;

(c) A description of the results of any test and/or evaluation for the presence of non-*stormwater discharges*;

(d) A description of the evaluation criteria or testing method used; and

(e) A list of the *outfalls* that were directly observed during the test.

(2) **Detail Non-*Stormwater Discharges*** - The sources of non-*stormwater discharges* listed in Part I.B.2 are authorized *discharges* under this permit provided the *owner or operator* includes the following information in the SWPPP:

(a) Identification of each authorized non-*stormwater* source (flows from emergency/unplanned firefighting activities do not need to be identified);

(b) The location where the non-*stormwater discharge* is likely to occur;

(c) Descriptions of appropriate BMPs for each source; and

(d) If mist blown from cooling towers is included as one of the authorized non-*stormwater discharges* from the facility, the *owner or operator* must specifically evaluate the potential for the *discharges* to be contaminated by chemicals used in the cooling tower and must select and implement BMPs to control such *discharges* so that the levels of cooling tower chemicals in the *discharges* would not cause or contribute to a violation of an applicable water quality standard.

g. The SWPPP must describe *BMPs* selected to eliminate *discharges* of solid materials, including waste, garbage and floating debris, to *surface waters of the State*, except as authorized by a permit issued under section 404 of the CWA.

h. The SWPPP must describe *BMPs* selected to *minimize* off-site vehicle tracking of raw, final, or waste materials or sediments, and the generation of dust.

i. The SWPPP must describe BMPs selected to stabilize exposed areas and contain runoff using structural and/or non-structural *control measures* to *minimize* onsite erosion and sedimentation, and the resulting *discharge* of *pollutants*.

(1) The SWPPP must identify areas at the facility which, due to topography, land disturbance (e.g., construction) or other factors, have potential for significant soil erosion.

(2) The SWPPP must identify structural, vegetative, and/or stabilization *BMPs* that will be implemented to limit erosion.

(3) The SWPPP must identify velocity dissipation devices (or equivalent measures), which are placed at *discharge* locations and along the length of any *outfall* channel, if they are necessary to provide a non-erosive flow velocity from the structure to a water course.

(4) The SWPPP must contain adequate details to demonstrate that controls conform to the New York Standards and Specifications for Erosion and Sediment Control (2016), or equivalent. This document is available at: http://www.dec.ny.gov

j. The SWPPP must describe the traditional *stormwater* management practices (permanent structural *BMPs)* that currently exist or that are

planned for the facility. These types of *BMPs* are typically used to divert, infiltrate, reuse, or otherwise reduce *pollutants* in *stormwater discharges* from the site. Examples of *BMPs* that could be used include but are not limited to: *stormwater* detention structures (including wet ponds); green infrastructure practices; *stormwater* retention structures; flow attenuation by use of open vegetated swales and natural depressions; and onsite infiltration of runoff.

The SWPPP must provide that all *stormwater* management practices that the *owner or operator* determines to be reasonable and appropriate, or are required by a *State* or local authority, must be designed and maintained in accordance with the New York State *Stormwater* Management Design Manual (2015). Factors for the *owner or operator* to consider when selecting appropriate *stormwater management* practices from the Design Manual should include:

(1) The industrial materials and activities that are exposed to *stormwater*, and the associated *pollutant* generating potential of those materials and activities; and

(2) The beneficial and potential detrimental effects on surface water quality, groundwater quality, receiving water base flow (dry weather stream flow), and physical integrity of receiving waters. Structural measures must be placed on upland soils, avoiding wetlands and floodplains, if possible. Structural *BMPs* may require a separate permit under section 404 of the CWA before installation begins.

k. Salt Storage

(1) As required in Part II.A.7, the SWPPP must document that all storage piles of salt are enclosed or covered to prevent exposure to precipitation, except during loading and transfer operations.

(2) The SWPPP must document all good housekeeping measures in place to assure that salt spilled during loading and transfer operations, and spilled or tracked along haul and access roads is removed and returned to the covered storage pile.

8. ***Monitoring and Sampling Data***

The SWPPP must include:

a. A summary of existing *stormwater discharge* sampling data taken at the facility;

b. Chain of Custody Records for samples collected and transported to an approved laboratory;

c. Laboratory reports of results of sample analysis;

d. Quarterly Visual Monitoring Reports;

e. Copies of semi-annual *Discharge Monitoring Reports (DMRs). Hardcopy or have the DMRs readiliy accessible from the NetDMR system*

f. Copies of *Annual Certification Reports* (ACR); *Hardcopy or have the ACRs readiliy accessible from the electronic system.*

g. A summary of all *stormwater* sampling data collected during the term of this permit;

h. Any monitoring waivers that have been claimed.

9. Permit Documents and Department Correspondence

The SWPPP must contain the most current copy of this permit, associated forms, acknowledgement of the NOI, and all associated correspondence with the Department.

10. Inspection Schedule & Documentation

The SWPPP must contain the schedule for conducting inspections and all documentation resulting from the nspection.

11. Corrective Action Documentation

The SWPPP must contain all corrective action documentation as detailed in Part V.C.

12. Monitoring and Reporting to be kept with the SWPPP

As applicable to the facility, the documentation in the summary table below must be retained with the SWPPP.

MSGP 0-23-001 Monitoring/Reporting to be kept with the SWPPP

Monitoring/Reporting type	Record Retention Requirement
Quarterly Visual Monitoring	Retain documentation with SWPPP.
Annual Dry Weather Flow Inspection	Retain documentation with SWPPP.
Routine Inspection	Retain documentation with SWPPP.
Corrective Action Documentation for facilities that do not discharge to an impaired waterbody	Retain documentation with SWPPP.
Monitoring for Bulk Storage and Loading/Unloading Areas	Retain documentation with SWPPP.
Storm Event Data Form	Retain documentation with SWPPP.
Discharge from Secondary Containment	Retain logbook of discharges, including the screening method, results of screening; date, time and volume of each discharge; and the personnel supervising each discharge.

B. SWPPP Preparer

1. The SWPPP must be prepared by a *qualified person.*

2. Erosion and Sediment Control plans needed to stabilize exposed areas and control runoff per Part II.A.5 or to meet sector specific requirements must be prepared by, a *qualified person* who is knowledgeable in the principles and practices of erosion and sediment control.

3. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), must be prepared by, or under the direct supervision of a professional engineer licensed to practice in the State of New York.

C. Signature and *Stormwater* Pollution Prevention Plan Availability

1. Signature/Location - The SWPPP must be signed in accordance with Appendix G.8 and retained (physically or digitally) on-site at the facility, at a different physical location or on the web. For inactive facilities, the SWPPP may be kept at the nearest office of the *owner or operator.*

2. Availability
   a. The *owner or operator* must make a copy of the SWPPP available to the *Department* for review at the time of an on-site inspection.

   b. The *owner or operator* must furnish a copy of the SWPPP within five (5) business days of a Department request in accordance with Appendix G.6.

   c. The *owner or operator* must make a copy of the SWPPP available to the public within fourteen (14) days of receipt of a written request. If there is a request for a copy of the SWPPP, the owner or operator must provide a copy of the SWPPP within fourteen (14) days of receipt of the request and payment from the requestor.

D. Special SWPPP Requirements

The following additional requirements are applicable for each special circumstance:

1. *Stormwater discharges* into or through *MS4s.*
   a. Facilities covered by this permit must comply with applicable requirements in municipal *stormwater* management programs developed under the *SPDES* permit issued for the *discharge* from the *MS4* that receives the facility's *discharge*, provided that the *MS4* operator has been notified of such conditions.

   b. *Owners or operators* that *discharge* through an *MS4*, or a municipal system designated by the *Department* must make their SWPPP available to the *MS4* operator within 5 days of a written request.

2. *Stormwater discharges* associated with *industrial activity* to *impaired waterbodies.*

   Facilities that are discharging to an *impaired waterbody* and the cause of the impairment is a *pollutant* of concern included in the *benchmarks* and/or numeric effluent limitations (see Appendix F) to which the facility is subject must include the following in their SWPPP:

   a. Identification of *Impaired Waterbody* – Identify any *impaired waterbody* that may receive *stormwater discharges associated with industrial activity* from the facility and the cause of the waterbody's impairment.

   b. *Pollutant(s)* of Concern – A list of *pollutant(s)* or *pollutant parameter(s)* that have been handled, treated, stored or disposed of in a manner that would create the reasonable potential for the *pollutant* of concern causing the impairment to be *discharged.*

   c. Potential for Presence in *Stormwater* – Identify each area of the facility that generates *stormwater discharges associated with industrial activity* with a reasonable potential to *discharge* the *pollutant(s)* of concern. Factors to consider include the likelihood of the *industrial activity* producing the *pollutant(s)* of concern to have contact with *stormwater* and a history of *reportable* leaks or spills that could result in the *pollutant(s)* of concern being *discharged* to the *impaired waterbody.*

   d. *Stormwater* Controls – The SWPPP must include a description of the type and location of existing and planned *BMPs* selected for each of the areas where the *pollutant(s)* of concern are exposed to *stormwater. BMPs* must be selected to *minimize* the *pollutant(s)* of concern from being *discharged* to the *impaired waterbody* and should take into consideration all *stormwater* controls listed in Part III.A.7. The SWPPP must describe how each *BMP* will be implemented for all the areas where the *pollutant(s)* of concern will be exposed to *stormwater.*

E. Keeping SWPPPs Current

The SWPPP must be amended whenever:

1. There is a change in design, construction, operation, or maintenance at the facility which may have an effect on the potential for the *discharge* of *pollutants* from the facility which has not otherwise been addressed in the SWPPP; or

2. Site inspections or monitoring required in Part IV reveal that the chosen BMPs are found to be ineffective in eliminating or significantly minimizing *pollutants* from sources identified under Part III.A.3 or is otherwise not achieving the goals or requirements of this permit. The SWPPP must be

modified, and additional monitoring and analysis must be completed as follows:

a. Maps or description of industrial activities – If the SWPPP has been found to be inaccurate or incomplete, modifications must be completed to correct the deficiencies identified.

b. It is deemed necessary to implement BMPs to comply with Part II.D.9.

c. *Stormwater* controls - The modification must identify the corrective actions needed and include a schedule for the implementation with a final date no later than 12 weeks from date of discovery unless the *Department* approves additional time in writing.

d. Additional inspections monitoring and/or analysis - If the results of inspections, monitoring and/or analysis, as required in Part IV, reveal a violation of this permit, a failure to maintain eligibility for coverage under this permit or a failure to comply with the *benchmarks* or other action levels in this permit, additional inspections, monitoring and/or laboratory analysis of *stormwater* samples may be required.

Part IV – Inspections and Monitoring

A. Comprehensive Site Compliance Inspection & Evaluation

The *qualified person* must conduct a comprehensive site compliance inspection at least once per year. If more frequent inspections are conducted, the SWPPP must specify the frequency of inspections.

1. *Scope of the Compliance Inspection & Evaluation*

a. Inspections must include all areas where industrial materials or activities are exposed to *stormwater*, as identified in Part III.A.3. At a minimum the inspection must identify or include:

(1) Industrial materials, residue or trash on the ground that could contaminate or be washed away in *stormwater*;

(2) Leaks or spills from industrial equipment, drums, barrels, tanks or similar containers;

(3) Examination of all *outfall* locations, to determine the presence of unauthorized non-*stormwater discharges* or authorized non-*stormwater discharges* that are not certified in accordance with Part III.A.7(f)(1);

(4) Off-site tracking of industrial materials or sediment where vehicles enter or exit the site;

(5) Tracking of material away from the area where it originates including from areas of *no exposure* to exposed areas;

(6) Evidence of, or the potential for, *pollutants* entering or discharging from the drainage system;

(7) Inspection of areas found to be the source of *pollutants* observed during visual and analytical monitoring done during the year;

(8) *Stormwater* BMPs identified in the SWPPP must be inspected to ensure that they are operating correctly.

2. *Compliance Inspection & Evaluation report*

a. A compliance inspection & evaluation report must be made at the conclusion of each inspection and retained as part of the SWPPP for a period of at least five (5) years from the date of the report. When the compliance inspection schedule overlaps with routine inspections required under Part IV.B, the comprehensive site compliance inspection may be used as one of the routine inspections required under Part IV.B.. At a minimum, the report must include:

(1) The scope of the inspection (Part IV.A.1),

(2) The name(s) of the person(s) conducting the inspection,

(3) The date(s) and time(s) of the inspection,

(4) Weather information at the time of the inspection,

(5) Major observations relating to the implementation of the SWPPP, including:

(a) The location(s) and description(s) of *discharges* of *pollutants* from the site;

(b) The location(s) and description(s) of previously unidentified *discharges* of *pollutants* from the site;

(c) Any evidence of, or the potential for, pollutants entering the drainage system;

(d) The source of any discharges and actions taken to address newly identified authorized non-stormwater discharges or elimination of non-authorized discharges;

(e) Location(s) of BMPs that need to be maintained;

(f) Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;

(g) Location(s) where additional BMPs are needed that did not exist at the time of inspection;

(h) Any incidents of noncompliance. Where an inspection does not identify any incidents of noncompliance, the report must contain a statement that the facility is in compliance with the SWPPP and this permit;

(i) Observations regarding the physical condition of and around all outfalls, including any flow dissipation devices; and evidence of pollutants in discharges and/or the receiving water; and,

(j) The required corrective actions to be implemented in accordance with Part V.

B. Routine Inspections of BMPs

1. In addition to or as part of the comprehensive site inspection, *a qualified person* must perform routine inspections evaluating the performance of *stormwater* BMPs described in the SWPPP in all areas of the facility where industrial materials or activities are exposed to precipitation or *stormwater runoff*. At a minimum, the inspection frequency must be on a quarterly basis or more frequently as specified in the facility's applicable industrial sector in Part VII.

2. The routine inspection, including the more frequent inspections as specified in the facility's applicable sector, must be documented in writing and must be kept with the SWPPP. Deficiencies in the implementation and/or adequacy of the BMPs, must also be documented.

3. Corrective actions, identified in the routine inspection, must be implemented in accordance with Part V.

C. Annual Dry Weather Flow Inspection

In addition to or as part of the Comprehensive Site Compliance Inspection (Part IV.A), the qualified person must perform an annual dry weather flow inspection and update the non-stormwater discharge certifications (Part III.A.7.f (1)). The requirements and procedures for the annual dry weather flow inspection are applicable to all facilities covered under this permit, regardless of the facility's sector of industrial activity.

1. The *qualified person* must perform and document at least one dry weather flow inspection each year after at least three (3) consecutive days of no precipitation. The annual dry weather flow inspection must be conducted to determine the presence of non-stormwater *discharges* to the stormwater drainage system.

2. The annual dry weather flow inspection must be documented in a written inspection report which must include the *outfall* locations, the inspection date and time, inspector name, description of *discharges* identified, the source of any *discharges* and actions taken to address any newly identified allowable non-stormwater *discharges* or elimination of non-authorized *discharges*.

3. If a non-stormwater discharge not previously certified in accordance with Part III.A.7.f (1) is discovered, corrective actions must be implemented in accordance with Part V.B.

4. The dry weather flow inspection report and updated non-stormwater discharge documentation required by Part III.A.7.f (1) must be retained with the SWPPP.

D. Collection and analysis of samples

Samples must be collected as follows:

1. *When to Sample*

A sample must be taken of the *stormwater discharge* resulting from a *qualifying storm event* with at least 0.1 inch of precipitation.Each outfall must be sampled except for any outfall for which the facility has claimed a representative outfall waiver in accordance with Part IV.G.3. In the case of snowmelt, samples must be taken during a period with a *discharge* from the site.

The sample must be taken during the first 30 minutes (or as soon as practical, but not to exceed one hour) of the *discharge* at the *outfall*. If the sampled *discharge* mixes with non-*stormwater* water, the *owner or operator* must attempt to sample the *stormwater discharge* prior to mixing.

2. *Sample Analysis*

a. Monitoring and analysis must be conducted according to test procedures approved under 40 CFR Part 136, or equivalent, unless other test procedures have been specified in this permit.

(1) Any laboratory test or sample analysis required by this permit for which the *State* Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law must be conducted by a laboratory that has been issued a certificate of approval (ELAP certified).

(2) The laboratory sample analysis reports must be kept with the SWPPP.

3. *Storm event data*

The storm event must be documented using the Storm Event Data Form provided by the *Department*. The Storm Event Data Form can be found on the Department's website and must be kept with the SWPPP. The Storm Event Data form is to be used for Benchmark monitoring, Numeric Effluent Limit monitoring, Impaired Waters monitoring and Quarterly Visual Monitoring.

4. *Secondary Containment Screening and Sampling*

Prior to each *discharge*[2] from a secondary containment system the *stormwater* must be screened for contamination. (Note: All *stormwater* must be inspected for visible evidence of contamination.) Additional screening methods must be developed by the *owner or operator* as part of the overall BMP Plan (e.g., the use of volatile gas meters to detect the presence of gross levels of gasoline or volatile organic compounds). If the screening indicates contamination, the *owner or operator* must collect and analyze a

[2] Note: Discharge includes stormwater discharges and snow and ice removal. If applicable, a representative sample of snow and/or ice should be collected and allowed to melt prior to assessment.

representative sample[3] of the *stormwater*. If the sample contains no *pollutants*, the *stormwater* may be *discharged*. Otherwise it must either be disposed of in an onsite or off-site wastewater treatment plant designed to treat and permitted to *discharge* such wastewater. The first discharge following any cleaned up spill or leak must be sampled regardless of the screening results.

E. Quarterly Visual Monitoring

The requirements and procedures for quarterly visual monitoring are applicable to all facilities covered under this permit, regardless of the facility's *industrial activity*.

1. The monitoring must be made at least once in each of the following quarters:
   - January 1st through March 31st,
   - April 1st through June 30th,
   - July 1st through September 30th, and
   - October 1st through December 31st
2. All samples must be collected from *discharges* resulting from a *qualifying storm event*, in accordance with Part IV.D.1.
3. The *owner or operator* must perform and document quarterly visual monitoring of a *stormwater discharge* associated with *industrial activity* from each *outfall* on the *Department* provided form and included with the SWPPP unless:
   a. A waiver is submitted in accordance with Part IV.G, or
   b. There is no *discharge* from a *qualifying storm event* during a monitoring period. If no *qualifying storm event* resulted in runoff from the facility during a monitoring quarter, documentation must be included with the SWPPP. If a visual examination was performed and the storm event was later determined not to be a *measurable storm event*, the visual examination must be included with the SWPPP.
4. Laboratory sample analysis is not necessary to fulfill the visual monitoring requirements.
5. If the visual monitoring indicates the presence of *stormwater* pollution (e.g., color, clarity, odor, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators), corrective actions must be implemented in accordance with Part V. An additional visual inspection must be performed

[3] If the stored substance is gasoline or aviation fuel then sample for oil & grease, benzene, ethylbenzene, naphthalene, toluene and total xylenes (EPA method 602). If the stored substance is kerosene, diesel fuel, fuel oil, or lubricating oil then sample for oil & grease and polynuclear aromatic hydrocarbons (EPA method 610). In all cases an estimated discharge volume and pH monitoring is required.

during a qualifying storm event following the implementation of the corrective action. If the first qualifying storm event does not occur until the next quarter, this follow-up action may be used as the next quarterly visual inspection as well as the current inspection for the corrective action.

F. Monitoring Requirements

The monitoring requirements that apply to a facility depends on the types of industrial activities generating *stormwater* runoff. The *owner or operator* must review this Part and Part VII as well as Appendices C, D, E and G of this permit to determine which monitoring requirements apply to each individual *outfall*.

- At facilities where more than one *industrial activity* occurs, monitoring requirements apply for all parameters specific to those industrial activities.
- Where more than one numeric limitation for a specific parameter applies to a *discharge*, compliance with the more restrictive limitation is required.
- Where monitoring requirements for a monitoring period overlap (e.g., need to monitor TSS twice/year for numeric effluent limitation monitoring and also twice/year for *benchmark monitoring*), a single sample will satisfy both monitoring requirements.

1. *Types of Pollutant Monitoring*

a. *Benchmark Monitoring* is intended to provide a guideline for the *owner or operator* to determine the overall effectiveness of the SWPPP in controlling the *discharge* of *pollutants* to receiving waters. The requirements for *benchmark monitoring* apply to *discharges* associated with specific industrial activities identified in Part VII (summarized in Appendix C).

b. *Numeric Effluent Limitation* Monitoring – this applies to specific industrial activities listed in Appendix D and specified in the applicable Sector in Part VII.

c. *Discharges* to Impaired Waterbodies – If a facility *discharges* to an *impaired waterbody*, and the cause of impairment is a *pollutant* of concern included in the benchmarks and/or numeric effluent limitations to which the facility is subject to in Part VII, the facility is required to conduct the additional sampling requirements detailed in Part IV.F.2 for that particular *pollutant*(s) only. The compliance monitoring for *discharges* to impaired waterbodies is in addition to any applicable sector specific *Benchmark Monitoring* in Part IV.F.1.a and Numeric Effluent Limitation Monitoring in Part IV.F.1.b. A summary of the applicable benchmarks and/or numeric effluent limitations associated with the *pollutant* of concern to an *impaired waterbody* and their applicable sector is located in Appendix F.

d. Coal Pile Runoff Monitoring - Facilities with *discharges* of *stormwater* from coal storage piles must comply with the effluent limitations and monitoring requirements of Table IV.3 for all *discharges* containing the coal pile runoff, regardless of the facility's sector of *industrial activity*.

e. Secondary Containment at Storage and Transfer Areas - Unless the *discharge* from any containment system outlet is permitted by an *individual SPDES permit* as an *outfall* with explicit effluent and monitoring requirements, the *owner or operator* must monitor the outlet as follows:

(1) Storage Area Secondary Containment Systems - The volume of each *discharge* from each outlet must be monitored. A representative sample must be collected of the first *discharge* following any cleaned up spill or leak. The sample must be analyzed for pH, the substance(s) stored within the containment area and any other *pollutants* the *owner or operator* knows or has reason to believe are present.

(2) Transfer Area Secondary Containment Systems - The first *discharge* following any spill or leak must be sampled for flow, pH, the substance(s) transferred in that area and any other *pollutants* the *owner or operator* knows or has reason to believe are present.

2. *Frequency and Timing of Monitoring*

The monitoring requirements for each type of monitoring are provided in Table IV.1 below:

Table IV.1
Monitoring Requirements

Type of Monitoring	Applicability	Frequency	Reported to the *Department*
Quarterly Visual Monitoring	All Facilities	Quarterly	No
Benchmark Monitoring, Numeric *Effluent Limitation* Monitoring, Coal Pile Runoff	Sector Specific	Semi-Annual	Yes
Secondary Containment at Storage and Transfer Areas	Sector Specific	As needed	No
Discharges to Impaired Waterbodies	Waterbody Specific	Quarterly	Yes

The monitoring periods for required monitoring are provided in the Table IV.2 below:

Table IV.2
Monitoring Periods

Monitoring Frequency	Monitoring Periods
Semi-Annual	Period 1 - January 1st through June 30th
	Period 2 - July 1st through December 31st
Quarterly	Quarter 1 – January 1st through March 31st
	Quarter 2 – April 1st through June 30th
	Quarter 3 – July 1st through September 30th
	Quarter 4 – October 1st through December 31st
• See Table VI for the Reporting requirements	

a. If a facility's permit authorization (Part I.D) was effective less than two months from the end of a monitoring period, monitoring begins with the next monitoring period.

b. If a facility is inactive for an entire monitoring period, it may claim a waiver in accordance with Part IV.G.

3. ***Monitoring Requirements***

a. Monitoring of *stormwater discharges* associated with *industrial activity* from each *outfall* must be performed and documented during the monitoring periods listed in Table IV.2 unless:

(1) A waiver applicable to the specific type of monitoring is submitted in accordance with Part IV.G, or

(2) There is no *discharge* from a *qualifying storm event* during a monitoring period. If no *qualifying storm event* resulted in runoff from the facility during a monitoring period, documentation must be included with the SWPPP.

If a monitoring sample is collected during a storm event that is later determined not to be a qualifying storm event, the results should be included with the SWPPP.

b. Collection and analysis of samples must be done in accordance with Part IV.D.

c. Evaluation of Results of Analysis - The tables found in the individual sectors in Part VII for *benchmark monitoring cut-off concentrations* and numeric effluent limitations must be used as a reference to evaluate the results of the monitoring analysis.

(1) An exceedance of a Benchmark cut-off concentration is not a permit violation.

(2) An exceedance of a Numeric *Effluent Limitation* is a permit violation.

All exceedances of *benchmark cut-off concentrations* and/or *numeric effluent limitations* require the *qualified person* to evaluate potential sources of *stormwater* contaminants at the facility and perform corrective actions in accordance with Part V.

d. Recording and Reporting Results

(1) Results of Benchmark and Numeric Effluent Limitation monitoring, (including coal pile runoff monitoring), must be reported to the *Department* using a *Discharge Monitoring Report (DMR)* and included with the SWPPP.

a. DMRs must be submitted for all monitoring periods, without exception, even if there is no discharge at the outfall during the monitoring period.

(2) Results of monitoring of *discharges* from secondary containment systems must be included with the SWPPP, but are not reported to the *Department*.

e. For monitoring of Coal Pile Runoff, the *owner or operator* must refer to Table IV.3 for numeric effluent limitations.

Table IV.3

Numeric Limitations for Coal Pile Runoff

Parameter	Limit	Monitoring Frequency	Sample Type
Total Suspended Solids (TSS)	50 mg/l, daily max	Semi-Annual	Grab
pH	6.0 - 9.0 min. and max	Semi-Annual	Grab

(1) The coal pile runoff must not be diluted with *stormwater* or other flows in order to meet this limitation.

(2) If a facility is designed, constructed and operated to treat the volume of coal pile runoff that is associated with a 10-year, 24-hour rainfall event, any untreated overflow of coal pile runoff from the treatment unit is not subject to the 50 mg/L limitation for total suspended solids.

G. Monitoring Waivers

Unless stated otherwise, the following waivers may be applied to any monitoring required under this permit.

1. Adverse Climatic Conditions Waiver - Adverse weather conditions are those that are dangerous or create inaccessibility for personnel. This waiver may be claimed if the only qualifying storm event(s) in a monitoring period created dangerous conditions for personnel, created conditions which made the sample location inaccessible or made collection of a sample impossible.. This waiver may not be claimed to indicate that samples were not collected due to inconvenient timing of storms or other failures to collect *stormwater* samples.

   If the Adverse Climatic Conditions Waiver is claimed, an Adverse Climatic Conditions Waiver Form must be signed and submitted to the *Department* with any associated *DMR* in accordance with Appendix G.8 and included with the SWPPP.

2. Inactive and unstaffed sites - Site inspections or monitoring required in Part IV, can be waived at a facility that is inactive and unstaffed for the entire monitoring period if no industrial materials or activities are exposed to

stormwater. Facilities covered under Sector J are not required to meet the requirement that no materials are exposed to *stormwater*; however adequate *stormwater* controls must be in place to prevent migration of contaminated *stormwater* to surface water. To claim this waiver, the *owner or operator* must:

a. Maintain a certification with the SWPPP stating the dates the site is inactive and unstaffed;

b. Perform and document a Comprehensive Site Inspection prior to shut down. The inspection report must be included in the SWPPP. The certification must include the results of this inspection; and,

c. Complete an Inactive or Unstaffed Waiver Form. When this waiver is being claimed, the waiver form must be signed and submitted with each DMR and be included with the SWPPP.

3. Representative *outfalls* - If a facility has two or more *outfalls* that have substantially identical *discharges*, the *owner or operator* may sample the *discharge* of one of the *outfalls* and report that the analytical data also applies to the substantially identical *outfall(s)*. Whether or not *discharges* are substantially identical is determined by the similarity of the industrial activities and exposed materials occurring within the drainage area of each *outfall*.

a. The *owner or operator* must collect a sample from the anticipated "worst case" *outfall*. This is determined by looking at the following indicators:

(1) Size of drainage area;

(2) Level of *industrial activity*;

(3) Amount of exposed industrial materials.

b. A representative *outfall* waiver may not be claimed at *outfalls* with *discharges* associated with different industrial activities. This representative *outfall* waiver applies to quarterly visual monitoring and *benchmark monitoring*. This waiver cannot be claimed for compliance monitoring for *discharges* subject to *effluent limitation guidelines or to discharges of the pollutant of concern* to *impaired waters*.

c. When this waiver is being claimed, the *owner or operator* must submit a completed Representative Outfall Waiver Form with the NOI and keep it with the SWPPP.

d. If there is an event that triggers corrective actions at an *outfall* that represents other substantially identical *outfalls*:

(1) corrective actions must be completed for all *outfalls* covered by the waiver;

(2) The representative outfall waiver is suspended and quarterly visual monitoring and benchmark monitoring of the substantially identical outfalls must commence immediately; and,

(3) Unless otherwise notified by the Department, the representative outfall waiver again applies when:

(a) The results of two consecutive monitoring periods reported to the Department show that all outfalls have had no exceedances of benchmark monitoring cut-off concentrations for all parameters: and,

(b) The owner or operator submits a new Representative Outfall Waiver Form to the Department.

Part V - Corrective Actions

Failure to document and take the necessary corrective actions are violations of this permit. Continued exceedance of benchmark cut-off concentrations and/or numeric effluent limitations may identify facilities that would be more appropriately covered under an *individual SPDES permit*. If there is an exceedance of either a benchmark or numeric effluent limit at an outfall where a representative outfall waiver has been claimed, the waiver no longer applies and corrective actions must be performed on all outfalls covered by the waiver (Part IV.G.3.d).

If the comprehensive site compliance inspection required in Part IV.A indicates the presence of *stormwater* pollution (e.g., color, odor, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators), corrective actions in this part must be implemented.

A. For *Stormwater Discharges*

When the quarterly visual monitoring indicates the presence of pollution or when the benchmark or numeric effluent limitation monitoring sample results indicate exceedances of the *pollutants*, the *owner or operator* must:

1. Inspect the facility for potential sources of *stormwater* contamination.

2. Implement additional non-structural and/or structural BMPs to address any sources of contamination that are identified to prevent recurrence within the following timeframes:

   a. The implementation must be completed before the next anticipated storm event, if practicable, but not more than 12 weeks after discovery.

   b. If implementation will take longer than 12 weeks, the *owner or operator* must submit a proposed schedule for completion of the project and obtain a written approval from the *Regional Water Manager (Appendix E)*

3. Revise the facility's SWPPP in accordance with Part III.E; and,

4. Continue efforts to implement additional BMPs at the facility if corrective actions do not result in achieving satisfactory results of the quarterly visual monitoring, *benchmark monitoring cut-off concentrations* and/or numeric effluent limitations.

B. For Non-*Stormwater Discharges*

1. If a non-*stormwater discharge* is discovered the *owner or operator* must:

   a. Identify its source and determine whether it is an authorized *discharge*.
   (1) Upon determination that the *discharge* is not covered under this permit or another SPDES permit, the *owner or operator* must notify the Regional Water Manager (Appendix E), of the unauthorized *discharge* and begin

immediate actions to eliminate the *discharge*. These actions must be documented in the SWPPP.

(2) Upon determination that the *discharge* is an authorized non-*stormwater discharge* identified in Part I.B.2 that were not previously certified in accordance with Part III.A.7.f (1), the *owner or operator* must update the discharge certification and keep with the SWPPP.

C. Corrective Action Documentation

Owners or operators must document the existence of any of the conditions listed in Parts V.A or V.B within 24 hours of becoming aware of such condition. Unless required by Part VI.A.2.b or as requested by the Department, the corrective action documentation is not required to be submitted and should be kept with the facility's SWPPP. Include the following information in your documentation:

a. A description of the condition triggering the need for corrective actions. For any spills or leaks, include the following information: a description of the incident including material, date/time, amount, location, and reason for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to waters of the state, through stormwater or otherwise;

b. Date the condition was identified;

c. The date when each corrective action was initiated and completed (or is expected to be completed);

d. A description of the corrective actions to minimize or prevent the discharge of pollutants. For any spills or leaks, include response actions, the date/time clean-up completed, notifications made, and staff involved. Also include any control measures taken to prevent the reoccurrence of such releases (see Part II.A.4); and

e. A statement, signed and certified in accordance with Appendix G.8.

Part VI – Reporting and Retention of Records

A. Reporting to the *Department*

1. *Annual Certification Report (ACR)*

The ACR is a summary of all monitoring, inspections, corrective actions and facility information, identified in this permit, performed at the facility each calendar year. It is the primary mechanism for reporting compliance with permit conditions to the *Department*.

a. An *owner or operator* of a facility must submit an ACR, which is signed in accordance with Appendix G.8, to the *Department*.

b. The *owner or operator* must submit the ACR electronically using the *Department*'s online ACR, which is available on the *Department*'s website (http://www.dec.ny.gov/).

c. An owner or operator of a facilty must submit an ACR form in accordance with the deadlines below:

(1) For facilities with existing coverage, the ACR covers January 1 through December 31 and must be received by the Department on an annual basis by January 28 of the following calendar year except:

(a) For facilities whose initial permit coverage is effective prior to October 1 of a calendar year, the initial ACR will cover the effective coverage date to December 31. This initial ACR must be received by the Department by January 28 of the following calendar year. Subsequent ACRs must be submitted in accordance with Part VI.A.1.c.(1).

(b) For facilities whose initial permit coverage is effective after October 1 of a calendar year, the initial ACR will cover January 1 to December 31 of the following calendar year. This initial ACR must be received by the Department by January 28 of the next year. Subsequent ACRs must be submitted in accordance with Part VI.A.1.c.(1).

2. *Discharge Monitoring Report (DMR)*

a. Where Benchmark and/or Numeric Effluent Limitation monitoring requirements apply to the facilty, the owner or operator must electronically submit the results of the analysis using EPA's electronic DMR reporting system. All DMRs must be received by the Department 28 days after the end of the monitoring period. Monitoring periods can be found in Table IV.1.

(1) Using the Corrective Action/Non Compliance Event Form provided on the Department's webpage, the owner or operator must report the following information when there is an exceedance of a numeric effluent limitation or exceedance of a benchmark cutoff concentration of the impairing pollutant of concern, (POC) for discharges to impaired waterbodies:

(a) Description of the exceedance and its cause;

(b) Corrective actions taken to address the exceedance;

(c) Preventative corrective actions taken, including any SWPPP modifications, to prevent a future exceedance; and

(d) Corrective actions taken for all outfalls claiming the representative outfall waiver.

3. *Additional reporting*

a. In addition to filing the ACRs and DMRs with the Department, the owner or operator with at least one stormwater discharge associated with industrial activity through the MS4, must submit signed copies of ACRs and DMRs for those outfalls to the MS4 Operator upon request of the MS4 Operator.

b. Notification of any spill listed must be reported to the NYSDEC Spills hotline (1-800-457-7362) within two hours after discovery.

(1) Any spill of a hazardous substance must be reported in accordance with 6 NYCRR 597.4.

(2) Any spill of Petroleum must be reported in accordance with 6 NYCRR 613.6 or 17 NYCRR 32.3.

c. Additional notifications may be required for Federal level notification through the National Response Center (NRC) at 1-800-424-8802.

d. Where a release of Hazardous Substances or Petroleum enters an MS4, the owner or operator must also notify the owner of the MS4 within 2 hours after discovery.

B. Reporting Submission Deadlines

1. The owner or operator must complete all permit required submissions by the deadlines listed in the summary table below.

MSGP 0-23-001 Submission Deadlines

Submission	Deadline
Notice of Intent (NOI)	Submit once per 5-year permit term
Annual Certification Report (ACR)	Report must be received in the Department's Central Office no later than January 28 of the year following the reporting period.
Benchmark Monitoring	Results must be received in NetDMR no later than July 28 of the year following reporting Period 1 - January 1 to June 30.
	Results must be received in NetDMR no later than January 28 of the year following reporting Period 2 - July 1 to December 31.
Monitoring for Numeric Effluent Limitation	Results must be received in NetDMR no later than July 28 of the year following reporting Period 1 - January 1 to June 30.
	Results must be received in NetDMR no later than January 28 of the year following reporting Period 2 - July 1 to December 31.
Monitoring for Discharges to Impaired Waterbodies	Results must be received in NetDMR no later than 28 days following the end of the reporting period. Period 1 - January 1 to March 31 Period 2 - April 1 to June 30 Period 3 - July 1 to September 30 Period 4 - October 1 to December 31
Coal Pile Run-off	Results must be received in NetDMR no later than July 28 of the year following reporting Period 1 - January 1 to June 30.
	Results must be received in NetDMR no later than January 28 of the year following reporting Period 2 - July 1 to December 31.
Non-Compliance Event Form for Exceedances of Numeric effluent limitations	Results of the exceedance(s) and corrective action(s) taken must be reported on the Non-Compliance Event Form provided by the Department with the submission of the DMR which reports the exceedance. (Part VI.A.2.b)
Corrective Action Form for facilities that have an exceedance of a Benchmark cut-off concentration to an impaired waterbody	Results of the exceedance(s) and corrective action(s) taken must be reported on the Correcctive Action Form provided by the Department with the submission of the DMR which reports the exceedance. (Part VI.A.2.b)
Representative Outfall Waiver	There are two scenarios for submission of this form: 1. Submit form with the Notice of Intent; or 2. When an exceedance at a representative outfall occurs this waiver no longer applies and all outfalls must be sampled. After which, when two consecutive monitoring periods show no exceedances this waiver may be submitted to the Department;
Adverse Climatic Conditions Waiver	Submit with DMR
Inactive/Unstaffed Waiver	Submit with DMR

C. Retention of Records

All records required by this permit must be retained to meet the timeframes specified below:

1. Administrative Records

The *owner or operator* must retain a copy of the the SWPPP and NOT, for a period of at least five (5) years from the date that the *Department* receives a complete NOT submitted in accordance with Part I.E of this permit.

2. Monitoring Activities

The *owner or operator* must retain records of all monitoring information for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by written request of the *Department*, provided that the extension is necessary to implement the provisions of this Part or *ECL* and that the reason or reasons for the extension are provided in the request.

a. The monitoring information must include:
   (1) Records of all data used to complete the application for the permit; and
   (2) Copies of all reports required by this permit.

b. Data to include with the records of monitoring information:
   (1) The date, exact place, and time of sampling or measurements;
   (2) The individual(s) who performed the sampling or measurements;
   (3) The date(s) analyses were performed;
   (4) The individual(s) who performed the analyses;
   (5) The analytical techniques or methods used;
   (6) The results of such analyses; and
   (7) Quality assurance/quality control documentation.

c. When records are stored electronically, the records must be preserved in a manner that reasonably assures their integrity and are acceptable to the *Department*. Such records must also be in a format which is accessible to the *Department*.

d. The *owner or operator* must make available to the *Department* for inspection and copying or furnish to the *Department* within 25 business days of receipt of a *Department* request for such information, any information retained in accordance with Part VI.C.2.a and b.

Part VII – Sector Specific Permit Requirements

The *owner or operator* must comply with the additional requirements of Part VII that apply to the specific *industrial activity* located at the *owner or operator's* facility. These requirements are in addition to the general requirements specified in the previous sections of this permit. The industry specific requirements are broken down into sections referred to as industrial sectors A through AC.

If the facility has more than one *industrial activity* meeting the description(s) of more than one sector occurring on-site, those industrial activities are considered to be *co-located*. *Stormwater discharges* from *co-located industrial activities* are authorized by this permit, provided that the *owner or operator* complies with any and all of the requirements applicable to each *industrial activity* at the facility. The monitoring and SWPPP terms and conditions of this permit are additive for *industrial activities* being conducted at a facility.

Examples of common *co-located industrial activities* include, but are not limited to:

- Timber Products (Sector A) and vehicle maintenance (Sector P)
- Auto salvage (Sector M) and auto recycling (Sector N)
- Mineral mining (Sector J) and maintenance of vehicles and equipment (Sector P)
- Mineral mining (Sector J) and asphalt manufacturing (Sector D)
- Mineral mining (Sector J) and concrete manufacturing (Sector E)
- Transfer stations accepting recyclables (Sector N) and maintenance of vehicles used in local trucking without storage (Sector P)
- Manufacturers of food and kindred products (Sector U) and maintenance of vehicles used in local or long-distance trucking (Sector P)

Sector A – Timber Products

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities generally classified under SIC Major Group 24 that are engaged in the following activities:

- Cutting timber and pulpwood (those that have log storage or handling areas);
- Log sorting and log storage activities;
- Mills, including merchant, lath, shingle, cooperage stock, planing, plywood and veneer;
- Producing lumber and wood materials (including processing logs into woodchips);
- Wood preserving;
- Manufacturing wood buildings or mobile homes; and,
- Manufacturing finished articles made entirely of wood or related materials, except for wood kitchen cabinet manufacturers (SIC Code 2434), which are addressed under Sector W.

The requirements of this section do not apply to active timber harvesting sites including the felling, skidding, preparation, loading and the incidental stacking and temporary storage of harvested timber on the harvest site prior to its initial transport to intermediate storage areas or other processing areas. An active harvest site is "considered to be an area where harvesting operations are actually on-going. Processing, sorting, or storage areas are not exempt if the site was used to store timber that was harvested from other sites.

Special Conditions

Prohibition of Non-Stormwater discharges

Discharges of stormwater from areas where there may be contact with chemical formulations sprayed to provide surface protection are not authorized by this permit. These discharges must be covered under a separate SPDES permit.

Allowable Non-Stormwater Discharges

Discharges from the spray down of lumber and wood product (wet decking) storage yards where no chemical additives are used in the spray down waters and no chemicals are applied to the wood during storage provided that such components are identified in the SWPPP in accordance with Part III.A.7.f. Discharges from Wet Decking are subject to the Numeric Effluent Limitations in Table VII-A-1.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Processing areas;
- Treatment chemical storage areas;
- Treated wood and residue storage areas;

- Wet decking areas;
- Dry decking areas;
- Untreated wood and residue storage areas; and,
- Treatment equipment storage areas.

Summary of Potential Pollutant Sources

Where information is available, facilities that have used chlorophenolic, creosote, or chromium-copper-arsenic formulations for wood surface protection or wood preserving activities on-site in the past shall identify in the inventory the following:

- Areas where contaminated soils, treatment equipment, and stored materials still remain; and,
- The management practices employed to minimize the contact of these materials with stormwater runoff.

Additional Non-Numeric Effluent Limits

Good Housekeeping

Good housekeeping measures in storage areas, loading and unloading areas, and material handling areas shall be designed to:

- Limit the discharge of wood debris; and
- Minimize the leachate generated from decaying wood materials; and
- Minimize the generation of dust.

Erosion and Sediment Control Plan

The Stormwater Pollution Prevention Plan (SWPPP) shall include details of temporary and permanent structural and vegetative measures that will be used to control erosion and sedimentation from areas at the facility, including but not limited to log storage areas, haul roads and areas where vehicles are maintained.

The design, installation, inspection, maintenance and repair of erosion and sediment controls shall conform to the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

Inspections

Inspections at processing areas, transport areas, and treated wood storage areas of facilities performing wood surface protection and preservation activities shall be performed monthly to assess the usefulness of practices in minimizing the deposit of treatment chemicals on unprotected soils and in areas that will come in contact with stormwater discharges.

Numeric Effluent Limitations

The following limitations shall be met by existing and new facilities:

Wet deck storage area runoff - Non-stormwater discharges from areas used for the storage of logs where water, without chemical additives, is intentionally sprayed or deposited on logs to deter decay or infestation by insects are required to meet the following effluent limitations:

Table VII-A-1
Sector A – Numeric Effluent Limitations

Wet Decking Discharges at Log Storage and Handling Areas (SIC 2411) Subject to the Point Source Category Provisions of 40CFR Part 429 Subpart I.	
Parameter	**Effluent Limitations**
pH	6.0 – 9.0 s.u.
Debris (woody material such as bark, twigs, branches, heartwood, or sapwood)	No discharge of debris that will not pass through a 2.54 cm (1") diameter round opening.

Benchmarks

Timber product facilities are required to monitor their stormwater discharges for the pollutants of concern listed in the appropriate section of Table VII-A-2.

Table VII-A-2
Sector A – Benchmark Monitoring Requirements

Pollutants of Concern	Benchmark Monitoring Cutoff Concentration
General Sawmills and Planing Mills (SIC 2421)	
Chemical Oxygen Demand (COD)	120 mg/L
Total Suspended Solids (TSS)	100 mg/L
Total Nitrogen (TN) *	8 mg/L
Total Recoverable Zinc	110 ug/L
Wood Preserving Facilities (SIC 2491)	
Total Recoverable Arsenic	150 ug/L
Total Recoverable Chromium	1.8 mg/L
Total Recoverable Copper	12 ug/L
Log Storage and Handling Facilities (SIC 2411)	
Total Suspended Solids (TSS)	100 mg/L
Hardwood Dimension and Flooring Mills; Special Products Sawmills, not elsewhere classified; Millwork, Veneer, Plywood and Structural Wood; Wood Containers; Wood Buildings and Mobile Homes; Reconstituted Wood Products; and Wood Products Facilities not elsewhere classified (SIC Codes 2426, 2429, 2431-2439 (except 2434), 2441, 2448, 2449, 2451, 2452, 2493, and 2499).	
Chemical Oxygen Demand (COD)	120 mg/L
Total Suspended Solids (TSS)	100 mg/L

* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen.

Sector B – Paper and Allied Products Manufacturing

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities classified as paper and allied products manufacturing under SIC Major Group 26 that are engaged in the following activities:

- Manufacture of pulps from wood and other cellulose fibers and from rags;
- Manufacture of paper and paperboard into converted products, such as paper coated off the paper machine, paper bags, paper boxes and envelopes; and,
- Manufacture of bags of plastic film and sheet.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Paperboard mills are required to monitor their stormwater discharges for the pollutants of concern listed in Table VII-B-1.

Table VII-B-1.
Sector B - Benchmark Monitoring Requirements

Pollutants of Concern	Benchmark Monitoring Cutoff Concentration
Paperboard Mills (SIC 2631)	
Chemical Oxygen Demand (COD)	120 mg/L

Sector C – Chemical and Allied Products

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities engaged in manufacturing the following products and generally described by the SIC code shown:

- Basic industrial inorganic chemicals (including SIC Code 281);
- Plastic materials and synthetic resins, synthetic rubbers, and cellulosic and other manmade fibers, except glass (including SIC Code 282);
- Medicinal chemicals and pharmaceutical products, including the grading, grinding and milling of botanicals (including SIC Code 283);
- Soap and other detergents, including facilities producing glycerin from vegetable and animal fats and oils; specialty cleaning, polishing, and sanitation preparations; surface active preparations used as emulsifiers, wetting agents, and finishing agents, including sulfonated oils; and perfumes, cosmetics, and other toilet preparations (including SIC Code 284);
- Paints (in paste and ready-mixed form); varnishes; lacquers; enamels and shellac; putties, wood fillers, and sealers; paint and varnish removers; paint brush cleaners; and allied paint products (including SIC Code 285);
- Industrial organic chemicals (including SIC Code 286);
- Nitrogen and phosphorous based fertilizers, mixed fertilizer, pesticides, and other agricultural chemicals (including SIC Code 287);
- Industrial and household adhesives, glues, caulking compounds, sealants, and linoleum, tile, and rubber cements from vegetable, animal, or synthetic plastics materials; explosives; printing ink, including gravure ink, screen process and lithographic inks ; miscellaneous chemical preparations, such as fatty acids, essential oils, gelatin (except vegetable), sizes, bluing, laundry sours, and writing and stamp pad ink; industrial compounds, such as boiler and heat insulating compounds; and chemical supplies for foundries (including SIC Code 289); and
- Ink and paints, including china painting enamels, India ink, drawing ink, platinum paints for burnt wood or leather work, paints for china painting, artists' paints and artists' water colors (SIC Code 3952, limited to those listed; for others in SIC Code 3952 not listed above, see Sector Y).
- Petroleum refineries listed under SIC Code 2911. Contaminated stormwater discharges from petroleum refining or drilling operations that are subject to

nationally established BAT or BPT guidelines found at 40 CFR Part 419 are not authorized by this permit.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general prohibition of non-stormwater discharges in Part I.B.2, the following discharges not covered by this permit include, but are not limited to:

- Inks, paints, or substances (hazardous, nonhazardous, etc.) resulting from an on-site spill, including materials collected in drip pans;
- Washwaters from material handling and processing areas; or
- Washwaters from drum, tank, or container rinsing and cleaning.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Processing and storage areas;
- Access roads, rail cars and tracks;
- Areas where substances are transferred in bulk; and,
- Operating machinery

Summary of Potential Pollutant Sources

A description of the following sources and activities that have potential pollutants associated with them:

- Loading, unloading and transfer of chemicals;
- Outdoor storage of salt, pallets, coal, drums, containers, fuels, fueling stations;
- Vehicle and equipment maintenance/cleaning areas;
- Areas where the treatment, storage or disposal (on-site or off-site) of waste/wastewater occur;
- Storage tanks and other containers;
- Processing and storage areas;
- Access roads, rail cars and tracks;
- Areas where the transfer of substances in bulk occurs; and,
- Areas where machinery operates.

Additional Non-Numeric Effluent Limits

Good Housekeeping

At a minimum, the SWPPP shall include:

- A schedule for regular pickup and disposal of garbage and waste materials, or adopt other appropriate measures to reduce the potential for the discharge of stormwater that has come into contact with garbage or waste materials; and
- Routine inspections of the condition of drums, tanks and containers for potential leaks

- Plastic Materials Requirements: Facilities that handle pre-production plastic must implement best management practices to eliminate discharges of plastic in stormwater. Examples of plastic material required to be addressed as stormwater pollutants include plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling.

Numeric Effluent Limitations

The following effluent limitations shall be met by existing and new discharges with phosphate fertilizer manufacturing runoff. The provisions of this paragraph are applicable to stormwater discharges from the phosphate subcategory of the fertilizer manufacturing point source category (40 CFR 418.10, Subpart A). The term contaminated stormwater runoff shall mean precipitation runoff, that during manufacturing or processing, comes into contact with any raw materials, intermediate product, finished product, by-products or waste product.

The concentration of pollutants in stormwater discharges shall not exceed the effluent limitations in Table VII-C-1.

Table VII-C-1
Sector C - Numeric Effluent Limitation

Parameter	Effluent Limitations	
	Daily Maximum	*30-day Average*
Phosphate Subcategory of the Fertilizer Manufacturing Point Source Category (40 CFR 418.10) - applies to precipitation runoff that, during manufacturing or processing, comes into contact with any raw materials, intermediate product, finished product, by-products or waste product (SIC 2874)		
Total Phosphorus (as P)	105 mg/L	35 mg/L
Fluoride	75 mg/L	25 mg/L

Benchmarks

Agricultural chemical manufacturing facilities; industrial inorganic chemical facilities; soaps, detergents, cosmetics, and perfume manufacturing facilities; and plastics, synthetics, and resin manufacturing facilities are required to monitor their stormwater discharges for the pollutants of concern listed in Table VII-C-2 below.

Table VII-C-2
Sector C - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cutoff Concentration
Agricultural Chemicals (SIC 2873-2879)	
Total Nitrogen (TN)	6 mg/L
Total Recoverable Iron	1 mg/L
Total Recoverable Lead	69 ug/L
Total Recoverable Zinc	110 ug/L
Total Phosphorus	2 mg/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen.	

Table VII-C-2 (Continued)
Sector C - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cutoff Concentration
Industrial Inorganic Chemicals (SIC 2812-2819)	
Total Recoverable Aluminum	750 ug/L
Total Recoverable Iron	1 mg/L
Industrial Inorganic Chemicals (SIC 2812-2819) (Continued)	
Total Nitrogen (TN)	6 mg/L
Soaps, Detergents, Cosmetics, and Perfumes (SIC 2841-2844)	
Total Nitrogen (TN)	6 mg/L
Total Recoverable Zinc	110 ug/L
Plastics, Synthetics, and Resins (SIC 2821-2824)	
Total Recoverable Zinc	110 ug/L
Petroleum Refineries (SIC 2911)	
Oil and Grease	100 mg/L
Benzene	50 ug/L
Ethylbenzene	50 ug/L
Toluene	50 ug/L
Xylene	50 ug/L
Total Recoverable Lead	69 ug/L
Total Recoverable Zinc	110 ug/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen.	

Sector D – Asphalt Paving & Roofing Materials & Lubricant Manufacturers

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities engaged in the following activities: manufacturing asphalt paving and roofing materials, including those facilities commonly identified by SIC Codes 2951 and 2952; portable asphalt plants (also commonly identified by SIC Code 2951); and manufacturing miscellaneous products of petroleum and coal, including those facilities classified as SIC Code 2992 and 2999. This section applies to mobile asphalt plants.

Special Conditions

Limitations on Coverage

The following stormwater discharges associated with industrial activity are not authorized by this section of the permit:

- Stormwater discharges from petroleum refining facilities, including those that manufacture asphalt or asphalt products that are classified as SIC Code 2911 (See Sector C);
- Stormwater discharges from oil recycling facilities; and
- Stormwater discharges associated with fats and oils rendering.
- Stormwater discharges mixed with asphalt release agents.

Prohibition of Non-Stormwater discharges

In addition to the general prohibitions of non-stormwater discharges in Part I.B.2, the discharges not covered by this permit include but are not limited to:

- Contact & Noncontact cooling water
- Floor and equipment wash water
- Wastewater from vehicle and internal vehicle wash-out
- Cooling tower and boiler blow downs
- Vehicle and equipment maintenance fluids.

These discharges must be covered under a separate SPDES permit

SWPPP Requirements in Addition to Part III

Site Map

Identify where asphalt release agents are stored, used, recycled and disposed

Additional Non-Numeric Effluent Limits

Inspections

The SWPPP shall provide for monthly routine facility inspections as part of the maintenance program at:

- Material storage and handling areas;
- Liquid storage tanks, hoppers or silos;
- Vehicle and equipment maintenance, cleaning, and fueling areas;
- Material handling vehicles;

- Spray racks; and,
- Equipment and processing areas

Non-Structural BMPs

The SWPPP shall include:

- Procedures to minimize the exposure of raw and waste materials to surface runoff and precipitation. If possible, store the equivalent one day's volume of materials indoors
- Procedures to minimize the potential of any outdoor storage of fluids/drums/totes from coming in contact with precipitation/runoff. Fluid containers with valves must be maintained in a closed and locked position
- A schedule of regular inspections of equipment for leaks, spills, malfunctioning, worn or corroded parts or equipment;
- A preventive maintenance program for manufacturing equipment;
- Provisions for drip pans or equivalent measures to be placed under any leaking piece of stationary equipment until the leak is repaired. The drip pans shall be inspected for leaks and potential overflow and all liquids properly disposed of in accordance with local, State, and federal requirements.

Structural BMPs

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Provide an impermeable pad under asphalt spray and vehicle wash racks, with sump to collected excess runoff
- Containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading installed where appropriate to minimize contact of stormwater runoff with outdoor processing equipment or stored materials;
- Diversion of runoff away from manufacturing areas, storage areas and asphalt spray racks via dikes, berms, containment trenches, culverts and surface grading;
- Installation of a sump/pump with each containment pit, and discharge collected fluids to a sanitary sewer system or collect for proper disposal

Numeric Effluent Limitations

Table VII-D-1
Sector D - Numeric Effluent Limitation

Parameter	Effluent Limitations	
	Daily Maximum	*30-day Average*
Discharges from areas where production of asphalt paving and roofing emulsions occurs (SIC 2951, 2952) Subject to the Point Source Category Provisions of 40 CFR Part 443 Subpart A.		
Total Suspended Solids (TSS)	23 mg/L	15 mg/L
Oil & Grease	15 mg/L	10 mg/L
pH	6.0 to 9.0 SU	

Benchmarks

Table VII-D-2
Sector D - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Asphalt Paving and Roofing Materials (SIC 2951, 2952)	
Total Suspended Solids (TSS)	100 mg/L

Sector E – Glass, Clay, Cement, Concrete and Gypsum Products

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities generally classified under SIC Major Group 32 that are engaged in either manufacturing the following products or performing the following activities:

- Flat, pressed, or blown glass or glass containers;
- Hydraulic cement;
- Clay products including tile and brick;
- Pottery and porcelain electrical supplies;
- Concrete products;
- Gypsum products;
- Non-clay refractories;
- Minerals and earths , ground or otherwise treated;
- Lime manufacturing;
- Cut stone and stone products;
- Asbestos products; and,
- Mineral wool and mineral wool insulation products.

Special Conditions

Prohibition of Non-Stormwater discharges

Facilities engaged in production of ready-mix concrete, concrete block, brick or similar products shall include in the certification a description of measures that ensure that process wastewater that results from washing of trucks, mixers, transport buckets, forms or other equipment are discharged in accordance with a separate SPDES permit or are recycled.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations of the following, if applicable:

- Bag house or other dust control device;
- Recycle/sedimentation pond, clarifier or other device used for the treatment of process wastewater and the areas that drain to the treatment device.

Additional Non-Numeric Effluent Limits

Good Housekeeping

Facilities shall prevent or minimize the discharge of:

- Spilled cement;
- Aggregate (including sand or gravel);
- Kiln dust;
- Fly ash;
- Settled dust; and
- Other significant materials in stormwater from paved portions of the site that are exposed to stormwater.

Measures used to minimize the presence of these materials may include regular sweeping, or other equivalent measures.

The SWPPP shall indicate the frequency of sweeping or equivalent measures. The frequency shall be determined based upon consideration of the amount of industrial activity occurring in the area and frequency of precipitation, but shall not be less than once per week if cement, aggregate, kiln dust; fly ash, or settled dust are being handled or processed.

Facilities shall prevent the exposure of fine granular solids (such as cement, kiln dust, etc.) to stormwater. Where practicable, these materials shall be stored in enclosed silos or hoppers, buildings, or under other covering.

Inspections

The inspection shall take place while the facility is in operation and shall include all of the following areas that are exposed to stormwater:

- Material handling areas
- Aboveground storage tanks
- Hoppers or silos,
- Dust collection/containment systems
- Truck wash down/equipment cleaning areas

Numeric Effluent Limitations

The following limitations shall be met by existing and new facilities: Cement manufacturing facility, material storage runoff, including hydraulic cement product manufacturers (SIC 3241). Any discharge composed of runoff that derives from the storage of materials including raw materials, intermediate products, finished products, and waste materials that are used in or derived from the manufacture of cement shall not exceed the limitations in Table VII-E-1.

Runoff from the storage piles shall not be diluted with other stormwater runoff or flows to meet these limitations.

Any untreated overflow from facilities designed, constructed and operated to treat the volume of material storage pile runoff that is associated with a 10-year, 24-hour rainfall event shall not be subject to the TSS or pH limitations.

Facilities subject to these numeric effluent limitations must be in compliance with these limits upon commencement of coverage and for the entire term of this permit.

Table VII-E-1 Sector E - Numeric Effluent Limitation		
Parameter	**Effluent Limitations**	
	Daily Maximum	***30-day Average***
Cement Manufacturing Facility, Material Storage Runoff: Any discharge composed of runoff that derives from the storage of materials including raw materials, intermediate products, finished products, and waste materials that are used in or derived from the manufacture of cement. Subject to the Point Source Category Provisions of 40 CFR Part 411 Subpart C.		
Total Suspended Solids (TSS)	50 mg/L	NA
pH	6.0 to 9.0 SU	

Benchmarks

Clay product manufacturers (SIC 3245-3259, SIC 3261-3269) and concrete and gypsum product manufacturers (SIC 3271-3275) are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-E-2.

Table VII-E-2 Sector E - Benchmark Monitoring Requirement	
Pollutants of Concern	**Benchmark Monitoring Cut-off Concentration**
Clay Product Manufacturers (SIC 3245-3259, 3261-3269)	
Total Recoverable Aluminum	750 ug/L
Concrete and Gypsum Product Manufacturers (SIC 3271-3275)	
Total Suspended Solids (TSS)	100 mg/L
pH	6.0 to 9.0 su
Total Recoverable Iron	1 mg/L

Sector F – Primary Metals

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from the following types of facilities in the primary metal industry, and generally described by the SIC code shown:

- Steel works, blast furnaces, and rolling and finishing mills, including: steel wire drawing and steel nails and spikes; cold-rolled steel sheet, strip, and bars; and steel pipes and tubes (SIC Code 331);
- Iron and steel foundries, including: gray and ductile iron, malleable iron, steel investment, and steel foundries not elsewhere classified (SIC Code 332);
- Primary smelting and refining of nonferrous metals, including: primary smelting and refining of copper, and primary production of aluminum (SIC Code 333);
- Secondary smelting and refining of nonferrous metals (SIC Code 334);
- Rolling, drawing, and extruding of nonferrous metals, including: rolling, drawing, and extruding of copper; rolling, drawing and extruding of nonferrous metals except copper and aluminum; and drawing and insulating of nonferrous wire (SIC Code 335);
- Nonferrous foundries (castings), including: aluminum die-castings, nonferrous die-castings, except aluminum, aluminum foundries, copper foundries, and nonferrous foundries, except copper and aluminum (SIC Code 336); and
- Miscellaneous primary metal products, not elsewhere classified, including: metal heat treating, and primary metal products, not elsewhere classified (SIC Code 339).

Activities covered include, but are not limited to, stormwater discharges associated with coking operations, sintering plants, blast furnaces, smelting operations, rolling mills, casting operations, heat treating, extruding, drawing, or forging of all types of ferrous and nonferrous metals, scrap, and ore.

Special Conditions

No Exposure of Copper Sources

If the facility discharges to a Copper Impaired waterbody, the owner or operator shall prevent the exposure of copper sources and copper containing materials or processes to *stormwater*. These materials shall be protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following activities may be exposed to precipitation/surface runoff:

- Storage or disposal of wastes such as spent solvents/baths, sand, slag/dross;
- Liquid storage tanks/drums;
- Processing areas including pollution control equipment (e.g., baghouses);
- Storage areas of raw materials such as coal, coke, scrap, sand, fluxes, refractories, or metal in any form.

Indicate sources where an accumulation of significant amounts of particulate matter could occur from such sources as:

- Furnace or oven emissions
- Losses from coal/coke handling operations, etc. which could result in a discharge of pollutants to surface waters

Summary of Potential Pollutant Sources

The inventory of materials handled at the site that potentially may be exposed to precipitation/runoff shall include areas where deposition of particulate matter from process air emissions or losses during material handling activities are possible.

Additional Non-Numeric Effluent Limits

Good Housekeeping

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Establishment of a cleaning/maintenance program for all impervious areas of the facility where particulate matter, dust, or debris may accumulate, especially areas where material loading/unloading, storage, handling, and processing occur.
- Paving of areas where vehicle traffic or material storage occurs, but where vegetative or other stabilization methods are not practicable. Sweeping programs shall be instituted in these areas as well.
- Use of stormwater management devices such as sediment traps, vegetative buffer strips, filter fabric fence, sediment filtering boom, gravel outlet protection, or other equivalent measures, that effectively trap or remove sediment for unstabilized areas of the facility where sweeping is not practical.

Inspections

Inspections shall be conducted at least quarterly, and shall address all potential sources of pollutants, including (if applicable):

- Air pollution control equipment (e.g., baghouses, electrostatic precipitators, scrubbers, and cyclones) shall be inspected for any signs of degradation (e.g., leaks, corrosion, or improper operation) that could limit their efficiency and lead to excessive emissions. The owner or operator shall consider monitoring air flow at inlets/outlets, or equivalent measures, to check for leaks (e.g., particulate deposition) or blockage in ducts;

- All process or material handling equipment (e.g., conveyors, cranes, and vehicles) shall be inspected for leaks, drips, or the potential loss of materials; and
- Material storage areas (e.g., piles, bins or hoppers for storing coke, coal, scrap, or slag, as well as chemicals stored in tanks/drums) shall be examined for signs of material losses due to wind or stormwater runoff.

BMPs for Outside Storage Areas

BMPs for outside material storage such as foundry returns, scrap metal, turnings, fines, ingots, bars, pigs, wire, where practicable:

- Confine storage to designated and labeled areas outside of drainage pathways and away from surface waters.
- Provide temporary cover (e.g., tarps) for the storage area.
- Minimize material storage through effective inventory and shipping controls.
- Minimize run-on from adjacent properties with diversion dikes, berms, curbing, surface grading or other equivalent measures.
- Stabilize areas with exposed soil with diversion dikes, berms, curbing, concrete pads, etc.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Primary metals facilities are required to monitor their stormwater discharges for the pollutants of concern listed in Table VII-F-1 below.

Table VII-F-2 *Sector F - Benchmark Monitoring Requirement*	
Pollutants of Concern	**Benchmark Monitoring Cut-off Concentration**
Steel Works, Blast Furnaces, and Rolling and Finishing Mills (SIC 3312-3317)	
Total Recoverable Aluminum	750 ug/L
Total Recoverable Zinc	110 ug/L
Iron and Steel Foundries (SIC 3321-3325)	
Total Recoverable Aluminum	750 ug/L
Total Suspended Solids (TSS)	100 mg/L
Total Recoverable Copper	12 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Zinc	110 ug/L
Rolling, Drawing, and Extruding of Nonferrous Metals (SIC 3351-3357)	
Total Recoverable Copper	12 ug/L
Total Recoverable Zinc	110 ug/L
Nonferrous Foundries (SIC 3363-3369)	
Total Recoverable Copper	12 ug/L
Total Recoverable Zinc	110 ug/L

Sector G – Metal Mining (Ore Mining & Dressing)

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from active, temporarily inactive and inactive metal mining and ore dressing facilities including mines abandoned on federal lands, as classified under SIC Major Group 10. Coverage is required for facilities that discharge stormwater that has come into contact with, or is contaminated by, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation. SIC Major Group 10 includes establishments primarily engaged in mining of ores, developing mines, or exploring for metallic minerals (ores) and also includes ore dressing and beneficiating operations, whether performed at co-located, dedicated mills or at separate mills, such as custom mills. For the purposes of this section, the term "metal mining" includes any of the separate activities listed above. Covered discharges include:

- All stormwater discharges from inactive metal mining facilities; and
- Stormwater discharges from the following areas of active and temporarily inactive metal mining facilities:
  - waste rock/overburden piles if composed entirely of stormwater and not combining with mine drainage;
  - topsoil piles;
  - off-site haul/access roads;
  - on-site haul/access roads constructed of waste rock/overburden if composed entirely of stormwater and not combining with mine drainage;
  - on-site haul/access roads not constructed of waste rock/overburden/spent ore except if mine drainage is used for dust control;
  - runoff from tailings dams/dikes when not constructed of waste rock/tailings and no process fluids are present;
  - runoff from tailings dams/dikes when constructed of waste rock/tailings and no process fluids are present if composed entirely of stormwater and not combining with mine drainage;
  - concentration building if no contact with material piles;
  - mill site if no contact with material piles; office/administrative building and housing if mixed with stormwater from industrial area;
  - chemical storage area;
  - docking facility if no excessive contact with waste product that would otherwise constitute mine drainage;
  - explosive storage;
  - fuel storage;
  - vehicle/equipment maintenance area/building;
  - parking areas (if necessary);
  - power plant;
  - truck wash areas if no excessive contact with waste product that would otherwise constitute mine drainage;
  - un-reclaimed, disturbed areas outside of active mining area;
  - reclaimed areas released from reclamation bonds prior to December 17, 1990; and
  - partially/inadequately reclaimed areas or areas not released from reclamation bonds.

Special Conditions

Limitations on Coverage

Stormwater discharges from active metal mining facilities that are subject to the effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440) are not authorized by this permit.

Note: Discharges that come in contact with overburden/waste rock are subject to 40 CFR Part 440, providing: the discharges drain to a point source (either naturally or as a result of intentional diversion), and they combine with mine drainage that is otherwise regulated under 40 CFR Part 440.

Discharges from overburden/waste rock can be covered under this permit if they are composed entirely of stormwater and do not combine with sources of mine drainage that are subject to 40 CFR Part 440 and meet other eligibility criteria in Part I.B

Prohibition of Non-Stormwater discharges

In addition to the general prohibition of non-stormwater discharges in Part I.B.2, the following discharges not covered by this permit include, but are not limited to: adit drainage or contaminated springs or seeps.

Certification of discharge testing - The owner or operator must test or evaluate for the presence of specific mining-related, non-stormwater discharges such as seeps or adit discharges or discharges subject to effluent limitations guidelines, such as mine drainage or process water. Alternatively (if applicable), the owner or operator may certify in the SWPPP that a particular discharge comprised of commingled stormwater and non-stormwater is covered under a separate SPDES permit; and that permit subjects the non-stormwater portion to effluent limitations prior to any commingling. This certification shall identify the non-stormwater discharges, the applicable SPDES permit(s), the effluent limitations placed on the non-stormwater discharge by the permit(s), and the points at which the limitations are applied.

Definitions

The following definitions are only for this section of the general permit:

- "*Active metal mining facility*" means a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted. For surface mines, this definition does not include any land where grading has returned the earth to a desired contour and reclamation has begun.
- "*Active phase*" means activities including each step from extraction through production of a salable product.
- "*Exploration and construction phase*" entails exploration and land disturbance activities to determine the financial viability of a site. Construction includes the building of site access roads and removal of overburden and waste rock to expose mineable minerals.
- "*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 permanent landscape mulches, riprap, or washed/crushed stone) have been employed on all unpaved areas and areas not covered by permanent structures.

- "*Inactive metal mining facility*" means a site or portion of a site where metal mining and/or milling occurred in the past but is not an active facility as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable (federal or *State*) governmental agency.
- "*Mining operation*" typically consists of three phases, any one of which individually qualifies as a "mining activity." The phases are the exploration and construction phase, the active phase, and the reclamation phase.
- "*Reclamation phase*" means activities undertaken, in compliance with applicable mined land reclamation requirements, following the cessation of the *Active Phase*, intended to return the land to an appropriate post-mining land use in order to meet applicable Federal and *State* reclamation requirements.
- "*Temporarily inactive metal mining facility*" means a site or portion of a site where metal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable (federal or *State*) government agency.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations of the following, as appropriate:

- mining/milling site boundaries;
- access and haul roads;
- an outline of the drainage areas of each stormwater *outfall* within the facility, and an indication of the types of discharges from the drainage areas;
- equipment storage, fueling and maintenance areas;
- materials handling areas;
- outdoor manufacturing, storage or material disposal areas; storage areas for chemicals and explosives;
- areas used for storage of overburden, materials, soils or wastes;
- location of mine drainage (where water leaves mine) or any other process water;
- tailings piles/ponds, both proposed and existing;
- heap leach pads;
- points of discharge from the property for mine drainage/process water;
- surface waters; and
- boundary of tributary areas that are subject to *effluent limitations* guidelines

Summary of Potential Pollutant Sources

For each area of the mine/mill site where stormwater discharges associated with industrial activities occur, the types of *pollutants* likely to be present in significant amounts must be identified (e.g., heavy metals, sediment). The following factors must be considered: the mineralogy of the ore and waste rock (e.g., acid forming); toxicity and quantity of chemicals used, produced or discharged; the likelihood, if

any, of contact with stormwater; vegetation of site; history of reportable leaks/spills of toxic or hazardous *pollutants*. A summary of any existing ore or waste rock/overburden characterization data and test results for potential generation of acid rock shall also be included. If the ore or waste rock/overburden characterization data are updated due to a change in the ore type being mined, the SWPPP shall be updated with the new data.

General Site Description

Active and Temporarily Inactive Mines

A description of the mining and associated activities taking place at the site that can potentially affect stormwater discharges covered by this permit. The description shall include:

- Total acreage within the mine site;
- Estimate of the number of acres of disturbed land;
- Estimate of the total amount of land proposed to be disturbed throughout the life of the mine; and
- General description of the location of the site relative to major transportation routes and communities.

Inactive Mines

The SWPPP shall briefly describe the mining and associated activities that took place at the site that can potentially affect the stormwater discharges covered by this permit. The following must be included:

- Approximate dates of operation;
- Total acreage within the mine and/or processing site;
- Estimate of acres of disturbed earth;
- Activities currently occurring on-site (e.g., reclamation);
- General description of site location with respect to transportation routes and communities.

Additional Non-Numeric Effluent Limits

Best Management Practices

Each of the following *BMPs* shall be considered and documented in the SWPPP. The potential *pollutants* identified for the type of mining activity (above) shall determine the priority and appropriateness of the *BMPs* selected. If it is determined that one or more of these *BMPs* are not appropriate for the facility, the plan must explain why it is not appropriate. If *BMPs* are implemented or planned but are not listed here (e.g., substituting a less toxic chemical for a more toxic one), descriptions of them must be included in the SWPPP.

The design, installation, maintenance and repair of erosion and sediment controls shall conform to the most current version of the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

- **Diversion of flow away from areas susceptible to erosion and potential *pollutant* sources**: A description of how and where stormwater will be diverted

away from potential *pollutant* sources to prevent stormwater contamination and/or erosion. *BMP* options may include the following: interceptor dikes and swales; diversion dikes, curbs and berms; pipe slope drains; subsurface drains; drainage/stormwater conveyance systems (channels or gutters, open top box culverts and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or equivalent measures.

- **Methods to control runoff** (such as check dams; rock outlet protection; level spreaders; grass swales; pipe slope drains; earth dikes; gradient terraces) The potential *pollutant* sources for the type of mine (above) must be considered when determining reasonable and appropriate measures for managing runoff

- **Stabilization methods to prevent or *minimize* contact with *pollutants* and/or erosion** (such as entrance stabilization; temporary or permanent seeding; Vegetative buffer strips; Protection of trees; Topsoiling; Soil Conditioning; Contouring; Mulching; Geotextiles (matting, netting, or blankets); Riprap; Gabions; Retaining walls; Capping (where capping of a potential stormwater pollution source is necessary, the source being capped and materials and procedures used to cap the contaminant source must be identified)

- **Structural methods for controlling sediment** (such as silt fences; gravel or stone filter berms; brush barriers; sediment traps; other controls such as waterway crossings or wind breaks; or other equivalent measures).

- **Treatment** - If treatment of a stormwater discharge is necessary to protect water quality, include a description of the type and location of stormwater treatment that will be used. Stormwater treatments include the following: chemical or physical systems; oil/water separators; artificial wetlands; etc

Employee Training

Employee training shall be conducted at least annually at active mining and temporarily inactive sites.

Erosion and Sediment Control Plan

A comprehensive Stormwater Pollution Prevention Plan (SWPPP) addressing the storm water run-on and run-off control systems needed during the mines construction, operation and reclamation phases must be prepared prior to the *commencement of any construction activity* that will result in a land disturbance of one or more acres of land. The plan must be prepared in accordance to the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

Stormwater discharges from earth-disturbing activities conducted during the *Exploration and Construction Phase* prior to active mining activities are covered under this permit. For such earth-disturbing activities, you must comply with all applicable requirements in Parts I – VII of the MSGP except for the technology-

based effluent limits in Part VII.G and Part II.A, the inspection requirements in Part VII.G and Part IV, and the monitoring requirements in Part VII.G and Part IV.

Once the *Exploration and Construction phase* are completed you must comply with "all applicable parts of the permit"

Inspections

Active mining sites must be inspected at least monthly.

Temporarily Inactive sites must be inspected at least quarterly unless adverse weather conditions make the site inaccessible.

Inactive Mines Annual site compliance evaluations may be impractical for inactive mining sites due to remote location/inaccessibility of the site, in which case the *owner or operator* must conduct the evaluation at least once every three years. The SWPPP must be documented to explain why annual compliance evaluations are not possible. If the evaluations will be conducted more often than every three years, the frequency of evaluations must be specified.

Numeric Effluent Limitations

The following *effluent limitations* shall be met by existing and new discharges from active, temporarily inactive and inactive metal mining and ore dressing facilities including mines abandoned on federal lands, as classified under SIC Major Group 10.

Table VII-G-1
Sector G – Numeric Effluent Limitations

Parameter	Effluent Limitations	
	Daily Maximum	*30-day Average*
Total Mercury	50 ng/L*	
*Mercury Analysis shall be by EPA Method 1631		

Table VII–G-2
Additional Monitoring Requirements for Discharges from Waste Rock and Overburden Piles From Active Ore Mining or Dressing Facilities

Type of Ore Mined	Pollutants of Concern		
	TSS (mg/l)	pH (SU)	Metals, Total Recoverable
Iron Ore	X	X	Iron, Dissolved
Titanium Ore	X	X	Iron, Nickel (H), Zinc (H)
Copper, Lead, Zinc, Gold, Silver and Molybdenum	X	X	Arsenic, Cadmium (H), Copper (H), Lead (H), Mercury, Zinc (H).
(H) indicates that hardness must also be measured when this *pollutant* is measured. The above monitoring must be compared to *benchmark monitoring cut-off concentrations* in Table VII-G-3			

Benchmarks

Discharges from waste rock and overburden piles at active ore mining and dressing facilities Active ore mining and dressing facilities with discharges from waste rock and overburden piles must perform analytic monitoring for the parameters listed in Table VII-G-3.

Facilities must also monitor for the parameters listed in Table VII-G-2. However, the *Department* may notify the facility that additional monitoring must be performed to accurately characterize the quality and quantity of *pollutants* discharged from the waste rock/overburden piles. Monitoring requirements for discharges from waste rock and overburden piles are not eligible for the waiver in Part IV.B.4.b.

Table VII-G-3
Sector G - Benchmark Monitoring Requirements

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Discharges From Waste Rock and Overburden Piles from Active Ore Mining or Dressing Facilities Iron Ores; Copper Ores; Lead and Zinc Ores; Gold and Silver Ores; Ferroalloy Ores Except Vanadium; Miscellaneous Metal Ores (SIC Codes 1011, 1021, 1031, 1041, 1044, 1061, 1081, 1094, 1099)	
Total Suspended Solids (TSS)	100 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Turbidity (NTUs)	50 NTUs
pH	6.0 – 9.0 SU
Hardness (as CaCO3)	No Benchmark Value
Total Recoverable Antimony	636 ug/L
Total Recoverable Arsenic	150 ug/L
Total Recoverable Beryllium	130 ug/L
Total Recoverable Cadmium	1.8 ug/L
Total Recoverable Copper	12 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Lead	69 ug/L
Total Recoverable Manganese	1.0 mg/L
Total Recoverable Nickel	0.42 mg/L
Total Recoverable Selenium	5 ug/L
Total Recoverable Silver	3.0 ug/L
Total Recoverable Zinc	110 ug/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen	

Table VII-G-4
Applicability of the Multi-Sector General Permit to Stormwater Runoff From Active Mining and Dressing Sites, Temporarily Inactive Sites, and Sites Undergoing Reclamation

Discharge/Source of Discharge	Note/Comment
Storage Piles	
Waste rock/overburden Storage Piles	Applicable if composed entirely of stormwater and not combining with mine drainage. See note below
Topsoil Storage Piles	Applicable
Roads constructed of waste rock or spent ore	
Onsite haul roads	Applicable if composed entirely of stormwater and not combining with mine drainage. See note below
Off Site haul and access roads	Applicable
Roads not constructed of waste rock or spent ore	
Onsite haul roads	Applicable except if mine drainage is used for dust control
Off Site haul and access roads	Applicable
Milling & Concentrating	
Runoff from tailings dams and dikes when constructed of waste rock/tailings	Applicable except if process fluids are present and only if composed entirely of stormwater and not combining with mine drainage. See Note below
Runoff from tailings dams/dikes when not constructed of waste rock and tailings	Except if process fluids are present
Concentration building	If stormwater only and no contact with piles
Mill Site	If stormwater only and no contact with piles
Ancillary Areas	
Office and administrative building and housing	If mixed with stormwater from the industrial area
Chemical Storage Areas	Applicable
Docking facility	Except if excessive contact with waste product that would otherwise constitute mine drainage
Explosive storage	Applicable
Fuel storage (oil tanks/coal piles)	Applicable
Vehicle and equipment maintenance area/building	Applicable
Parking areas	But coverage unnecessary if only employee and visitor-type parking
Power Plant - Truck wash area	Except when excessive contact with waste product that would otherwise constitute mine drainage

Table VII-G-4 (Continued)
Applicability of the Multi-Sector General Permit to Stormwater Runoff From Active Mining and Dressing Sites, Temporarily Inactive Sites, and Sites Undergoing Reclamation

Discharge/Source of Discharge	Note/Comment
Reclamation-related areas	
Any disturbed area (unreclaimed)	Only if not in active mining area
Reclaimed areas released from reclamation bonds prior to Dec. 17, 1990	Applicable
Partially/inadequately reclaimed areas or areas not released from reclamation bond	Applicable

Note: Stormwater runoff from these sources are subject to the *SPDES* program for stormwater unless mixed with discharges subject to the 40 CFR Part 440 that are not regulated by another permit prior to mixing. Non-stormwater discharges from these sources are subject to *SPDES* permitting and may be subject to the *effluent limitation guidelines* under 40 CFR Part 440. Discharges from overburden/waste rock and overburden/waste rock related areas are not subject to 40 CFR Part 440 unless: (1) it drains naturally (or is intentionally diverted) to a *point source*; and (2) combines with "mine drainage" that is otherwise regulated under the Part 440 regulations. For such sources, coverage under this permit would be available if the discharge composed entirely of stormwater does not combine with other sources of mine drainage that are not subject to 40 CFR Part 440, as well as meeting other eligibility criteria contained in Section I.C. of the permit. Permit applicants bear the initial responsibility for determining the applicable technology-based standard for such discharges. DEC recommends that permit applicants contact the relevant *SPDES* permit issuance authority for assistance to determine the nature and scope of the "active mining area" on a mine-by-mine basis, as well as to determine the appropriate permitting mechanism for authorizing such discharges.

Sector H – (Reserved)

Sector I – Oil & Gas Extraction and Refining

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from oil and gas extraction listed under SIC Major Group 13 which have had a discharge of a reportable quantity (RQ) of oil or a hazardous substance for which notification is required under 40 CFR 110.6, 40 CFR 117.21 or 40 CFR 302.6. These include oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with any overburden raw material, intermediate products, finished products, by-products or waste products located on the site of such operations. Industries in SIC Major Group 13 include the extraction and production of crude oil and natural gas; the production of hydrocarbon liquids and natural gas from coal; and associated oilfield service, supply and repair industries.

Special Conditions

Prohibition of Non-Stormwater discharges

Contaminated stormwater discharges from petroleum refining or drilling operations that are subject to nationally established BAT or BPT guidelines found at 40 CFR Part 419 and 40 CFR Part 435 respectively are not authorized by this permit.

Oil and gas drilling operations utilizing high volume hydraulic fracturing (HVHF) techniques are not eligible for coverage under this permit.

In addition to the general prohibition of non-stormwater discharges in Paragraph I.D.1, the following discharges not covered by this permit include, but are not limited to discharges of vehicle and equipment washwater, including tank cleaning operations. Alternatively, washwater discharges must be authorized under a separate SPDES permit, or be discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Reportable quantity (RQ) releases;
- Locations used for the treatment, storage or disposal of wastes;
- Processing areas and storage areas;
- Chemical mixing areas;
- Construction and drilling areas;
- All areas subject to the effluent guidelines requirement of "No Discharge" in accordance with 40 CFR 435.32 and the structural controls to achieve compliance with the "No Discharge" requirement

Summary of Potential Pollutant Sources

The plan shall include a description of the potential *pollutant* sources from the following activities:

- Chemical, cement, mud or gel mixing activities
- Drilling activities
- Equipment cleaning and rehabilitation activities.

The plan must include information about the Reportable Quantity release which triggered the permit application requirements, including:

- Nature of the release (e.g., spill of oil from a drum storage area);
- Amount of oil or hazardous substance released;
- Amount of substance recovered;
- Date of the release;
- Cause of the release (e.g., poor handling techniques and lack of containment in the area);
- Areas affected by the release, including land and waters; procedure to cleanup release;
- Actions or procedures implemented to prevent or improve response to a release; and remaining potential contamination of stormwater from release (taking into account human health risks, the control of drinking water intakes, and the designated uses of the receiving water).

Additional Non-Numeric Effluent Limits

Good Housekeeping

Vehicle & Equipment Storage Areas

The storage of vehicles and equipment awaiting or having completed maintenance must be confined to designated areas (delineated on the site map). The plan must describe *BMPs* that prevent or *minimize* contamination of the stormwater runoff from these areas (e.g., drip pans under equipment, indoor storage, use of berms and dikes); or other equivalent *BMPs*.

Materials & Chemical Storage Areas

Storage units of all chemicals and materials must be maintained in good condition so as to prevent contamination of stormwater. Hazardous materials must be plainly labeled

Chemical Mixing Areas

The plan must describe *BMPs* that prevent or *minimize* contamination of the stormwater runoff from chemical mixing areas

Erosion and Sediment Control Plan

Unless covered by a SPDES General Permit for Stormwater Discharges from Construction Activity, the additional erosion control requirement for well drilling are as follows

Site Description

Each plan shall provide a description of the following:

- A description of the nature of the exploration activity
- Estimates of the total area of the site and the area of the site that is expected to be disturbed due to the exploration activity
- An estimate of the *runoff coefficient* of the site
- A site map indicating drainage patterns and approximate slopes
- The name of all receiving water(s).

Vegetative Controls

The SWPPP shall include a description of vegetative practices designed to preserve existing vegetation where attainable and revegetate open areas as soon as practicable after grade drilling. Such practices may include:

- Temporary or permanent seeding
- Mulching
- Sod stabilization
- Vegetative buffer strips
- Tree protection practices

The *owner or operator* shall initiate appropriate vegetative practices on all disturbed areas within 14 calendar days of the last activity at that disturbed area.

The *owner or operator* shall comply with the New York State Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

Sediment Control Measures

Off-site vehicle tracking of sediments shall be *minimized*

Erosion and Sediment Control Inspections

The SWPPP shall include procedures for inspection of all erosion controls on the site at least once every seven calendar days.

Facility Inspections

All equipment and areas addressed in the SWPPP shall be inspected at a minimum of six month intervals.

Equipment and vehicles which store, mix (including all on-site and off-site mixing tanks) or transport chemicals/hazardous materials (including those transporting supplies to oil field activities) will be inspected at least quarterly.

For temporarily or permanently inactive oil and gas extraction facilities within Major SIC Group 13, which are remotely located and unstaffed, the inspections shall be performed at least annually.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Oil and gas extraction facilities (SIC Major Group 13) and petroleum refineries (SIC 2911) covered under this section are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-I-1.

Table VII-I-2
Sector I - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Oil and Gas Extraction (SIC Major Group 13)	
Total Suspended Solids (TSS)	100 mg/l
Chlorides	860 mg/l
pH	6.0 to 9.0 su

Sector J – Mineral Mining and Dressing

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from active and inactive mineral mining and dressing facilities as identified by the SIC Major Group 14. The types of activities that owner or operators under Sector J are primarily engaged in are:

- Exploring for minerals (e.g., stone, sand, clay, chemical and fertilizer minerals, non-metallic minerals, etc.)
- Developing mines and the mining of minerals
- Mineral dressing
- Nonmetallic mineral services.

Most stormwater discharges subject to an existing effluent limitation guideline in 40 CFR Part 436 are not authorized by this permit, except for mine dewatering discharges composed entirely of stormwater or ground water seepage from construction sand and gravel, industrial sand, and crushed stone mining facilities.

Special Conditions

Limitations on Coverage

Pre-approved post-mining construction activities require coverage under the *SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001).*

Termination of Permit Coverage

A mineral mining and dressing facility cannot terminate permit coverage until *final stabilization* is reached in accordance with 6 NYCRR 422.3.

Prohibition of Non-Stormwater discharges

In addition to the general prohibitions of non-stormwater discharges, the following discharges not covered by this permit include, but are not limited to:

- Mineral wash water
- Transport (slurry) water
- Wet scrubber blowdown
- Contact cooling water
- Noncontact cooling water
- Floor and equipment washing
- Water used for dust suppression (except as indicated below)
- Cooling tower and boiler blowdowns
- Vehicle and equipment maintenance fluids
- Intake water treatment backwashes.
- Stormwater discharges subject to an existing *effluent limitation* guideline in 40CFR Part 436, except for mine dewatering discharges composed entirely of stormwater or *groundwater* seepage from construction sand and gravel, industrial sand, and crushed stone mining facilities.

These discharges must be covered under a separate SPDES permit.

Allowable Non-Stormwater Discharges

In addition to the discharges described in Part I.B.2, the discharge of clean water applied to roadways for dust control may be authorized by this permit provided that *BMPs* are in place to limit application rates thus preventing erosion and minimizing surface runoff.

Mine accessibility for monitoring

The Adverse Climatic Conditions Waiver form (Part IV.G) must be used each time the monitoring requirements cannot be achieved when the outfall is inaccessible per MSHA regulations.

Definitions

The following definitions are only for this section of the general permit:

"Haulageway" means all roads utilized for mining purposes, together with that area of land over which material is transported, that are located within the permitted area.

"Mine" means any excavation from which a mineral is to be produced for sale or exchange, or for commercial, industrial or municipal use; al haulageways and all equipment above, on or below the surface of the ground used in connection with such excavation, and all lands included in the life of the mine review by the *Department*.

"*Mining Activity or Activities*" means the activities associated with mining and reclamation including the exploration and land disturbance to determine the financial viability of a site, construction of haulageways, buildings and structures associated with *mining*.

"Mining" means the extraction of overburden and minerals from the earth; the preparation and processing of minerals, including any activities or processes or parts thereof for the extraction or removal of minerals from their original location and the preparation, washing, cleaning, crushing, stockpiling or other processing of minerals at the mine location so as to make them suitable for commercial, industrial, or construction use; exclusive of manufacturing processes, at the mine location; the removal of such materials through sale or exchange, or for commercial, industrial or municipal use; and the disposition of overburden, tailings and waste at the mine location. "Mining" shall not include the excavation, removal and disposition of minerals from construction projects, exclusive of the creation of water bodies, or excavations in aid of agricultural activities.

"Reclamation" means the activities associated with conditioning of the affected land to make it suitable for any uses or purposes consistent with the pre-approved, post mining use.

Note: The following definitions are not intended to supercede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

"*Active Mineral Mining Facility*" means a place where work or other activity related to the extraction, removal or recovery of minerals is being conducted. This definition does not include any land where grading has returned the earth to a desired contour and reclamation has begun.

"*Inactive Mineral Mining Facility*" means a site or portion of a site where mineral mining and/or dressing occurred in the past but is not an active facility as defined above, and where the inactive portion is not covered by an active permit issued by the applicable *State* or Federal government agency.

"*Mine Dewatering*" means any water that is impounded or that collects in the mine and is pumped, drained or otherwise removed from the mine through the efforts of the mine operator. This term shall also include wet pit overflows caused solely by direct rainfall and/or ground water seepage.

"*Process Generated Wastewater*" means if a mine is also used for treatment of process generated waste water, discharges of commingled water from the facilities shall be deemed discharges of process generated waste water.

"*Temporarily Inactive Mineral Mining Facility*" means a site or portion of a site where mineral mining and/or dressing occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable *State* or Federal government agency.

"*Final Stabilization*" means that a site has implemented all applicable Federal and State (6 NYCRR 422.3) reclamation requirements.

SWPPP Requirements in Addition to Part III

Site Map

Document on your site map the locations of the following:

- Mining or milling site boundaries
- Access and haul roads,
- Outline of the drainage areas or each stormwater *outfall* within the facility with indications of the types of discharges from the drainage areas
- Location(s) of all permitted discharges covered under an *individual SPDES permit*
- Outdoor equipment storage, fueling, and maintenance areas
- Materials handling areas
- Outdoor manufacturing, outdoor storage, and material disposal areas
- Outdoor chemicals and explosives storage areas
- Overburden, materials, soils, or waste storage areas
- Location of mine drainage dewatering or other process water
- Surface waters
- Boundary of tributary areas that are subject to *effluent limitations guidelines*
- Location(s) of reclaimed areas

Additional Non-Numeric Effluent Limits

Erosion and Sediment Control Plan

An erosion and sediment control (ESC) plan must be developed and implemented for *mining activities* that result in a soil disturbance with the potential for stormwater discharge to surface *waters of the State*. Areas draining internal to the mine that do not have the potential to discharge to *surface waters of the State* and areas that have achieved *final stabilization* are not subject to these requirements. This plan

shall include details of temporary and permanent structural and vegetative measures that will be used to control erosion and sedimentation. The design, installation, inspection, maintenance and repair of erosion and sediment controls shall conform to the New York Standards and Specifications for Erosion and Sediment Control, 2016, and New York State Revegetation Procedures Manual: Surface Mining Reclamation, or their equivalents.

Erosion and Sediment Control Inspections

1. The *qualified person* shall conduct site inspections in areas with the potential to discharge to *surface waters of the State* as follows:
   - All erosion and sediment control practices in areas with potential for stormwater discharge to surface water, to ensure integrity and effectiveness to ensure that practices are constructed as indicated in the SWPPP.
   - All areas of disturbance in areas with potential for stormwater discharge to surface water that have not achieved *final stabilization;*
   - All points of discharge including discharges to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *mine*.

2. For sites where soil disturbance activities are on-going, the *qualified person* shall conduct a site inspection at least once every seven (7) calendar days. Where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* has been applied to all disturbed areas or if runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), the *qualified person* shall conduct a site inspection at least once every thirty (30) calendar days.

3. At a minimum, the inspection report shall include and/or address the following:
   - Date and time of inspection;
   - Name and title of person(s) performing inspection;
   - A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
   - A description of the condition of the runoff at all points of discharge from the site.
   - Identify any discharges of sediment or other *pollutants* from the site, including discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
   - A description of the condition of all natural surface water bodies 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 water body;

   - Identification of all *BMPs* and erosion and sediment control practices that need repair or maintenance
   - Identification of all *BMPs* and erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
   - Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
   - Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s)

4. Within one (1) business day of the completion of an inspection, the *qualified person* shall notify the *owner or operator* and appropriate contractor of any corrective actions that need to be taken. The *owner or operator* shall begin implementing the corrective actions within one (1) business day of this notification and shall complete the corrective actions within seven (7) calendar days unless otherwise notified by the *Department*.

Facility Inspections

All *BMPs* (other than Erosion & Sediment Controls) at the facility shall be inspected quarterly for evidence of actual or potential discharges of contaminated stormwater and shall include the following areas:

- Chemical handling and storage areas
- Vehicle & equipment maintenance areas
- Fueling areas
- Other potential sources of pollution

Temporarily or permanently inactive facilities shall be inspected annually.

Numeric Effluent Limitations

The following *effluent limitations* shall be met by existing and new discharges from *Mine Dewatering* activities at construction sand and gravel; industrial sand; and crushed stone mining facilities (SIC 1422–1429, 1442, 1446) in accordance with 40 CFR 436:

Table VII-J-1.
Sector J - Numeric Effluent Limitations

Parameter	Effluent Limitations	
	Daily Maximum	30-day Average
Mine Dewatering Activities at Construction Sand and Gravel; Industrial Sand; and Crushed Stone Mining Facilities (SIC 1422–1429, 1442, 1446) Subject to the Point Source Category Provisions of 40CFR Part 436 Subparts B, C & D		
Total Suspended Solids (TSS)	45 mg/L	25 mg/L
pH	6.0 to 9.0 SU	

Benchmarks

Sand and gravel mining facilities (SIC 1442, 1446) and facilities manufacturing dimension, crushed stone and nonmetallic minerals (except fuels). (SIC 1411, 1422-1429, 1481, 1499) are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-J-2.

Table VII-J-2
Sector J - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Sand and Gravel Mining (SIC 1442, 1446)	
Total Nitrogen	6 mg/L
Total Phosphorous (TP)	2 mg/L
Total Suspended Solids (TSS)	100 mg/L
Total Recoverable Iron	1 mg/L
Sand and Gravel Mining (SIC 1442, 1446) (Continued)	
Total Recoverable Zinc	110 ug/L
Dimension and Crushed Stone and Nonmetallic Minerals (except fuels) (SIC 1411, 1422-1429, 1481, 1499)	
Total Suspended Solids (TSS)	100 mg/L

* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen

Sector K – Hazardous Waste Treatment, Storage or Disposal Facilities

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from facilities that treat, store, or dispose of hazardous wastes, including those that are operating under interim status or a permit under Subtitle C of RCRA (Industrial Activity Code "HZ"). Disposal facilities that have been properly closed and capped, and have no *significant materials* exposed to stormwater, are considered inactive and do not require permits.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-stormwater prohibition in Paragraph I.D.1, the discharges not covered by this permit include, but are not limited to:

- Leachate
- Gas collection condensate
- Drained free liquids
- Contaminated ground water
- Laboratory-derived wastewater
- Contact washwater from washing truck, railcar and equipment exteriors and surface areas that have come in direct contact with solid waste or daily cover at the landfill facility.

These discharges must be covered under a separate *SPDES* permit

Definitions

The following definitions are only for this section of the general permit:

"Contaminated groundwater" means water below the land surface in the zone of saturation which has been contaminated by activities associated with waste disposal.

"*Contaminated stormwater*" means stormwater that comes in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined below. Some specific areas of a landfill that may produce contaminated stormwater include, but are not limited to: the open face of an active landfill with exposed waste (including areas with daily cover); the areas around wastewater treatment operations; trucks, equipment or machinery that has been in direct contact with the waste; and waste dumping areas.

"*Drained free liquids*" means aqueous wastes drained from waste containers (e.g., drums, etc.) prior to landfilling.

"*Land treatment facility*" means a facility or part of a facility at which solid waste, including hazardous waste, is applied onto or incorporated into the soil surface. Such facilities are disposal facilities if the waste will remain after closure.

"*Landfill*" means a disposal facility or part of a facility where solid waste, including hazardous waste, is placed in or on land, and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.

"*Landfill wastewater*" as defined in 40 CFR Part 445 (Landfills Point Source Category) means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, noncontaminated stormwater, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated stormwater and contact washwater from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

"*Leachate*" means a liquid, including any suspended components or dissolved compounds in the liquid, which has been in contact with or passed through solid waste, including hazardous waste.

"*Noncontaminated stormwater*" means stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined above. Noncontaminated stormwater includes stormwater that flows off the final cover of the landfill, runoff from intermediate cover that has not come in contact with leachate or waste and runoff from inactive portions of the landfill which are segregated from active portions of the landfill.

"*Pile*" means any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage and that is not a containment building.

"*Surface impoundment*" or "*impoundment*" means a facility or part of a facility which is a natural topographical depression, human-made excavation, or diked area formed primarily of earthen materials (although it may be lined with human-made materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds and lagoons.

Numeric Effluent Limitations

As set forth at 40 CFR Part 445 Subpart A, the numeric limitations in Table VII-K-1 apply to contaminated stormwater discharges from hazardous waste landfills subject to the provisions of RCRA Subtitle C at 40 CFR Parts 264 (Subpart N) and 265 (Subpart N) except for any of the facilities described in subdivisions "a" through "d" of this subsection:

1. Landfills operated in conjunction with other industrial or commercial operations when the landfill only receives wastes generated by the industrial or commercial operation directly associated with the landfill;

2. Landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes provided the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or

commercial operation or the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

3. Landfills operated in conjunction with Centralized Waste Treatment (CWT) facilities subject to 40 CFR Part 437 so long as the CWT facility commingles the landfill wastewater with other nonlandfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

4. Landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Table VII-K-1.
Sector K - Numeric Effluent Limitations

Parameter	Effluent Limitations	
	Daily Maximum	30-day Average
Hazardous Waste Treatment, Storage, or Disposal Facilities (Industrial Activity Code "HZ") Subject to the Point Source Category Provisions of 40 CFR Part 445 Subpart A.		
Biochemical Oxygen Demand (BOD5)	220 mg/L	56 mg/L
Total Suspended Solids (TSS)	88 mg/L	27 mg/L
Ammonia	10 mg/L	4.9 mg/L
Alpha Terpineol	0.042 mg/L	0.019 mg/L
Aniline	0.024 mg/L	0.015 mg/L
Benzoic Acid	0.119 mg/L	0.073 mg/L
Naphthalene	0.059 mg/L	0.022 mg/L
p-Cresol	0.024 mg/L	0.015 mg/L
Phenol	0.048 mg/L	0.029 mg/L
Pyridine	0.072 mg/L	0.025 mg/L
Arsenic (Total)	1.1 mg/L	0.54 mg/L
Chromium (Total)	1.1 mg/L	0.46 mg/L
Zinc (Total)	0.535 mg/L	0.296 mg/L
Total Mercury*	50 ng/L	
pH	6.0 to 9.0 SU	
*Mercury analysis shall be by EPA Method 1631		

Benchmarks

Owner or operators with hazardous waste treatment, storage or disposal facilities (TSDFs) are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-K-2. These *benchmark monitoring cut-off concentrations* apply to *stormwater discharges associated with industrial activity* other than contaminated stormwater discharges from landfills subject to the numeric *effluent limitations* set forth in Table VII-K-1.

Table VII-K-2
Sector K - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Hazardous Waste Treatment, Storage, or Disposal Facilities (Industrial Activity Code "HZ")	
Total Nitrogen (TN)	6 mg/L
Total Suspended Solids (TSS)	100 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Total Recoverable Magnesium	64 ug/L
Total Recoverable Arsenic	150 ug/L
Total Recoverable Cadmium	1.8 ug/L
Total Cyanide	22 ug/L
Total Recoverable Lead	69 ug/L
Total Recoverable Selenium	5 ug/L
Total Recoverable Silver	3.0 ug/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen	

Sector L – Landfills, Land Application Sites and Non-Compliant Landfills

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from waste disposal at landfills, land application sites, construction and demolition debris landfills, and non-compliant landfills (Industrial Activity Code "LF") that receive or have received *industrial wastes* (waste that is received from *industrial activities* at any of the facilities described under 40 CFR Part 122.26(b)(14) categories (i) - (xi)). The requirements listed under this section are intended to apply to initial, as well as ongoing *construction activities* at landfills. [Note: Non-compliant landfills are solid waste disposal units that are not in compliance with *State*/federal criteria established under RCRA Subtitle D.] Landfills that have been closed in accordance with 6 NYCRR Part 360 are not required to maintain *SPDES* permit coverage for stormwater discharges provided that the landfill is or has been maintained under a post closure care program.

Special Conditions

The SWPPP must address the stormwater run-on and run-off control systems needed during the landfill's construction, operation and closure phases prior to commencement of any soils disturbance of one or more acres of land. The plan must be prepared in accordance with the New York Standards and Specifications for Erosion and Sediment Control, 2016, and the New York State Stormwater Management Design Manual, 2010. If alternative erosion and sediment controls or stormwater management practices are proposed, the owner or operator must demonstrate equivalence to these technical standards.

The SWPPP must be kept current and must address effective stormwater controls for all appurtenances and components associated with the landfill, including but not limited to, haul roads, paved areas, associated buildings and structures, landfill surfaces, perimeter ditches and berms.

Prohibition of Non-Stormwater discharges

In addition to the general non-stormwater prohibition in Part I.B.2, the discharges not covered by this permit include, but are not limited to:

- Leachate
- Gas collection condensate
- Drained free liquids
- Contaminated ground water
- Laboratory wastewater
- Contact wash water from washing truck, railcar and equipment exteriors and surface areas that have come in direct contact with solid waste or daily cover at the landfill facility.

These discharges must be covered under a separate *SPDES* permit.

Non-stormwater discharge test certification - The discharge test and certification must also be conducted for the presence of leachate and vehicle washwater.

Definitions

The following definitions are only for this section of the general permit:

"*Contaminated groundwater*" means water below the land surface in the zone of saturation which has been contaminated by activities associated with waste disposal.

"*Contaminated stormwater*" means stormwater that comes in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined below. Some specific areas of a landfill that may produce contaminated stormwater include, but are not limited to: the open face of an active landfill with exposed waste (including areas with daily cover); the areas around wastewater treatment operations; trucks, equipment or machinery that has been in direct contact with the waste; and waste dumping areas.

"*Drained free liquids*" means aqueous wastes drained from waste containers (e.g., drums, etc.) prior to landfilling.

"*Land application facility*" means a site where solid waste is applied to the soil surface or injected into the upper layer of the soil to improve soil quality or provide plant nutrients. Solid waste suitable for this purpose includes, but is not limited to, certain food processing waste, sewage treatment plant sludge and septage.

"*Landfill*" means land or a disposal facility or part of one where solid waste or its residue after treatment is intentionally placed and which is not a land application facility, surface impoundment, injection well or waste pile.

"*Landfill wastewater*" as defined in 40 CFR Part 445 (Landfills Point Source Category) means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, noncontaminated stormwater, contaminated *groundwater*, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory-derived wastewater, contaminated stormwater and contact washwater from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

"*Leachate*" means any solid waste in the form of a liquid, including any suspended components in the liquid, that results from contact with or passage through solid waste.

"*Noncontaminated stormwater*" means stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined above. Noncontaminated stormwater includes stormwater that flows off the final cover of the landfill, runoff from intermediate cover that has not come in contact with leachate or waste and runoff from portions of the landfill where waste has not yet been disposed of and which are segregated from active portions of the landfill.

"*Surface impoundment*" means a solid waste management facility or part of one that is a natural topographical depression, excavation, or diked area formed primarily of earthen materials (although it may be lined with synthetic materials), that is designed to hold solid waste in semisolid or liquid form and that is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds and lagoons.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Active and closed landfill cells or trenches
- Active and closed land application areas
- Locations where open dumping is occurring or has occurred
- Locations of any known leachate breakouts or other areas where uncontrolled leachate may commingle with runoff
- Leachate collection and handling systems

Summary of Potential Pollutant Sources

The SWPPP shall also include a description of potential *pollutant* sources associated with any of the following:

- Fertilizer, herbicide and pesticide application
- Earth/soil moving
- Waste hauling and loading/unloading
- Outdoor storage of *significant materials* including daily, interim and final cover material stockpiles, as well as, temporary waste storage areas
- Exposure of active and inactive landfill and land application areas
- Uncontrolled leachate flows
- Failure or leaks from leachate collection and treatment systems

Additional Non-Numeric Effluent Limits

Good Housekeeping

The SWPPP shall describe and provide for implementation of *BMPs* that prevent or *minimize* the potential of any residual fluids from coming in contact with precipitation/runoff. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Protected storage areas for pesticides, herbicides, fertilizer and other significant materials.
- A schedule of regular inspections of equipment for leaks, spills, malfunctioning, worn or corroded parts or equipment;
- Frequent sweeping of haul and access roads and the use of dry absorbent or wet vacuum cleanup methods, to contain or dispose/recycle residual liquids originating from recyclable containers;
- Prohibit the practice of allowing wash water from tipping floors or other processing areas from discharging to the storm sewer system;
- A preventive maintenance program for processing equipment;
- The plan shall address measures and controls to *minimize* contact of residual liquids and particulate matter from materials stored indoors or under cover from coming in contact with surface runoff.
- Disconnect or seal off all floor drains connected to the storm sewer system

- Drums containing liquids, especially oil and lubricants, should be stored: indoors; in a bermed area; in overpack containers or spill pallets; or in similar containment devices; and
- Drip pans or equivalent measures shall be placed under any leaking piece of stationary equipment until the leak is repaired. The drip pans shall be inspected for leaks and potential overflow and all liquids properly disposed of in accordance with RCRA requirements.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading installed where appropriate to *minimize* contact of stormwater runoff with outdoor processing equipment or stored materials;
- Diversion of runoff away from storage areas via dikes, berms, containment trenches, culverts and surface grading;
- Covers over containment bins, dumpsters, roll-off boxes
- Permanent or semi-permanent covers over areas where materials are transferred, stored or stockpiled;
- Sediment traps, vegetated swales and strips, catch basin filters and sand filters to facilitate settling or filtering of sediments.

Spill Prevention & Response

1. The SWPPP shall include *BMPs* to *minimize* stormwater contamination at loading/unloading areas, and from equipment or container failures. The plan may refer to applicable portions of other existing plans such as SPCC plans required under 40 CFR Part 112. The SWPPP must:

   - Describe spill prevention and response measures to address areas that are potential sources of fluid leaks or spills;
   - Provide for immediate containment and cleanup of spills/leaks. If malfunctioning equipment is responsible for the spill/leak, repairs shall also be conducted as soon as possible;
   - Specify cleanup procedures including the use of dry absorbents. Where dry absorbent cleanup methods are used, an adequate supply of dry absorbent material shall be maintained on-site. Used absorbent material shall be disposed of properly;
   - Drip pans or equivalent measures shall be placed under any leaking piece of stationary equipment until the leak is repaired. The drip pans shall be inspected for leaks and potential overflow and all liquids properly disposed of in accordance with RCRA requirements

2. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Store drums containing liquids, especially oil and lubricants indoors; in a bermed area; in overpack containers or spill pallets; or in similar containment devices;

- Install overfill prevention devices on all fuel pumps or tanks;

- Install an alarm and/or pump shut off system should be installed on outdoor equipment with hydraulic reservoirs exceeding 150 gallons in order to prevent draining the tank contents in the event of a line break. Alternatively, the equipment may have a secondary containment system capable of containing the contents of the hydraulic reservoir plus adequate freeboard for precipitation

Preventative Maintenance Program

The *owner or operator* shall maintain:

- All containers used for outdoor chemical/*significant materials* storage to prevent leaking
- All elements of leachate collection and treatment systems to prevent commingling of leachate with stormwater
- The integrity and effectiveness of any intermediate or final cover (including making repairs to the cover as necessary to *minimize* the effects of settlement, sinking, and erosion).

Erosion and Sediment Control Plan

An erosion and sediment control (ESC) plan must be developed and implemented for all activities associated with the landfill construction, operation or closure that result in a soil disturbance with the potential for stormwater discharge to surface waters of the State. Stormwater runoff that is handled as leachate and from areas that have achieved final stabilization are not subject to these requirements. This plan shall include details of temporary and permanent structural and vegetative measures that will be used to control erosion and sedimentation for all areas that result in a soil disturbance. The design, installation, inspection, maintenance and repair of erosion and sediment controls shall conform to the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

If any phase of the landfill construction or closure will result in the disturbance of five (5) or more acres of land at any one time, the *owner or operator* must obtain approval from the Regional Office stormwater contact person prior to disturbing more than five acres.

Erosion and Sediment Control Inspections

The *qualified person* shall conduct site inspections of erosion and sediment controls in areas with potential to discharge to surface water as follows:

- All erosion and sediment control practices and all post-construction stormwater management practices in areas with potential for stormwater

discharge to surface water, to ensure integrity and effectiveness to ensure that practices are constructed as indicated in the SWPPP addressing the operation phase;
- All areas of disturbance in areas with potential for stormwater discharge to surface water 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 activity*; and,
- All points of discharge.

ESC Inspection Frequency

For sites where soil disturbance activities are on-going, the *qualified person* shall conduct a site inspection at least once every seven (7) calendar days.

Where soil disturbance activities are on-going and the *owner or operator* has received authorization to disturb greater than five (5) acres of soil at any one time, the *qualified person* 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.

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 person* shall conduct a site inspection at least once every thirty (30) calendar days.

ESC Inspection Reports

At a minimum, the inspection report shall include and/or address the following:

- Date and time of inspection;
- Name and title of person(s) performing inspection;
- A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- A description of the condition of the runoff at all points of discharge from the site.
- Identify any discharges of sediment or other *pollutants* from the site, including discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface water body;
- Identification of all *BMPs* and erosion and sediment control practices that need repair or maintenance
- Identification of all *BMPs* and erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s)
- Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified person* 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 person* 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 person* 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
- An inspection report shall be completed and signed by the *qualified person* for each inspection. All inspection reports shall be maintained on site with the SWPPP.

ESC Inspection Follow-Up

Within one (1) business day of the completion of an inspection, the *qualified person* shall notify the *owner or operator* and appropriate contractor of any corrective actions that need to be taken. The *owner or operator* shall begin implementing the corrective actions within one (1) business day of this notification and shall complete the corrective actions within seven (7) calendar days unless otherwise notified by the *Department*.

Post Construction Stormwater Management Controls

Stormwater runoff from all impervious areas that is not handled as leachate shall be captured and treated by post-construction stormwater management controls. The design, construction and maintenance of all post-construction stormwater management controls shall conform to the New York State Stormwater Management Design Manual, 2010. If alternative post construction controls are proposed, the *owner or operator* must demonstrate equivalence to this technical standard.

At a minimum, the post-construction stormwater management practice component of the SWPPP shall include the following:

a. Identification, dimensions, material specifications and installation details of all post-construction stormwater management practices to be constructed;
b. A site map/construction drawing(s) at a scale of 1" = 50' or less, showing the specific location and size of each post-construction stormwater management practice;
c. A Stormwater Modeling and Analysis Report that includes:

1. Map(s) showing pre-development conditions, including watershed/subcatchment boundaries, flow paths/routing, and design points;
2. Map(s) showing post-development conditions, including watershed/sub-catchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
3. 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;
4. Summary table, with supporting calculations, which demonstrate that each post-construction stormwater management practice has been designed in conformance with the sizing criteria included in the 2015 New York State Stormwater Management Design Manual;
5. Identification of any sizing criteria that is not required based on the waiver criteria included in the 2015 New York State Stormwater Management Design Manual; and
6. Identification of any elements of the design that are not in conformance with the 2015 New York State Stormwater Management Design Manual. Include the identification of and justification for any deviations from the 2015 New York State Stormwater Management Design Manual;
   a. Soil test results (test pit, borings);
   b. Infiltration test results, when required; and
   c. 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 and a description of applicable easements, vegetative requirements, access and safety issues, and testing and disposal of sediments as they are removed.

Enhanced Phosphorus Removal Standards – Landfills that are located in the following watersheds shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the 2015 New York State Stormwater Management Design Manual.

- New York City East of Hudson Drinking Water Supply Watershed
- Onondaga Lake Watershed
- Greenwood Lake Watershed
- Oscawana Lake Watershed

Facility Inspections

All *BMPs* (other than Erosion & Sediment Controls) at facilities shall be inspected by *qualified person* for evidence of actual or potential discharges of contaminated stormwater and shall include the following areas:

- Chemical handling and storage areas

- Vehicle & Equipment Maintenance Areas
- Fueling Areas
- Active land application areas
- Areas used for storage of materials/wastes that are exposed to precipitation
- Leachate collection and treatment systems
- Locations where equipment and waste trucks enter and exit the site
- Other potential sources of pollution

Operating landfills, non-compliant landfills, and land application sites shall be inspected at least once every seven days.

Inspections of inactive sites - Inactive landfills, non-compliant landfills, and land application sites shall be inspected at least quarterly. The *qualified person* shall inspect landfill stabilization and structural erosion *control measures* and leachate collection and treatment systems, and all closed land application areas.

Employee Training

1. Training and Education – Staff must be trained in prevention of contamination to stormwater. In addition to the requirements in Part II.A.8.d, training subjects must include:
   - Identification of material that is not accepted at the facility
   - How to identify and remedy leaky containers
   - Dry clean up methods.

2. The *owner or operator* must educate incoming drivers on:
   - Materials not accepted by the facility
   - Preventing contamination to stormwater from leaky vehicles
   - Prohibition of non-stormwater discharges, including but not limited to waste water from truck washout.

Numeric Effluent Limitations

As set forth at 40 CFR Part 445 Subpart B, the numeric *effluent limitations* in Table VII-L-1 apply to contaminated stormwater discharges from municipal solid waste landfills (MSWLFs) that have not been closed in accordance with 40 CFR 258.60, and contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR Part 257 except for discharges from any of the facilities described in subdivisions "1" through "4" of this subsection:

1. Landfills operated in conjunction with other industrial or commercial operations when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

2. Landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes provided the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or

commercial operation or the other wastes received are of a nature similar to the wastes generated by the industrial or commercial operation;

3. Landfills operated in conjunction with centralized waste treatment (CWT) facilities subject to 40 CFR Part 437 so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

4. Landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service

Table VII-L-1.
Sector L - Numeric Effluent Limitations

Parameter	Effluent Limitations	
	Daily Maximum	30-day Average
Landfills (Industrial Activity Code "LF") That Are Subject to the Point Source Category Provisions of 40 CFR Part 445 Subpart B.		
Biochemical Oxygen Demand (BOD5)	140 mg/L	37 mg/L
Total Suspended Solids (TSS)	88 mg/L	27 mg/L
Ammonia	10 mg/L	4.9 mg/L
Alpha Terpineol	0.033 mg/L	0.016 mg/L
Benzoic Acid	0.12 mg/L	0.071 mg/L
p-Cresol	0.025 mg/L	0.014 mg/L
Phenol	0.026 mg/L	0.015 mg/L
Zinc (Total)	0.20 mg/L	0.11 mg/L
pH	6.0 to 9.0 SU	

Benchmarks

Landfill and land application sites are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-L-2. These *benchmark monitoring cut-off concentrations* apply to *stormwater discharges associated with industrial activity* other than contaminated stormwater discharges from landfills subject to the numeric *effluent limitations* set forth in Table VII-L-1.

Table VII-L-2
Sector L - Benchmark Monitoring Requirements

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Landfills, Land Application Sites and Non-Compliant Landfills (Industrial Activity Code "LF").	
Total Suspended Solids (TSS)	100 mg/L
Total Nitrogen (TN)*	6 mg/L
Total Phosphorus (TP)	2 mg/L
Total Recoverable Iron	1 mg/L
Landfills, Land Application Sites and Non-Compliant Landfills, Except Municipal Solid Waste Landfill Areas Closed in Accordance With 40 CFR 258.60 (Industrial Activity Code "LF")	
Total Suspended Solids (TSS)	100 mg/L
Total Recoverable Iron	1 mg/L

* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen

Sector M - Automobile Salvage Yards

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from facilities engaged in dismantling or wrecking used motor vehicles for the purpose of selling parts (SIC Code 5015). Facilities primarily engaged in dismantling motor vehicles for scrap are classified in Sector N (SIC Code 5093).

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general prohibition of non-stormwater discharges in Part I.B.2, the following discharges not covered by this permit include, but are not limited to:

- Discharges of vehicle, equipment, and floor wash water.

All wash water discharges must be authorized under a separate *SPDES* permit or discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements.

SWPPP Requirements in Addition to Part III

Site Map

The site map must identify where any of the following may be exposed to precipitation/surface runoff:

- Vehicle storage areas;
- Dismantling areas;
- Parts storage areas (e.g., engine blocks, tires, hub caps, batteries, hoods, mufflers);
- Liquid storage tanks and drums for fuel and other fluids;
- Location of each discharge and monitoring point.

The estimated total area used (in acres) for *industrial activity* including, but not limited to:

- Dismantling
- Storage
- Maintenance of used motor vehicle parts

Summary of Potential Pollutant Sources

The owner or operator must assess the potential for the following activities to contribute pollutants to stormwater discharges:

- Vehicle storage areas
- Dismantling areas
- Parts storage areas (e.g. engine blocks, tires, hub caps, batteries, and hoods)
- Fueling stations

Additional Non-Numeric Effluent Limits

Good Housekeeping

Vehicle Dismantling & Maintenance Areas

The SWPPP must describe *BMPs* that prevent or *minimize* contamination of stormwater runoff from all areas used for vehicle dismantling and maintenance. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Inspect all incoming vehicles for leaks and take appropriate actions to prevent the release of automobile fluids to the ground;
- Remove fuel, refrigerants and the battery as soon as possible;
- Vehicle draining and dismantling activities must be conducted in a bermed area, constructed of concrete or other surfaces that allows equivalent protection to *groundwater*;
- The dismantling area should also be covered;
- Promptly transfer any drained fluids to segregated storage containers that are properly labeled and in good concition (e.g, anti-freeze, gasoline, used oil, transmission fluid, brake fluids, window washer fluid) for reuse or recycling;
- Drain and collect all fluids to the maximum extent practicable in accordance with best available industry standards from engines, radiators, transmissions, heater core, brake fluid reservoirs, differentials, hoses, fuel tanks, air conditioning units and window washing fluids before crushing or storage over bare ground;
- When pulling parts from vehicles in the yard, employ a catch sled or tray to recover the majority of fluids which will be released.
- Place drip pans, large plastic sheets, or canvas under vehicles or equipment during maintenance and dismantling activities.
- Where drip pans are used, care should be taken to prevent accidental spills.
- Properly store batteries for recycling or resale;
- Store cracked batteries in a non-leaking covered container;
- Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets;
- Plug floor drains that are connected to the storm or sanitary sewers;
- Vehicle dismantling activities shall include removal of lead acid batteries, other lead parts such as tire weights and battery cable ends, mercury switches, other mercury containing parts for recycling;
- Recover air conditioner refrigerants using EPA certified recycling equipment;
- Maintain an organized inventory of materials used in the maintenance shop;
- Nonhazardous substances that are contaminated with a hazardous substance are considered to be a hazardous substance;
- Dispose of greasy rags, air filters, and degreasers properly;
- Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries);
- Drain oil and transmission filters before disposal or recycling;
- Inspect the maintenance area regularly for proper implementation of *control measures*;
- The use of mercury spill kits for spills from storage of mercury switches;

- Use dry cleanup methods and prohibit the practice of hosing down the shop floor;
- Recycle mineral spirits and solvents;
- Provide treatment of stormwater discharges with devices such as oil-water separators;
- Train employees on proper waste control and disposal procedures

Vehicle Parts and Equipment Storage Areas

The SWPPP must describe *BMPs* that prevent or *minimize* contamination of the stormwater runoff from vehicle, parts and equipment storage areas. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Use drip pans under all vehicles and equipment waiting for maintenance and during maintenance;
- Use large plastic or metal bins with secure lids to store oily parts (e.g., small engine parts);
- Install curbing, berms or dikes around storage areas;
- Confine storage of parts, equipment and vehicles to designated areas;
- Cover all parts storage areas with a permanent cover (e.g., roofs) or temporary cover (e.g., canvas tarps);
- Store used batteries within non-leaking secondary containment or by other equivalent means to prevent leaks of acid into stormwater discharges;
- Inspect the storage yard for filling drip pans and other problems regularly; and
- Train employees on procedures for storage and inspection items.

Vehicle, Equipment, and Parts Cleaning Areas

The SWPPP must describe *BMPs* that prevent or *minimize* contamination of stormwater from all areas used for vehicle, equipment, and parts cleaning. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Avoid washing parts or equipment outside;
- Designate an area for cleaning activities;
- Install curbing, berms or dikes around cleaning areas;
- Consider using detergent-based or water-based cleaning systems in place of organic solvent degreasers;
- Use phosphate-free biodegradable detergents;
- Contain steam cleaning wash waters* or discharge under an applicable *SPDES* permit;
- Inspect cleaning area regularly;
- Train employees on proper washing procedures

*Wash waters from vehicle, equipment, and parts cleaning areas are process wastewaters that are not authorized discharges under this section.

Liquid Storage Areas

The SWPPP must describe *BMPs* that prevent or *minimize* contamination of the stormwater runoff from all areas used for liquid storage. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Maintain good integrity of all storage containers;
- Provide containment and a roof over liquid storage areas;
- Inspect storage tanks to detect potential leaks and perform preventive maintenance;
- Inspect piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks;
- Train employees on proper filling and transfer procedures

Employee Training

Training must be conducted annually at a minimum; however, more frequent training may be necessary at facilities with high employee turnover. Training must be documented in the SWPPP in accordance with Part III.A.7.e. In addition to the requirements in Part II.A.8.d, training subjects must include the following areas when applicable to a facility:

- Used oil management;
- Spill prevention and response;
- Purpose, function and maintenance of erosion and sediment control practices;
- Good housekeeping practices;
- Used battery management;
- Removal of parts containing mercury;
- Lead and PCBs;
- Proper handling (i.e., collection, storage, and disposal) of all fluids;
- Identification of unpermitted discharges from floor drains, sinks, or outdoor storm drain inlets;
- Condition and maintenance needs of stormwater controls;
- Sump maintenance (regular pumping, use of pads around perimeter to prevent unwanted hazardous materials from entering, etc..);
- Condition and maintenance needs for oil water separators, filters and screens used to remove sludges and solids before they reach waste sumps;
- Prohibition of the practice of hosing down the shop floor;
- Use of dry cleanup methods, and/or collecting the stormwater runoff from the maintenance area.

Facility Inspections

Routine facility inspections conducted by the qualified person identified in Part IV.B shall include, but is not limited to the following:

- All incoming vehicles upon arrival at the site for leakage;
- Outdoor storage of vehicles, parts or equipment for leakage at least quarterly;

- Outdoor storage of fluids in tanks or containers for leakage at least quarterly;
- Prior to crushing, spot check vehicles for removal of fluids, battery, mercury switches, lead battery connectors, lead tire balance weights, PCB capacitors, etc.

Management of Runoff

The SWPPP must consider management practices, such as berms or drainage ditches on the property line that may be used to prevent run-on from neighboring properties. Berms must be considered for uncovered outdoor storage of oily parts, engine blocks, and aboveground liquid storage. The *owner or operator* shall consider the installation of detention ponds, filtering devices, and oil/water separators.

Consider using green infrastructure practices such as vegetated swales and constructed wetlands to reduce export of metals in stormwater.

Minimize Exposure

Minimizing exposure prevents *pollutants* including waste metal, spare parts, engine blocks and other debris, from coming into contact with precipitation and can reduce the need for *BMPs* to treat contaminated stormwater runoff. Examples of *BMPs* for exposure minimization include:

- Covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected
- Moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds).
- Consolidating processing activities to an area that is covered and bermed with impermeable concrete surface equipped with a drain, where all fluids are drained.

Erosion and Sediment Control Plan

The SWPPP must include an Erosion and Sediment Control plan (ESC plan) addressing the storm water run-on and run-off control systems in all areas of the facility. The ESC plan must be developed by a *qualified individual* and implemented by the *owner or operator*. The design, installation, inspection, maintenance and repair of erosion and sediment controls shall conform to the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent.

Spill and Leak Prevention

- As indicated in Part II.A.4, the discharge of hazardous substances or petroleum in the stormwater discharge(s) from the facility shall be prevented or *minimized* in accordance with the stormwater pollution prevention plan for the facility.
- Any spill of petroleum must be reported in accordance with 6 NYCRR Part 613.8. Any spill of a hazardous substance must be reported in accordance with 6 NYCRR Part 595.3.

- Notification must be reported to the DEC Spill hotline (1-800- 457-7362) within two hours of identifying a release. Spills or leaks outside of containment areas shall be cleaned up immediately and spills or leaks within containment shall be controlled immediately and cleaned up as stated in Part II.A.4.
- After clean up from a spill, absorbents must be promptly placed in containers for proper disposal.
- All vehicles that are intended to be dismantled must be properly drained of all fluids prior to being dismantled or crushed, or other equivalent means must be taken to prevent leaks or spills of fluids including motor oil, transmission fluid, fuel and antifreeze.

Guidance in Development of SWPPPs

Owner or operators operating facilities engaged in dismantling or wrecking used motor vehicles for parts recycling/resale and for scrap (SIC Code 5015) must review the following guidance documents to ensure that operating practices meet regulatory requirements and follow pollution prevention measures which will *minimize* waste and promote environmental compliance.

a. NYSDEC's Environmental Compliance and Pollution Prevention Guide for Automobile Recyclers , January 2003

b. Auto Recyclers Guide to a Cleaner Environment - Best Management Practices, April 2001, prepared by the Monroe County Small Business Pollution Prevention Task Force and NYSDEC

c. Industrial Fact Sheet Series for Activities Covered by EPA's MSGP Sector M: Automobile Salvage Yards (PDF) (EPA 833-F-06-028) http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm

d. Other helpful information for Vehicle Dismantlers is also available on the Department's web site at http://www.dec.ny.gov/chemical/8505.html

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Automobile salvage yards are required to monitor their stormwater discharges for the *pollutants* of concern listed in Table VII-M-1.

Table VII-M-1
Sector M - Benchmark Monitoring Requirement

Pollutants of Concern	Benchmark Monitoring Cut-off Concentration
Automobile Salvage Yards (SIC 5015)	
Total Suspended Solids (TSS)	100 mg/L
Oil & Grease	15 mg/L
Benzene	50 ug/L
Ethylbenzene	50 ug/L
Toluene	50 ug/L
Xylene	50 ug/L
Total Recoverable Aluminum	750 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Lead	69 ug/L

Sector N – Scrap Recycling & Waste Recycling Facilities

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from facilities engaged in:

- Processing, reclaiming and wholesale distribution of scrap (including but limited to facilities with activities described by SIC code 5093)
- Waste recycling facilities, including recycling facilities commonly referred to as material recovery facilities (MRFs).
- Transfer stations with recycling activities, including the collection of source separated recyclables
- Ship dismantling, marine salvaging, and marine wrecking of ships for scrap (SIC 4499). Other activities listed under SIC 4499 are covered in Sector Q.

Vehicle salvage yards engaged in reclaiming and retail or wholesale distribution of used motor vehicle parts (SIC code 5015) are included in Sector M.

Subsectors Descriptions

Sector N is divided into the following subsectors which have specific industrial activities.

Subsector N-1

Recycling activities at transfer stations, landfills and other facilities engaged in the collection of source-separated recyclables such as aluminum and tin cans; plastic and glass containers; newspapers and cardboard from institutional, commercial/non-industrial and residential sources.

Subsector N-2

Recycling activities at transfer stations, landfills and other facilities that receive a mixed wastestream of non-recyclable and recyclable wastes.

Subsector N-3

Scrap and waste recycling (non-liquid wastes). Individual scrap and waste recycling facilities may process one or more types of recyclable materials, including but not limited to ferrous and nonferrous metals, paper, plastic, cardboard, glass, animal hides. Activities at facilities included in this subsector typically include scrap waste stockpiling; material processing; segregating processed materials into uniform grades; and collecting non-recyclable materials for disposal.

Subsector N-4

Facilities included in other Sector N subsectors that operate a shredder.

Subsector N-5

Facilities engaged in the reclaiming and recycling of liquid wastes such as used oil, antifreeze, mineral spirits, industrial solvents and liquid wastes.

Subsector N-6

Facilities engaged in dismantling ships, marine salvaging, and marine wrecking of ships for scrap.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-*stormwater* prohibition in Part I.B.2, non-*stormwater discharges* from turnings containment areas are not covered by this permit. *Discharges* from containment areas in the absence of a storm event are prohibited unless covered by a separate *SPDES* permit

Battery re-claimers engaged in breaking up of used lead-acid batteries are not eligible for coverage under this permit.

All wash water *discharges* must be authorized under a separate *SPDES* permit or *discharged* to a sanitary sewer in accordance with applicable industrial pretreatment requirements.

Co-Located Industrial Activities

If any vehicle dismantling activities for the purpose of selling parts occur at this facility, the *owner or operator* must also comply with all the requirements in Sector M - Automobile Salvage Yards

SWPPP Requirements in Addition to Part III

In addition to the requirements of Part III, all facilities covered under Sector N are required to comply with following general requirements as well as the requirements applicable to each applicable subsector. Included in each section below, are lists of *BMP* options that, along with any functional equivalents, shall be considered for implementation. *Discharges* of precipitation from containment areas containing used oil shall also be in accordance with 6 NYCRR Parts 596-599, 613 and 370-373.

At a minimum the *owner or operator* must evaluate the applicability of the *BMPs* in this section. Per Part II.D, if the *owner or operator* concludes that any of the following *BMPs* are not appropriate for the facility, a written explanation of why any of these *BMPs* are not appropriate shall be included in the SWPPP.

Site Map

The site map shall identify the locations where the following activities or sources may be exposed to precipitation/surface runoff:

- Locations of haul and access roads
- Scrap and waste material storage areas
- Outdoor scrap and waste processing equipment
- Areas where materials are sorted, transferred, stockpiled
- Containment areas.

Additional Non-Numeric Effluent Limits

Discharges to Copper Impaired Waters

If the facility discharges to a Copper Impaired waterbody, the owner or operator shall prevent the exposure of copper sources and copper containing materials or processes to *stormwater*. These materials shall be protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

Inbound Waste Control Program

The SWPPP shall include a program to control materials received for processing:

- Notify suppliers/public which scrap materials will not be accepted at the facility or are only accepted under certain conditions
- Develop and implement procedures to inspect inbound shipments of recyclable materials
- Develop and distribute educational material targeting the public and/or commercial drivers of inbound vehicles;
- Training targeted for personnel engaged in the inspection and acceptance of inbound recyclable materials.

Minimize Contact of Particulate Matter

The plan shall address *BMPs* to *minimize* contact of particulate matter from materials stored indoors or under cover from coming in contact with surface runoff. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Good housekeeping measures, including frequent sweeping of haul and access roads and the use of dry absorbent or wet vacuum clean up methods, to contain or dispose/recycle residual liquids originating from recyclable containers
- Good housekeeping measures to prevent the accumulation of particulate matter and fluids, particularly in high traffic areas.

Stockpiled materials, processed materials and Non-Recyclable Wastes

The SWPPP must describe *BMPs* to *minimize* contact of *stormwater* runoff with stockpiled materials, processed materials and non-recyclable wastes. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Store the equivalent one day's volume of recyclable materials indoors;
- Containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading installed where appropriate to *minimize* contact of *stormwater* runoff with outdoor processing equipment or stored materials;
- Diversion of runoff away from storage areas via dikes, berms, containment trenches, culverts and surface grading;
- Cover containment bins, dumpsters, roll off boxes;

- Permanent or semi-permanent covers over areas where materials are transferred, stored or stockpiled;
- Install a sump/pump with each containment pit, and *discharge* collected fluids to a sanitary sewer system;
- Sediment traps, vegetated swales and strips, catch basin filters and sand filters to facilitate settling or filtering of sediments;

Residual Liquids & Fluids

The plan shall address *BMPs* to *minimize* contact of residual liquids and particulate matter from materials stored indoors or under cover from coming in contact with surface runoff. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Prohibit the practice of allowing washwater from tipping floors or other processing areas from discharging to the storm sewer system
- Disconnect or seal off all floor drains connected to the storm sewer system;
- Drums containing liquids, especially oil and lubricants, should be stored: indoors; in a bermed area; in overpack containers or spill pallets; or in similar containment devices;
- Drip pans or equivalent measures shall be placed under any leaking piece of stationary equipment until the leak is repaired. The drip pans shall be inspected for leaks and potential overflow and all liquids properly disposed of in accordance with RCRA requirements.
- Liquid wastes, including used oil, shall be stored in materially compatible and non leaking containers, and be disposed or recycled in accordance with all requirements under the Resource Recovery and Conservation Act (RCRA), and *State* or local requirements.

Spill and Leak Prevention

The SWPPP shall include measures to *minimize stormwater* contamination at loading/unloading areas, and from equipment or container failures. The plan may refer to applicable portions of other existing plans such as SPCC plans required under 40 CFR Part 112

- Describe spill prevention and response measures to address areas that are potential sources of fluid leaks or spills. Include measures used for any release of mercury from switches, anti-lock brake systems, and switch storage areas
- Provide for immediate containment and clean up of spills/leaks. If malfunctioning equipment is responsible for the spill/leak, repairs shall also be conducted as soon as possible
- Specify cleanup procedures, including the use of dry absorbents. Where dry absorbent cleanup methods are used, an adequate supply of dry absorbent material shall be maintained on site. Used absorbent material shall be disposed of properly.
- Place drip pans or equivalent measures under any leaking piece of stationary equipment until the leak is repaired. The drip pans shall be inspected for

leaks and potential overflow and all liquids properly disposed of in accordance with RCRA requirements

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Store drums containing liquids, especially oil and lubricants, indoors; in a bermed area; in overpack containers or spill pallets; or in similar containment devices
- Install overfill prevention devices on all fuel pumps or tanks
- Install an alarm and/or pump shut off system on outdoor equipment with hydraulic reservoirs exceeding 150 gallons in order to prevent draining the tank contents in the event of a line break. Alternatively, the equipment may have a secondary containment system capable of containing the contents of the hydraulic reservoir plus adequate freeboard for precipitation.

Additional Sub-sector specific Non-Numeric Effluent Limits

Subsectors N-1 and N-2

Inbound Waste Control Program

Provide totally enclosed drop off containers for the public whenever possible. When determined to be impractical, the SWPPP must describe the measures implemented to either prevent the *discharge* of contaminated *stormwater* from containers, or the containers should be subject to screening and monitoring required in Part IV.F.1.e.

Subsectors N-3 and N-4

Inbound Recyclable & Waste Control Program

Facilities must develop and implement a program to control what is received at the facility. Such plan shall include:

- Provisions for information/education flyers, brochures and pamphlets to suppliers of scrap and recyclable waste materials on:
  - Draining and proper recycling/disposal of residual fluids prior to delivery to the facility when applicable (e.g., from vehicles and equipment engines, radiators, and transmissions, oil filled transformers, and individual containers or drums);
  - Removal and proper collection, recycling and/or disposal of mercury switches, mercury containing parts, lead tire weights, lead battery cable ends air conditioning refrigerants, and small PCB capacitors from vehicles; and
  - Removal and proper collection/disposal of PCB capacitors, ballasts, CFCs/HCFCs, mercury switches, mercury containing components and other sources of potential contaminants from appliances.
- Procedures to require certification by suppliers of inbound shipments of recyclable materials that the items identified above were completed
- Procedures to inspect inbound shipments of recyclable materials to ensure that the items identified above were completed

Lead Battery Program

Facilities accepting lead acid batteries must develop and implement a scrap lead acid battery program. The plan shall address measures and controls for the proper handling, storage and disposal of scrap lead acid batteries. The SWPPP shall document decisions relating to the following *BMP* options:

- Segregate scrap lead acid batteries from other scrap materials;
- A description of procedures and/or measures for the proper handling, storage and disposal of cracked or broken batteries;
- A description of measures to collect and dispose of leaking lead acid battery fluid;
- A description of measures to *minimize* and, whenever possible, eliminate exposure of scrap lead acid batteries to precipitation or runoff; and,
- A description of employee training for the management of scrap batteries.

Residual Fluids

Install oil/water separators, sumps and dry adsorbents for areas where potential sources of residual fluids are stockpiled (e.g., automotive engine storage areas)

The plan shall implement measures necessary to *minimize* contact of surface runoff with residual cutting fluids. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Store all turnings exposed to cutting fluids under some form of permanent or semi-permanent cover. *Stormwater discharges* from these areas are permitted provided the runoff is first treated by an oil/water separator or its equivalent. Procedures to collect, handle, and dispose or recycle residual fluids that may be present shall be identified in the plan
- Establish dedicated containment areas for all turnings that have been exposed to cutting fluids. *Stormwater* runoff from these areas can be *discharged* provided that:
  - The containment areas are constructed of either concrete, asphalt or other equivalent type of impermeable material;
  - There is a drainage collection system for runoff generated from containment areas;
  - There is a schedule to maintain the oil/water separator (or its equivalent); and
  - Procedures are identified and implemented for the proper disposal or recycling of collected residual fluids.

Scrap & Recyclable Waste Processing Areas

The SWPPP shall include *BMPs* to *minimize* surface runoff from coming in contact with scrap processing equipment. In the case of processing equipment that generate visible amounts of particulate residue (e.g., shredding facilities), the plan shall describe measures to *minimize* the contact of residual fluids and accumulated particulate matter with runoff (i.e., through good housekeeping, preventive maintenance, etc.). The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Provide *stormwater* containment within a 30-foot perimeter of the following fixed equipment: shears, balers, shredders, grinders, screeners and conveyors;
- Oil/water separators or sumps
- Catch basin filters or sand filters;
- Use and maintenance of silt and/or other fencing around light material processing to prevent migration lightweight materials such as foam by wind and *stormwater* runoff.
- using dry-absorbents or other cleanup practices to collect and dispose of or recycle spilled or leaking fluids or use mercury spill kits for spills from storage of mercury switches

Subsector N-4

Shredders

At minimum, the SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Use and maintenance of silt and/or other fencing around shredder fluff or other light material processing to prevent migration lightweight materials such as foam by wind and *stormwater* runoff.
- The ground in the entire shredder and downstream area shall be covered by asphalt or concrete, and drainage shall be controlled
- Ground surface must be cleaned/swept at the end of each shift to prevent dirt and debris from being tracked to other areas

Subsector N-5

Indoor Storage Areas

The plan shall include *BMPs* to *minimize*/eliminate contact between residual liquids from waste materials stored indoors and surface runoff. The following Non-Structural *BMPs* must be implemented:

- Development and implementation of procedures for material handling (including labeling and marking); and
- Keep a sufficient supply of dry absorbent materials or a wet vacuum system to collect spilled or leaked materials.
- The use of mercury spill kits for spills from storage of mercury switches.

The SWPPP must document decisions relating to consideration of the following Structural *BMPs*:

- An appropriate containment structure, such as trenches, curbing, gutters or other equivalent measures; and
- A drainage system, including appurtenances (e.g., pumps or ejectors, or manually operated valves), to handle *discharges* from diked or bermed areas. Drainage shall be *discharged* to an appropriate treatment facility, sanitary sewer system, or otherwise disposed of properly. *Discharges*

from these areas may require coverage under a separate *SPDES* permit or industrial user permit under the pretreatment program

Truck & Rail Car Transfer Areas, Outdoor Stockpiles & Storage Areas

Maintain sufficient supply of absorbent materials or a wet vacuum system to collect spills.

The SWPPP must document decisions relating to consideration of the following Structural *BMPs*:

- Appropriate containment structures (e.g., dikes, berms, curbing, pits) to store the volume of the largest single tank, with sufficient extra capacity for precipitation;
- Drainage control and other diversionary structures; and
- For storage tanks, provide corrosion protection and/or leak detection systems

Subsector N-6

Vessel Breaking/Scraping Activities

The following SWPPP special conditions have been established for facilities that are engaged in dismantling ships, marine salvaging, and marine wrecking ships for scrap.

Scrapping of vessels shall be accomplished ashore beyond the range of mean high tide, whenever practicable. If this activity must be conducted while a vessel is afloat or grounded in *Surface Waters of the State*, then the *owner or operator* must employ *BMPs* to *minimize* the amount of *pollutants* released.

The following *BMPs* shall be implemented during those periods when vessels (ships, barges, yachts, etc.) are brought to the facility's site for recycling, scrapping and storage prior to scrapping:

- Fixed or floating platforms sufficiently sized and constructed to catch and prevent scrap materials and *pollutants* from entering *waters of the State* (or equivalent measures approved by the *Department*) shall be used as work surfaces when working on or near the water surface. These platforms shall be cleaned as required to prevent *pollutants* from entering *Surface Waters of the State* and at the end of each work shift. All scrap metals and *pollutants* shall be collected in a manner to prevent releases (containerization is recommended).
- There shall be no *discharge* of oil or oily wastewater at the facility. Drip pans and other protective devices shall be required for all oil and oily waste transfer operations to catch incidental spillage and drips from hose nozzles, hose racks, drums or barrels. Drip pans and other protective devices shall be

inspected and maintained to prevent releases. Oil and oily waste must be disposed at a permitted facility and adequate documentation of off-site disposition shall be retained for review by the board upon request.

- During the storage/breaking/scrapping period, oil containment boom(s) shall be deployed either around the vessel being scrapped, or across the mouth of the facility's wetslip, to contain *pollutants* in the event of a spill. Booms must be inspected, maintained, and repaired as needed. Oil, grease and fuel spills shall be prevented from reaching *Surface Waters of the State*. Cleanup shall be carried out promptly after an oil, grease, and/or fuel spill is detected.
- Paint and solvent spills shall be immediately cleaned up to prevent *pollutants* from reaching storm drains, deck drains, and *Surface Waters of the State*.

Contaminated bilge and ballast water shall not be *discharged* to waters of the *State*. If it becomes necessary to dispose of contaminated bilge and ballast waters during a vessel breaking activity, the wastewater must be disposed at a permitted facility and adequate documentation of off-site disposition shall be retained fwith the SWPPP.

Numeric Effluent Limitations

Table VII-N-1
Sector N – Numeric Effluent Limitations (Subsector N4 Only)

Parameter	Effluent Limitations	
	Daily Maximum	30 Day - Average
Total Mercury*	50 ng/L	
PCBs	200 ng/L per Aroclor**	

*Mercury Analysis shall be by EPA Method 1631
** Required for Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260. If 65 ng/L per Aroclor or more is detected, *owner or operator* shall make adjustments to their *BMPs*

Benchmarks

Scrap recycling and waste recycling facilities; and facilities engaged in dismantling ships, marine salvaging, and marine wrecking ships for scrap are required to monitor their *stormwater discharges* for the *pollutants* of concern as follows:

Subsector N-1: Facilities engaged *only* in activities limited to the description of Sector N-1 are not required to complete *benchmark monitoring* and analysis

Subsectors N-2, N-3, N-4, N-5 and N-6: Facilities in these subsectors must complete the benchmark analysis in Table VII-N-2 below.

Subsector N-4: In addition to the Numeric Effluent Limitations in Table VII-N-1, Subsector N-4 facilities must also complete benchmark analysis for the parameters in Table VII-N-3 for *outfalls* discharging *stormwater* from drainage areas where there are shredder operations and storage areas.

Table VII-N-2
Sector N - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Scrap Recycling and Waste Recycling Facilities (nonsource-separated facilities only) (SIC 5093) and Facilities Engaged in Dismantling Ships, Marine Salvaging, and Marine Wrecking - Ships For Scrap (SIC 4499, limited to list)	
Total Suspended Solids (TSS)	100 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Oil and Grease	15 mg/L
Total Recoverable Aluminum	750 ug/L
Total Recoverable Cadmium	1.8 ug/L
Total Chromium	1.8 mg/L
Total Recoverable Copper	12 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Lead	69 ug/L
Total Recoverable Zinc	110 ug/L

Table VII-N-3
Additional Subsector N4 – *Benchmark Monitoring* Requirements

***Pollutant* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Benzene	50 ug/L
Ethylbenzene	50 ug/L
Toluene	50 ug/L
Xylene	50 ug/L

Sector O – Steam Electric Generating Stations

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from steam electric power generating facilities using coal, natural gas, oil, nuclear energy, or other sources of energy to produce a steam source, including coal handling areas; *stormwater discharges* from coal pile runoff subject to numeric *effluent limitations* are eligible for coverage under this permit, but are subject to *effluent limitations* established by 40 CFR 423; and dual fuel co-generation facilities.

Special Conditions

Prohibition of Non-Stormwater discharges

Stormwater discharges not covered by this permit include: ancillary facilities (e.g., fleet centers, gas turbine stations, and substations) that are not contiguous to a steam electric power generating facility; and heat capture co-generation facilities.

In addition to the general non-*stormwater* prohibition in Part I.B.2, non-*stormwater discharges* subject to *effluent limitation guidelines* are also not covered by this permit.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations of any of the following activities or sources that may be exposed to precipitation/surface runoff:

- Storage tanks, scrap yards, general refuse areas;
- Short- and long-term storage of general materials (including, but not limited to: supplies, construction materials, plant equipment, oils, fuels, used and unused solvents, cleaning materials, paint, water treatment chemicals, fertilizer, and pesticides);
- Landfills;
- Construction sites; and
- Stockpile areas (such as coal or limestone piles).

Additional Non-Numeric Effluent Limits

Inspections

The qualified person shall conduct a monthly inspection which include the following areas:

- Coal handling areas
- Loading/unloading areas
- Switchyards
- Fueling areas
- Bulk storage areas
- Ash handling areas

- Areas adjacent to disposal ponds and landfills
- Maintenance areas
- Liquid storage tanks; and,
- Long term and short-term material storage areas

Good Housekeeping

Fugitive Dust Emissions

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* fugitive dust emissions from coal handling areas. The SWPPP shall document procedures to *minimize* off-site tracking of coal dust such as installing specially designed tires or washing vehicles in a designated area before they leave the site, and controlling the wash water.

Delivery Vehicles

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of *stormwater* runoff from delivery vehicles arriving on the plant site. At a minimum the SWPPP shall include:

- Procedures for the inspection of delivery vehicles arriving on the plant site, and ensure overall integrity of the body or container; and
- Procedures to deal with leakage/spillage from vehicles or containers

Fuel Oil Unloading Areas

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of precipitation/surface runoff from fuel oil unloading areas. At a minimum, the SWPPP must document consideration of the following measures (or their equivalents):

- Use containment curbs in unloading areas;
- Station personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks/spills are immediately contained and cleaned up; and
- Use spill and overflow protection (e.g., drip pans, drip diapers, and/or other containment devices placed beneath fuel oil connectors) to contain potential spillage during deliveries or from leaks at the connectors.

Chemical Loading & Unloading Areas

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of precipitation/surface runoff from Chemical loading and unloading areas. At a minimum, the SWPPP must document consideration of the following measures (or their equivalents):

- Use containment curbs in unloading areas;
- Station personnel familiar with spill prevention and response procedures to ensure that any leaks/spills are immediately contained and cleaned up; and

- Where practicable, load and unload in covered areas and store chemicals indoors.

Miscellaneous Loading & Unloading Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* the contamination of *stormwater* runoff from loading and unloading areas.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Covering the loading area;
- Grading, berming, or curbing around the loading area to divert run-on;
- Locating the loading/unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems

Liquid Storage

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of *stormwater* runoff from aboveground liquid storage tanks. At a minimum the SWPPP must document consideration of the following measures (or their equivalents):

- Use of protective guards around tanks;
- Use of containment curbs;
- Use of spill and overflow protection; and
- Use of dry cleanup methods.

Large Bulk Storage Fuel Tanks

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of *stormwater* runoff from large bulk fuel storage tanks. At a minimum, the SWPPP must document consideration of containment berms (or their equivalent). The *owner or operator* shall also comply with applicable *State* and federal laws, including Spill Prevention Control and Countermeasures (SPCC).

Spill Reduction Measures

The SWPPP shall describe and provide for implementation of measures to reduce the potential for an oil/chemical spill or reference the appropriate section of their SPCC plan. At a minimum, the structural integrity of all aboveground tanks, pipelines, pumps and other related equipment shall be visually inspected on a weekly basis. All repairs deemed necessary based on the findings of the inspections shall be completed immediately to reduce the incidence of spills and leaks occurring from such faulty equipment.

Oil Bearing Equipment in Switchyards

The SWPPP shall describe and provide for implementation of measures to prevent or *minimize* contamination of surface runoff from oil bearing equipment in

switchyard areas. The SWPPP shall document consideration of the use of level grades and gravel surfaces to retard flows and limit the spread of spills, and the collection of *stormwater* runoff in perimeter ditches.

Residue Hauling Vehicles

All residue hauling vehicles shall be inspected for proper covering over the load, adequate gate sealing and overall integrity of the container body. Vehicles without load coverings or adequate gate sealing, or with leaking containers or beds must be repaired as soon as practicable.

Ash Loading Areas

The SWPPP shall describe and provide for implementation of procedures to reduce or control the tracking of ash/residue from ash loading areas. Where practicable, clear the ash building floor and immediately adjacent roadways of spillage, debris and excess water before departure of each loaded vehicle.

Landfills, Scrapyards, Surface Impoundments, General Refuse Sites

The plan must address and include appropriate *BMPs* for landfills, scrapyards, surface impoundments, non-compliant landfills and general refuse sites.

Vehicle & Equipment Maintenance Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of the *stormwater* runoff from all areas used for vehicle/equipment maintenance. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Performing maintenance activities indoors; using drip pans;
- Keeping an organized inventory of materials used in the shop;
- Draining all parts of fluids prior to disposal;
- Prohibiting wet clean up practices where the practices would result in the discharge of pollutants to stormwater drainage systems;
- Using dry cleanup methods;
- Treating and/or recycling collected stormwater runoff; and,
- Minimizing runon/runoff of stormwater to maintenance areas

Material Storage Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of *stormwater* runoff from material storage areas (including areas used for temporary storage of miscellaneous products, and construction materials stored in lay down areas). The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Flat yard grades;
- Runoff collection in graded swales or ditches; erosion protection measures at steep outfall sites (e.g., concrete chutes, riprap, stilling basins);
- Covering lay down areas storing materials indoors;

- Covering materials temporarily with polyethylene, polyurethane, polypropylene, or hypalon.
- Minimize stormwater run-on by constructing an enclosure or berming around the area.

Numeric Effluent Limitations

Owner or operators with *point sources* of coal pile runoff associated with steam electric power generation must monitor these *stormwater discharges* for the presence of TSS and for pH semi-annually in accordance with Part IV.F.3.e (Table IV.3).

Table VII-O-1
Sector O – Numeric Effluent Limitations

Parameter	Effluent Limitation	
	Daily Maximum	30-Day Average
PCBs	200 ng/L per Aroclor*	

* Required for Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260. If 65 ng/L per Aroclor or more is detected, *owner or operator* shall make adjustments to their *BMPs*

Benchmarks

Steam electric power generating facilities are required to monitor their *stormwater discharges* for the *pollutant* of concern listed in Table VII-O-2.

Table VII-O-2
Sector O - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Steam Electric Generating Facilities (Industrial Activity Code "SE")	
Oil & Grease	15 mg/L
Total Recoverable Iron	1 mg/L

Sector P – Land Transportation and/or Warehousing

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from land transportation and/or warehousing facilities (generally identified by SIC Codes 4011, 4013, 4111-4173, 4212-4231, 4311 and 5171), that have vehicle and equipment maintenance shops (vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication) and/or equipment cleaning operations. Transfer stations that have vehicle and equipment maintenance shops are covered under this sector in addition to the applicable Sector N subsector requirements.

Special Conditions

Prohibition of Non-Stormwater discharges

The *discharge* of vehicle/equipment wash waters, including tank cleaning operations, are not authorized by this permit and must be covered under a separate *SPDES* permit or *discharged* to a sanitary sewer in accordance with applicable industrial pretreatment requirements.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations of any of the following activities or sources:

- Fueling stations;
- Vehicle/equipment maintenance or cleaning areas;
- Storage areas for vehicle/equipment with actual or potential fluid leaks;
- Loading/unloading areas;
- Areas where treatment, storage or disposal of wastes occur; liquid storage tanks;
- Processing areas;
- Storage areas; and
- All monitoring areas.

Summary of Potential Pollutant Sources

The plan shall describe and assess the potential for the following to contribute *pollutants* to *stormwater discharges*:

- On-site waste storage or disposal
- Dirt/gravel parking areas for vehicles awaiting maintenance; and,
- Fueling areas

Additional Non-Numeric Effluent Limits

Good Housekeeping

Vehicle & Equipment Storage Areas

The storage of vehicles and equipment awaiting maintenance with actual or potential fluid leaks must be confined to designated areas (delineated on the site map). The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- The use of drip pans under vehicles and equipment;
- Indoor storage of vehicles and equipment;
- Installation of berms or dikes;
- Use of absorbents;
- Roofing or covering storage areas; and
- Cleaning pavement surface to remove oil and grease.

Fueling Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of the *stormwater* runoff from fueling areas. The SWPPP shall document consideration of the following measures (or their equivalents):

- Covering the fueling area;
- Using spill/overflow protection and cleanup equipment;
- Minimizing stormwater run-on/runoff to the fueling area;
- Using dry cleanup methods; and
- Treating and/or recycling collected stormwater runoff

Material Storage Areas

Storage vessels of all materials (e.g., for used oil/oil filters, spent solvents, paint wastes, hydraulic fluids) must be maintained in good condition, so as to prevent contamination of *stormwater*, and plainly labeled (e.g., "used oil," "spent solvents," etc.). The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Indoor storage of the materials;
- Installation of berms/dikes around the areas, minimizing runoff of stormwater to the areas;
- Using dry cleanup methods; and
- Treating and/or recycling the collected stormwater runoff

Vehicle & Equipment Cleaning Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of *stormwater* runoff from all areas used for vehicle/equipment cleaning. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Performing all cleaning operations indoors;
- Covering the cleaning operation;
- Ensuring that all wash waters drain to a proper collection system (i.e., not the stormwater drainage system unless SPDES permitted); and,
- Treating and/or recycling the collected stormwater runoff

Vehicle & Equipment Maintenance Areas

The SWPPP shall describe and provide for implementation of measures that prevent or *minimize* contamination of the *stormwater* runoff from all areas used for vehicle/equipment maintenance. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Performing maintenance activities indoors; using drip pans;
- Keeping an organized inventory of materials used in the shop;
- Draining all parts of fluids prior to disposal;
- Prohibiting wet clean up practices where the practices would result in the discharge of pollutants to stormwater drainage systems;
- Using dry cleanup methods;
- Treating and/or recycling collected stormwater runoff; and,
- Minimizing runon/runoff of stormwater to maintenance areas

Locomotive Sanding (loading sand for traction) Areas

The SWPPP must describe measures that prevent or *minimize* contamination of the *stormwater* runoff from areas used for locomotive sanding. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Covering sanding areas;
- Minimizing stormwater runon/runoff; or
- Appropriate sediment removal practices to minimize the off-site transport of sanding material by stormwater.

Employee Training

Employee training shall take place, at a minimum, annually (once per calendar year) and must address the following, as applicable:

- Used oil and spent solvent management;
- Fueling procedures;
- General good housekeeping practices;
- Proper painting procedures; and
- Used battery management

Inspections

The following areas/activities shall be included in all inspections:

- Storage area for vehicles /equipment awaiting maintenance;
- Fueling areas;
- Indoor and outdoor vehicle/equipment maintenance areas;
- Material storage areas;
- Vehicle/equipment cleaning areas; and
- Loading/unloading areas

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Land transportation and/or warehousing facilities are required to monitor their *stormwater discharges* for the *pollutant* of concern listed in Table VII-P-1.

Table VII-P-1 Sector P - *Benchmark Monitoring* Requirement	
***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Land Transportation and /or Warehousing Facilities (SIC Codes 4011, 4013, 4111-4173, 4212-4231, 4311 and 5171)	
Oil & Grease	15 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Benzene	50 ug/L
Ethylbenzene	50 ug/L
Toluene	50 ug/L
Xylene	50 ug/L

Sector Q – Water Transportation

Applicability

The requirements listed under this section apply to *stormwater discharges* associated with *industrial activity* from water transportation facilities (generally identified by SIC Major Group 44), that have vehicle (vessel) maintenance shops and/or equipment cleaning operations. The water transportation industry includes facilities engaged in foreign or domestic transport of freight or passengers in deep sea or inland waters; marine cargo handling operations; ferry operations; towing and tugboat services; and marinas, including: boat yards, storage and incidental repair; and yacht basins. The retail sale of fuel alone at marinas, without any other vessel maintenance or equipment cleaning operations, is not considered to be grounds for coverage under the stormwater regulations.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-*stormwater* prohibition in Part I.B.2, the following *discharges* not covered by this permit include, but are not limited to:

- Bilge and ballast water
- Sanitary wastes
- Pressure wash water
- Cooling water originating from vessels.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations where any of the following activities may be exposed to precipitation/surface runoff:

- Fueling;
- Engine maintenance/repair;
- Vessel maintenance/repair, pressure washing;
- Painting;
- Sanding;
- Blasting;
- Welding;
- Metal fabrication;
- Loading/unloading areas;
- Locations used for the treatment, storage or disposal of wastes;
- Liquid storage tanks;
- Liquid storage areas (e.g., paint, solvents, resins); and,
- Material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

Summary of Potential Pollutant Sources

The SWPPP shall describe the following additional sources and activities that have potential pollutants associated with them:

- Outdoor manufacturing or processing activities (i.e., welding, metal fabricating);
- Significant dust or particulate generating processes (e.g., abrasive blasting, sanding, painting).

Additional Non-Numeric Effluent Limits

Good Housekeeping

Pressure Washing Areas

Discharge of wastewater from pressuring washing to remove marine growth from vessels must be permitted by a separate *SPDES* permit. Facilities that pressure wash vessels must include the following information in the SWPPP:

- Measures to collect or contain the discharge from the pressure washing area;
- Method for the removal of the visible solids;
- Methods of disposal of the collected solids; and,
- Location where the discharge will be released

Blasting & Painting Areas

The SWPPP shall describe and provide for implementation of standard operating practices for blasting and painting activities. The SWPPP shall document consideration of the prohibition of uncontained blasting/painting over open water, or the prohibition of blasting/painting during windy conditions which can render containment ineffective.

The SWPPP must describe and provide for implementation of measures to prevent spent abrasives, paint chips, and overspray from discharging into the receiving water or the storm sewer system. Stormwater conveyances shall be regularly cleaned to remove deposits of abrasive blasting debris and paint chips.

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Containment of all blasting/painting activities
- Use of hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris
- Other measures to prevent or minimize the discharge of contaminants

Material Storage Areas

All containerized materials (fuels, paints, solvents, waste oil, antifreeze, batteries) must be plainly labeled and stored in a protected, secure location away from drains.

The SWPPP must:

- Describe and provide for implementation of measures to prevent or minimize the contamination of precipitation/surface runoff from the storage areas.

- Specify which materials are stored indoors and consider containment or enclosure for materials that are stored outdoors.
- Document considerations regarding implementing an inventory control plan to limit the presence of potentially hazardous materials on-site.
- Evaluate the storage and disposal of spent abrasive materials generated at the facility where abrasive blasting is performed.

Engine Maintenance & Repair Areas

The SWPPP must describe and provide for implementation of measures to prevent or minimize contamination of precipitation/surface runoff from all areas used for engine maintenance and repair.

The SWPPP shall document consideration of the following measures (or their equivalent):

- Performing all maintenance activities indoors;
- Maintaining an organized inventory of materials used in the shop;
- Draining all parts of fluids prior to disposal;
- Prohibiting the practice of hosing down the shop floor;
- Specify use of dry cleanup methods; and
- Treating and/or recycling stormwater runoff collected from the maintenance area.

Material Handling Areas

The SWPPP must describe and provide for implementation of measures to prevent or minimize contamination of precipitation/surface runoff from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels).

The SWPPP shall document consideration of the following measures (or their equivalent):

- Covering fueling areas;
- Using spill/overflow protection;
- Mixing paints and solvents in a designated area (preferably indoors or under a shed); and
- Minimizing run-on of stormwater to material handling areas

Dry Dock Areas

The SWPPP must include the following:

- Routine maintenance and cleaning of the dry dock to minimize the potential for pollutants in the stormwater runoff.
- Procedures for cleaning the accessible areas of the dry dock prior to flooding
- Final cleanup after the vessel is removed and the dock is raised
- Cleanup procedures for oil, grease, or fuel spills occurring on the dry dock
- Sweep rather than hose off debris /spent blasting material from the accessible areas of the dry dock prior to flooding;

- Keep absorbent materials and oil containment booms readily available to contain/cleanup any spills

General Yard Area

The plan must include a schedule for routine yard maintenance and cleanup. Scrap metal, wood, plastic, miscellaneous trash, paper, glass, industrial scrap, insulation, welding rods, packaging, etc., must be routinely removed from the general yard area.

Employee Training

Training shall address, at a minimum, the following activities (as applicable):

- Used oil management
- Spent solvent management
- Disposal of spent abrasives
- Disposal of vessel wastewaters
- Spill prevention and control
- Fueling procedures
- General good housekeeping practices
- Painting and blasting procedures
- Used battery management

Inspections

The following areas shall be included in all monthly inspections:

- Pressure washing area;
- Blasting, sanding, and painting areas;
- Material storage areas;
- Engine maintenance and repair areas;
- Material handling areas;
- Drydock area; and
- General yard area

Preventative Maintenance

As part of the facility's preventive maintenance program, stormwater management devices shall be inspected and maintained in a timely manner (e.g., oil/water separators and sediment traps cleaned to ensure that spent abrasives, paint chips and solids are intercepted and retained prior to entering the storm drainage system). Facility equipment and systems shall also be inspected and tested to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Water transportation facilities are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-Q-1.

Table VII-Q-1
Sector Q - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Water Transportation Facilities (SIC 4412-4499)	
Total Recoverable Aluminum	750 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Lead	69 ug/L
Total Recoverable Zinc	110 ug/L

Sector R – Ship & Boat Building or Repair Yards

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from facilities engaged in ship and boat building and repairing (SIC Code 373). (According to the U.S. Coast Guard, a vessel 65 feet or greater in length is referred to as a ship and a vessel smaller than 65 feet is a boat.)

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-*stormwater* prohibition in Part I.B.2, the following *discharges* not covered by this permit include, but are not limited to:

- Bilge and ballast water
- Pressure wash water
- Sanitary wastes
- Cooling water originating from vessels

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations where any of the following activities may be exposed to precipitation/surface runoff:

- Fueling;
- Engine maintenance/repair;
- Vessel maintenance/repair;
- Pressure washing;
- Painting;
- Sanding;
- Blasting;
- Welding;
- Metal fabrication;
- Loading/unloading areas;
- Locations used for the treatment, storage or disposal of wastes;
- Liquid storage tanks;
- Liquid storage areas (e.g., paint, solvents, resins); and,
- Material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

Summary of Potential Pollutant Sources

The SWPPP shall include a description of the following additional sources and activities that have potential *pollutants* associated with them (if applicable):

- Outdoor manufacturing/processing activities (e.g., welding, metal fabricating);
- Significant dust/particulate generating processes (e.g., abrasive blasting, sanding, painting).

Additional Non-Numeric Effluent Limits

Good Housekeeping

Pressure Washing

Discharge of wastewater from pressuring washing to remove marine growth from vessels must be permitted by a separate *SPDES* permit. Facilities that pressure wash vessels must include the following information in the SWPPP:

- Measures to collect or contain the discharge from the pressure washing area;
- Method for the removal of the visible solids;
- Methods of disposal of the collected solids; and,
- Location where the discharge will be released

Blasting & Painting Areas

The SWPPP must:

- Describe and provide for the implementation of measures to prevent spent abrasives, paint chips and overspray from discharging into the receiving water body or the storm sewer system.
- Include provisions to contain all blasting/painting activities to prevent the discharge of contaminants. Consider hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris.
- Include a schedule for regularly cleaning storm systems to remove deposits of abrasive blasting debris and paint chips, if applicable.
- Describe and provide for implementation of standard operating practices for blasting and painting activities, such as the prohibition of uncontained blasting/painting over open water or the prohibition of blasting/painting during windy conditions that can render containment ineffective.

Material Storage Areas

All containerized materials (fuels, paints, solvents, waste oil, antifreeze, batteries) must be plainly labeled and stored in a protected, secure location away from drains.

The SWPPP must:

- Describe and provide for the implementation of measures to prevent or minimize contamination of precipitation/surface runoff from the storage areas.
- Specify which materials are stored indoors and consider containment or enclosure for materials that are stored outdoors.
- Document considerations regarding implementing an inventory control plan to limit the presence of potentially hazardous materials on-site.

- Evaluate the storage and disposal of spent abrasive materials generated at the facility where abrasive blasting is performed

General Yard Area

The plan must include a schedule for routine yard maintenance and cleanup. Scrap metal, wood, plastic, miscellaneous trash, paper, glass, industrial scrap, insulation, welding rods, packaging, etc., must be routinely removed from the general yard area.

Engine Maintenance & Repair Areas

The SWPPP must describe and provide for implementation of measures to prevent or minimize contamination of precipitation/surface runoff from all areas used for engine maintenance and repair.

The SWPPP shall document considerations of the following *BMPs* (or their equivalence):

- Performing all maintenance activities indoors;
- Maintaining an organized inventory of materials used in the shop;
- Draining all parts of fluids prior to disposal;
- Prohibiting the practice of hosing down the shop floor;
- Specify use of dry cleanup methods
- Treating and/or recycling stormwater runoff collected from the maintenance area.

Material Handling Areas

The SWPPP must describe and provide for implementation of measures to prevent or minimize contamination of precipitation/surface runoff from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels).

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Covering fueling areas;
- Using spill/overflow protection;
- Mixing paints and solvents in a designated area (preferably indoors or under a shed);
- Minimizing run-on of stormwater to material handling areas

Dry dock Areas

The SWPPP must describe procedures for the following:

- Routine maintenance and cleaning of the dry dock to minimize the potential for pollutants in the stormwater runoff.
- Cleaning the accessible areas of the dry dock prior to flooding
- Final cleanup after the vessels are removed and the dock is raised
- Cleanup of oil, grease, or fuel spills occurring on the dry dock.

- Sweep rather than hose off debris /spent blasting material from the accessible areas of the dry dock prior to flooding
- Keep absorbent materials and oil containment booms readily available to contain/cleanup any spills.

Inspections

The following areas shall be included in all monthly inspections:

- Pressure washing areas;
- Blasting, sanding, and painting areas
- Material storage areas
- Engine maintenance/repair areas
- Material handling areas
- Drydock area
- General yard area.

Employee Training

Training shall address, at a minimum, the following activities (as applicable):

- Used oil management
- Spent solvent management
- Proper disposal of spent abrasives
- Proper disposal of vessel wastewaters, spill prevention and control
- Fueling procedures
- General good housekeeping practices
- Painting and blasting procedures
- Used battery management.

Preventative Maintenance

As part of the facility's preventative maintenance program, *stormwater* management devices shall be inspected and maintained in a timely manner (e.g., oil/water separators and sediment traps cleaned to ensure that spent abrasives, paint chips and solids are intercepted and retained prior to entering the storm drainage system). Facility equipment and systems shall also be inspected and tested to uncover conditions that could cause breakdowns or failures resulting in *discharges* of *pollutants* to surface waters.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

No *Benchmark Monitoring* or reporting is required for this sector.

Sector S – Air Transportation

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from air transportation facilities including

- air transportation (scheduled and non-scheduled);
- air courier services;
- airports;
- flying fields (except those maintained by aviation clubs);
- air terminal services including air traffic control (except government);
- aircraft storage at airports;
- aircraft upholstery repair;
- airfreight handling at airports;
- airport hangar rental;
- airport leasing, if operating airport;
- airport terminal services;
- hangar operation;
- airport, aircraft service and maintenance including aircraft cleaning and janitorial service;
- aircraft servicing /repairing (except on a factory basis);
- vehicle maintenance shops;
- material handling facilities;
- equipment clearing operations; and
- airport/aircraft deicing and anti-icing. [Note: For the purpose of this section, the term "deicing" is defined as the process to remove frost, snow, or ice and "anti-icing" is the process which prevents the accumulation of frost, snow, or ice.]

Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this section.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general prohibition of non-stormwater discharges in Part I.B.2, the following discharges not covered by this permit include:

- aircraft, ground vehicle, runway and equipment wash-waters, and
- dry weather discharges of deicing/anti-icing chemicals.

These *discharges* must be covered by a separate *SPDES* permit.

SWPPP Requirements in Addition to Part III

General

Air transportation facilities often have more than one operator who could *discharge stormwater* associated with *industrial activity*. For the purposes of this permit Owners or Operators include the airport authority and airport tenants. Tenants of the

airport facility include airline passenger or cargo companies, fixed based *owners or operators* and other parties who have contracts with the airport authority to conduct business operations on airport property and whose operations result in *stormwater discharges* associated with *industrial activity*.

SWPPPs developed for areas of the facility occupied by tenants of the airport shall be integrated with the comprehensive SWPPP for the entire airport. As applicable, the SWPPP must clearly specify the MSGP requirements to be complied with by the:

- Airport authority for itself;
- Airport authority on behalf of its tenants;
- Tenants for themselves

For each activity that an *owner or operator* conducts on behalf of another *owner or operator*, the SWPPP must describe a process for reporting results to the latter operator and for ensuring appropriate follow-up by all affected operators.

Site Map

The site map shall identify where any of the following activities may be exposed to precipitation/surface runoff:

- Aircraft and runway deicing/anti-icing operations;
- Fueling stations;
- Aircraft, ground vehicle and equipment maintenance/cleaning areas;
- Storage areas for aircraft, ground vehicles and equipment awaiting maintenance.

Summary of Potential Pollutant Sources

A narrative description of the potential *pollutant* sources from the following activities:

- aircraft, runway, ground vehicle and equipment maintenance and cleaning;
- aircraft and runway deicing/anti-icing operations (including apron and centralized aircraft deicing/anti-icing stations, runways, taxiways and ramps).

Facilities that conduct deicing/anti-icing operations shall maintain a record of the types (including the Material Safety Data Sheets (MSDS)) and monthly quantities of deicing/anti-icing chemicals used, either as measured amounts, or in the absence of metering, as estimated amounts. This includes all deicing/anti-icing chemicals, not just glycols and urea (e.g., potassium acetate). Tenants and fixed-base operators who conduct deicing/anti-icing operations shall provide the above information to the airport authority for inclusion in the *stormwater* pollution prevention plan for the entire facility.

Additional Non-Numeric Effluent Limits

Good Housekeeping

Aircraft, ground vehicle and equipment maintenance areas

The SWPPP must describe and provide for implementation of measures that prevent or minimize the contamination of *stormwater* runoff from all areas used

for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangars).

The SWPPP must document consideration of the following measures (or their equivalents):

- Performing maintenance activities indoors;
- Maintaining an organized inventory of materials used in the maintenance areas
- Draining all parts of fluids prior to disposal
- Preventing the practice of hosing down the apron or hangar floor
- Using dry cleanup methods
- Collecting the stormwater runoff from the maintenance area
- Providing treatment or recycling

Aircraft, ground vehicle and equipment cleaning areas

The SWPPP shall include provisions that ensure that cleaning of equipment is conducted in designated areas only and clearly identify these areas on the ground and delineate them on the site map.

The plan must describe measures that will be implemented to prevent or *minimize* the contamination of the *stormwater* runoff from cleaning areas.

Aircraft, ground vehicle and equipment storage areas

The storage of aircraft, ground vehicles and equipment awaiting maintenance must be confined to designated areas (delineated on the site map).

The SWPPP shall document consideration of the following *BMPs* (or their equivalents):

- Indoor storage of aircraft and ground vehicles
- Use of drip pans for the collection of fluid leaks
- Perimeter drains, dikes or berms surrounding storage areas.

Material storage areas

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of precipitation/runoff from storage areas. Storage vessels of all materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) must be maintained in good condition, so as to prevent or *minimize* contamination of *stormwater*, and plainly labeled (e.g., "used oil," "Contaminated Jet A," etc.).

The SWPPP shall document consideration of the following *BMPs* (or their equivalents):

- Indoor storage of materials
- Centralized storage areas for waste materials
- Installation of berms/dikes around storage areas.

Airport Fuel System and Fueling Areas

The SWPPP must describe and provide for implementation of measures that prevent or minimize the *discharge* of fuels to the storm sewer/surface waters resulting from fuel servicing activities or other operations conducted in support of the airport fuel system.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Implementing spill and overflow practices (e.g., placing absorptive materials beneath aircraft during fueling operations)
- Using dry cleanup methods
- Collecting the stormwater runoff

Source Reductions

Owners or operators who conduct deicing/anti-icing operations shall consider alternatives to the use of urea and glycol-based deicing/anti-icing chemicals to reduce the aggregate amount of deicing/anti-icing chemicals used and/or lessen the environmental impact. Chemical options to replace ethylene glycol, propylene glycol and urea include: potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.

Runway Deicing Operations

Owners or operators shall evaluate present application rates to ensure against excessive over application by analyzing application rates and adjusting as necessary, consistent with considerations of flight safety.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Metered application of chemicals;
- Prewetting dry chemical constituents prior to application;
- Installation of runway ice detection systems;
- Implementing anti-icing operations as a preventive measure against ice buildup;
- Product substitution;
- Heating sand

Aircraft deicing/anti icing operations

Owners *or operators* shall determine whether excessive application of deicing/anti-icing chemicals occur, and adjust as necessary, consistent with considerations of flight safety. This evaluation should be carried out by the personnel most familiar with the particular aircraft and flight operations in question (versus an outside entity such as the airport authority). The use of alternative deicing/anti-icing agents, as well as containment measures for all applied chemicals, shall be considered.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents) for reducing deicing fluid:

- Forced-air deicing systems
- Computer-controlled fixed-gantry systems
- Infrared technology
- Hot water
- Varying glycol content to air temperature
- Enclosed-basket deicing trucks
- Mechanical methods
- Solar radiation
- Hangar storage
- Aircraft covers
- Thermal blankets for MD-80s and DC-9s
- Ice-detection systems
- Airport traffic flow strategies
- Departure slot allocation systems

Management of Runoff

Where deicing/anti-icing operations occur, *owners or operators* shall describe and implement a program to control or manage contaminated runoff to *minimize* the amount of *pollutants* being *discharged* from the site.

The SWPPP shall document consideration of the following *BMPs* (or their equivalents):

- Establish a dedicated deicing facility with a runoff collection/recovery system;
- Use vacuum/collection trucks;
- Store contaminated stormwater/deicing fluids in tanks and releasing controlled amounts to a publicly owned treatment works in accordance with pretreatment program requirements
- Collect contaminated runoff in a wet pond for biochemical decomposition (be aware of attracting wildlife that may prove hazardous to flight operations)
- Direct runoff into vegetative swales or other infiltration measures.
- Recover deicing/anti-icing materials when these materials are applied during non-precipitation events (e.g., covering storm sewer inlets, using booms, installing absorptive interceptors in the drains, etc.) to prevent these materials from later becoming a source of stormwater contamination.
- Recycle used deicing fluid whenever possible.

Inspections

The inspection frequency shall be specified in the SWPPP. At a minimum, inspections shall be conducted once per month during deicing/anti-icing season (e.g., October through April for most airports). If deicing occurs before or after this period, the inspections shall be expanded to include all months during which deicing chemicals may be used.

If significantly or deleteriously large quantities of deicing chemicals are being spilled or *discharged*, or if water quality impacts have been reported, the inspection

frequency shall be increased to weekly until such time as the chemical spills/*discharges* or impacts are reduced to acceptable levels.

Comprehensive site compliance inspection

In addition to the requirements in Part IV.A, the annual site compliance evaluations shall be conducted by the qualified person during periods of actual deicing operations, if possible. If not practicable during active deicing or if the weather is too inclement, the evaluations shall be conducted when deicing operations are likely to occur and the materials and equipment for deicing are in place.

Numeric Effluent Limitations

Airfield Pavement Deicing

For both existing and new "primary airports" (as defined at 40 CFR 449.2) with 1,000 or more annual non-propeller aircraft departures that *discharge stormwater* from airfield pavement deicing activities, there shall be no *discharge* of airfield pavement deicers containing urea. To comply with this limitation, such airports must do one of the following: (1) certify annually on the annual report that you do not use pavement deicers containing urea, or (2) meet the effluent limitation in Table VII-S-1.

Aircraft Deicing

Airports that are both "primary airports" (as defined at 40 CFR 449.2) and new sources ("new airports") with 1,000 or more annual non-propeller aircraft departures must meet the applicable requirements for aircraft deicing at 40 CFR 449.11(a). *Discharges* of the collected aircraft deicing fluid directly to waters of the U.S. are not eligible for coverage under this permit.

Monitoring, Reporting and Recordkeeping. For new and existing airports subject to the effluent limitations above, you must comply with the applicable monitoring, reporting and recordkeeping requirements outlined in 40 CFR 449.20.

Table VII-S-1
Sector S - Numeric Effluent Limitations

Industrial Activity	Parameter	Effluent Limit
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures.	Ammonia as Nitrogen	14.7 mg/L daily maximum

Benchmarks

Airports that use more than 100,000 gallons of glycol-based deicing/anti-icing chemicals and/or 100 tons or more of urea on an average annual basis shall sample their *stormwater discharges* for the parameters listed in Table VII-S-12. Only those *outfalls* from the airport facility that collect runoff from areas where deicing/anti-icing activities occur must be monitored (SIC 4512-4581).

Table VII-S-2
Sector S - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Air Transportation Facilities (SIC 4512-4581)	
Biochemical Oxygen Demand (BOD5)	30 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Total Nitrogen (TN)*	6 mg/L
pH	within the range 6.0 to 9.0 s.u.
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen	

Sector T – Treatment Works

Applicability

The requirements listed under this section apply to stormwater discharges associated with industrial activity from treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under 40 CFR 403 (Industrial Activity Code "TW"). Farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located within the facility, or areas that are in compliance with Section 405 of the CWA are not required to have permit coverage.

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-stormwater prohibition in Part I.B.2, the following discharges not covered by this permit include, but are not limited to: sanitary and industrial wastewater; and equipment/vehicle wash waters.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Grit, screenings and other solids handling, storage or disposal areas
- Sludge drying beds
- Dried sludge piles
- Compost piles
- Septage or hauled waste receiving station
- Storage areas for process chemicals, petroleum products, solvents, fertilizers, herbicides and pesticides

Summary of Potential Pollutant Sources

A description of the potential pollutant sources from the following activities, as applicable:

- Grit, screenings and other solids handling, storage or disposal areas
- Sludge drying beds; dried sludge piles
- Compost piles
- Septage or hauled waste receiving station
- Access roads/rail lines.

Additional Non-Numeric Effluent Limits

Best Management Practices

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Routing stormwater to the treatment works
- Covering exposed materials, including but not limited to the following:
  - Grit, screenings and other solids handling, storage or disposal areas
  - Sludge drying beds
  - Dried sludge piles
  - Compost piles
  - Septage or hauled waste receiving station.

Employee Training

Employee training must, at a minimum, address the following areas when applicable to a facility:

- Petroleum product management
- Process chemical management
- Spill prevention and control
- Fueling procedures
- General good housekeeping practices
- Proper procedures for using fertilizers, herbicides and pesticides

Inspections

The following areas shall be included in all inspections:

- Access roads/rail lines, grit, screenings and other solids handling, storage or disposal areas;
- Sludge drying beds
- Dried sludge piles
- Compost piles
- Septage or hauled waste receiving station areas

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Treatment works are required to monitor their stormwater discharges for the pollutants of concern listed in Table VII-T-1

Table VII-T-1
Sector T - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Treatment Works (Industrial Activity Code "TW")	
Chemical Oxygen Demand (COD)	120 mg/L

Sector U – Food & Kindred Products

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from food and kindred products processing facilities (commonly identified by SIC Code 20), including:

- Meat products
- Dairy products
- Canned, frozen and preserved fruits, vegetables, and food specialties
- Grain mill products
- Bakery products;
- Sugar and confectionery products;
- Fats and oils
- Beverages
- Miscellaneous food preparations and kindred products and tobacco products manufacturing (SIC Code 21).

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-stormwater prohibition in Paragraph I.D.1, the following discharges not covered by this permit include, but are not limited to:

- Boiler blow down
- Cooling tower overflow and blow down
- Ammonia refrigeration purging
- Vehicle washing/clean-out operations

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify the locations of the following activities if they are exposed to precipitation/surface runoff:

- Vents/stacks from cooking, drying, and similar operations
- Dry product vacuum transfer lines
- Animal holding pens
- Spoiled product
- Broken product container storage areas

Summary of Potential Pollutant Sources

In addition to food and kindred products processing-related industrial activities, the plan must also describe application and storage of pest control chemicals (e.g., rodenticides, insecticides, fungicides, etc.) used on plant grounds.

Additional Non-Numeric Effluent Limits

Inspections

At a minimum the following areas must be inspected:

- Loading and unloading areas for all significant materials
- Storage areas, including associated containment areas
- Waste management units
- Vents and stacks emanating from industrial activities
- Spoiled product and broken product container holding areas
- Animal holding pens
- Staging areas
- Air pollution control equipment

Employee Training

The employee training program must also address pest control.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Grain mills and fats and oils products facilities are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-U-1.

Table VII-U-1
Sector U - *Benchmark Monitoring* Requirement

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Grain Mill Products (SIC 2041-2048)	
Total Suspended Solids (TSS)	100 mg/L
Total Nitrogen (TN)	6 mg/L
Total Phosphorus (TP)	2 mg/L
Fats and Oils Products (SIC 2074-2079)	
Total Suspended Solids (TSS)	100 mg/L
Biochemical Oxygen Demand (BOD5)	30 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Total Nitrogen (TN)*	6 mg/L
Total Phosphorus (TP)	2 mg/L

* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen.

Sector V – Textile Mills, Apparel & Other Fabric Products

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from textile mills, apparel and other fabric product manufacturing, generally described by SIC 22 and 23. Facilities in this sector are primarily engaged in the following activities:

- Textile mill products, of and regarding facilities and establishments engaged in the preparation of fiber and subsequent manufacturing of yarn, thread, braids, twine, and cordage,
- Manufacturing of broad woven fabrics, narrow woven fabrics, knit fabrics, and carpets and rugs from yarn
- Processes involved in the dyeing and finishing of fibers, yarn fabrics, and knit apparel
- Integrated manufacturing of knit apparel and other finished articles of yarn
- Manufacturing of felt goods (wool), lace goods, nonwoven fabrics , miscellaneous textiles, and other apparel products.

This section also covers facilities engaged in manufacturing finished leather and artificial leather products (SIC 31, except 3111).

Special Conditions

Prohibition of Non-Stormwater discharges

In addition to the general non-*stormwater* prohibition in Paragraph I.D.1, the following *discharges* not covered by this permit and must be covered by a separate *SPDES* Permit include, but are not limited to:

- *Discharges* of wastewater (e.g., wastewater as a result of wet processing or from any processes relating to the production process)
- Reused/recycled water
- Water used in cooling towers

SWPPP Requirements in Addition to Part III

Summary of Potential Pollutant Sources

A description of the potential *pollutant* sources from industry-specific *significant materials* and industrial activities (e.g., backwinding, beaming, bleaching, backing, bonding carbonizing, carding, cut and sew operations, de-sizing, drawing, dyeing, flocking, fulling, knitting, mercerizing, opening, packing, plying, scouring, slashing, spinning, synthetic-felt processing, textile waste processing, tufting, turning, weaving, web forming, winging, yarn spinning, and yarn texturing.)

Additional Non-Numeric Effluent Limits

Material storage areas

All containerized materials (fuels, petroleum products, solvents, dyes, etc.) must be clearly labeled and stored in a protected area, away from drains.

The SWPPP must document considerations of the following BMPs (or their equivalents):

- Describe and provide for implementation of measures that prevent or minimize contamination of stormwater runoff from such storage areas.
- Provide for containment or enclosure of materials that are stored outdoors.
- Develop an inventory control plan to prevent excessive purchasing of potentially hazardous substances
- Ensure that empty chemical drums/containers are clean
  - Triple rinsing shall be considered
  - Residuals are not subject to contact with precipitation/runoff.
  - Proper collection and storage of washwater from drum cleanings

Material handling areas

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of the *stormwater* runoff from materials handling operations and areas.

The SWPPP must document considerations of the following *BMPs* (or their equivalence):

- Use of spill/overflow protection
- Covering fueling areas
- Covering and enclosing areas where the transfer of materials may occur.
- Replacement or repair of leaking connections, valves, transfer lines and pipes that may carry chemicals, dyes, or wastewater, where applicable.

Fueling areas

The SWPPP must describe and include provisions to implement measures that prevent or *minimize* contamination of the *stormwater* runoff from fueling areas.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Covering the fueling area
- Using spill and overflow protection
- Minimizing run-on of stormwater to the fueling areas
- Using dry cleanup methods
- Treating and/or recycling stormwater runoff collected from the fueling area.

Inspections

Inspections shall be conducted at least monthly, and shall include the following activities and areas (at a minimum):

- Transfer and transmission lines;
- Spill prevention;
- Good housekeeping practices;
- Management of process waste products; and
- All structural and nonstructural management practices.

Aboveground Storage Tank areas

The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of the *stormwater* runoff from aboveground storage tank areas, including the associated piping and valves.

The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Regular cleanup of these areas
- Preparation of a spill prevention control and countermeasure program
- Spill and overflow protection
- Minimizing run-on of stormwater from adjacent areas
- Restricting access to the area
- Insertion of filters in adjacent catch basins
- Absorbent booms in unbermed fueling areas
- Use of dry cleanup methods
- Permanently sealing drains within critical areas that may discharge to a storm drain.

Employee Training

Employee training must, at a minimum address, the following areas when applicable to a facility:

- Use of reused/recycled waters;
- Solvents management;
- Proper disposal of dyes;
- Proper disposal of petroleum products and spent lubricants;
- Spill prevention and control;
- Fueling procedures; and
- General good housekeeping practices.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

No *Benchmark Monitoring* or reporting is required for this sector.

Sector W – Furniture & Fixtures

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from facilities involved in the manufacturing of:

- Wood kitchen cabinets (generally described by SIC Code 2434)
- Household furniture (SIC 251)
- Office furniture (SIC 252)
- Public buildings and related furniture (SIC 253)
- Partitions, shelving, lockers, and office and store fixtures (SIC 254)
- Miscellaneous furniture and fixtures (SIC 259).

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Material storage areas (including tanks or other vessels used for liquid or waste storage)
- Outdoor material processing areas
- Areas where wastes are treated, stored or disposed
- Access roads
- Rail spurs.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

No *Benchmark Monitoring* or reporting is required for this sector.

Sector X – Printing & Publishing

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from printing and publishing facilities (generally classified under SIC Major Group 27) including the following:

- Book printing
- Commercial printing and lithographics
- Plate making and related services
- Commercial printing
- Commercial printing not elsewhere classified.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Aboveground storage tanks
- Drums and barrels permanently stored outside.

Summary of Potential Pollutant Sources

The plan shall include a description of the following additional sources and activities that have potential *pollutants* associated with them, as applicable:

- Loading and unloading operations
- Outdoor storage activities
- Significant dust or particulate generating processes
- On-site waste disposal practices (e.g., blanket wash).

The *pollutant* or *pollutant* parameter associated with each *pollutant* source shall be identified (e.g., oil and grease, scrap metal, etc.).

Additional Non-Numeric Effluent Limits

Employee Training

Employee training must, at a minimum, address the following areas when applicable to a facility:

- Spent solvent management
- Spill prevention and control
- Used oil management
- Fueling procedures
- General good housekeeping practices

Material storage areas

All containerized materials (skids, pallets, solvents, bulk inks, and hazardous waste, empty drums, portable/mobile containers of plant debris, wood crates, steel racks, fuel oil, etc) must be clearly labeled and stored in a protected area, away from drains.

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Describe and provide for implementation of measures that prevent or minimize contamination of stormwater runoff from such storage areas
- Provide for containment or enclosure for those materials that are stored outdoors.
- Develop an inventory control plan to prevent excessive purchasing of potentially hazardous substances.

Material handling areas

The SWPPP must describe and include provisions to implement measures that prevent or minimize contamination of the stormwater runoff from materials handling operations and areas (e.g. blanket wash, mixing solvents, loading & unloading materials).

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Use of spill/overflow protection
- Covering fueling areas
- Covering and enclosing areas where the transfer of materials may occur.
- Replacement or repair of leaking connections, valves, transfer lines and pipes that may carry chemicals, dyes, or wastewater, where applicable

Fueling areas

The SWPPP must describe and include provisions to implement measures that prevent or minimize contamination of the stormwater runoff from fueling areas.

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Covering the fueling area
- Using spill and overflow protection
- Minimizing run-on of stormwater to the fueling areas
- Using dry cleanup methods
- Treating and/or recycling stormwater runoff collected from the fueling area.

Aboveground Storage Tank areas

The SWPPP must describe and include provisions to implement measures that prevent or minimize contamination of the stormwater runoff from aboveground storage tank areas, including the associated piping and valves.

The SWPPP shall document considerations of the following BMPs (or their equivalents):

- Regular cleanup of these areas
- Preparation of a spill prevention control and countermeasure program
- Spill and overflow protection

- Minimizing run-on of *stormwater* from adjacent areas
- Restricting access to the area
- Insertion of filters in adjacent catch basins
- Absorbent booms in unbermed fueling areas
- Use of dry cleanup methods
- Permanently sealing drains within critical areas that may discharge to a storm drain.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

No *Benchmark Monitoring* or reporting is required for this sector.

Sector Y – Rubber, Plastics & Miscellaneous Manufacturing Industries

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from rubber and miscellaneous plastic products manufacturing facilities (SIC Major Group 30) and miscellaneous manufacturing industries, except jewelry, silverware, and plated ware (SIC Major Group 39, except 391).

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Aboveground storage tanks
- Drums and barrels permanently stored outside.

Summary of Potential Pollutant Sources

The *owner or operator* shall review the use of zinc at the facility and the possible pathways through which zinc may be *discharged* in *stormwater* runoff.

Plastic Products Manufacturers

The SWPPP shall describe and provide for implementation of specific controls to *minimize* the *discharge* of plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling in *stormwater discharges*. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Minimizing spills
- Cleaning up spills promptly and thoroughly
- Sweeping thoroughly
- Pellet capturing
- Employee education
- Disposal precautions

Additional Non-Numeric Effluent Limits

Rubber Manufacturers

Inadequate housekeeping

Evaluate the handling and storage of zinc bags at their facilities and document the consideration for the following *BMP* options:

- Employee training regarding the handling/storage of zinc bags
- Indoor storage of zinc bags
- Cleanup of zinc spills without washing the zinc into the storm drain
- Use of 2,500-pound sacks of zinc rather than 50- to 100-pound sacks.

Dumpsters

The SWPPP shall document considerations relating to the following BMPs to minimize discharges of zinc from dumpsters:

- Provide a cover for the dumpster
- Move the dumpster to an indoor location
- Provide a lining for the dumpster.

If a liner is used in an uncovered dumpster, the SWPPP must describe the measures implemented to either prevent the *discharge* of contaminated *stormwater* from the containers, or the containers should be subject to screening and monitoring required in Part IV.D.4.

Malfunctioning dust collectors or baghouses

Evaluate dust collectors/baghouses as possible sources in zinc in *stormwater* runoff. Improperly operating dust collectors/baghouses shall be replaced or repaired as appropriate.

Grinding operations

Evaluate dust generation from rubber grinding operations at their facility and, as appropriate, install a dust collection system.

Zinc stearate coating operations

Appropriate measures to prevent or clean up drips /spills of zinc stearate slurry that may be released to the storm drain. Alternate compounds to zinc stearate shall also be considered.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Rubber product manufacturing facilities are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-Y-1.

Sector VII-Y-1
***Benchmark Monitoring* Requirement**

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Tires and Inner Tubes; Rubber Footwear; Gaskets, Packing and Sealing Devices; Rubber Hose and Belting; and Fabricated Rubber Products Not Elsewhere Classified (SIC 3011-3069).	
Total Recoverable Zinc	110 ug/L

Sector Z – Leather Tanning and Finishing

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from leather tanning, currying and finishing (SIC Code 3111).

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Processing and storage areas of the beamhouse, tanyard, retan-wet finishing and dry finishing operation
- Haul roads
- Access roads
- Rail spurs.

Summary of Potential Pollutant Sources

A description of potential *pollutant* sources including (as appropriate):

- Temporary or permanent storage of fresh and brine cured hides
- Chemical drums, bags, containers and aboveground tanks
- Leather dust, scraps, trimmings and shavings
- Spent solvents
- Extraneous hide substances and hair
- Empty chemical containers and bags
- Floor sweepings/washings
- Refuse and waste piles and sludge
- Significant dust/particulate generating processes (e.g., buffing).

Additional Non-Numeric Effluent Limits

Good Housekeeping

Storage for Raw, Semi-Processed or Finished Tannery By-Products

- Pallets/bales of raw, semi processed or finished tannery by-products (e.g., splits, trimmings, shavings, etc.) shall be stored indoors or protected by polyethylene wrapping, tarpaulins, roofed storage area or other suitable means.
- Materials shall be placed on an impermeable surface; the area should be enclosed or bermed or other equivalent measures should be employed to prevent run-on/runoff of stormwater

Material Storage Areas

- Label storage units of all materials (e.g., specific chemicals, hazardous materials, spent solvents, waste materials).
- Describe and implement measures that prevent or minimize contact with stormwater.

Buffing & Shaving Areas

- The SWPPP shall describe and provide for implementation of measures that prevent or minimize contamination of the stormwater runoff with leather dust from buffing/shaving areas.
- The SWPPP shall document considerations for dust collection enclosures, preventive inspection/maintenance programs or other appropriate preventive measures.

Receiving, Unloading & Storage Areas

The SWPPP shall describe and provide for implementation of measures that prevent or minimize contamination of the *stormwater* runoff from receiving, unloading, and storage areas. The SWPPP shall document considerations of the following *BMPs* (or their equivalents) for exposed receiving, unloading and storage areas:

- Hides and chemical supplies protected by a suitable cover
- Diversion of drainage to the process sewer
- Grade berming/curbing area to prevent runoff of stormwater.

Outdoor Storage of Contaminated Equipment

The SWPPP shall describe and provide for implementation of measures that prevent or minimize contact of *stormwater* with contaminated equipment. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Equipment protected by suitable cover
- Diversion of drainage to the process sewer
- Thorough cleaning prior to storage.

Waste Management

Describe and implement measures that prevent or *minimize* contamination of the *stormwater* runoff from waste storage areas. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Inspection/maintenance programs for leaking containers or spills
- Cover dumpsters
- Move waste management activities indoors
- Cover waste piles with temporary covering material such as tarpaulins or polyethylene
- *Minimize stormwater* runoff by enclosing the area or building berms around the area.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Leather tanning and finishing facilities are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-Z-1.

Sector VII-Z-1 *Benchmark Monitoring* Requirement	
***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Leather Tanning and Finishing (SIC 3111)	
Total Nitrogen (TN)*	6 mg/L
Total Recoverable Chromium	1.8 mg/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen	

Sector AA - Fabricated Metal Products

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from the fabricated metals industry (except for electrical related industries); fabricated metal products (except machinery and transportation equipment); and jewelry, silverware, and plated ware. Potential *pollutants* include chromium, zinc, lubricating oil, solvents, aluminum, oil and grease, methyl ethyl ketone, steel and other related materials.

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Raw metal storage areas
- Finished metal storage areas
- Scrap disposal collection sites
- Equipment storage areas
- Processing areas including outside painting areas
- Wood preparation
- Recycling
- Raw material storage.

Summary of Potential Pollutant Sources

A description of the potential *pollutant* sources from the following activities:

- Loading and unloading operations for paints, chemicals and raw materials
- Outdoor storage activities for raw materials, paints, empty containers, corn cob, chemicals, scrap metals
- Outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, brazing, etc.
- On site waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingots pieces, refuse and waste piles.

Additional Non-Numeric Effluent Limits

General

All fabricated metal products facilities should implement *BMPs* in the following areas of the site:

- Metal fabricating areas
- Storage areas for raw metal
- Receiving, unloading, and loading areas
- Heavy equipment storage
- Metal working fluid areas
- Unprotected liquid storage tanks

- Chemical cleaners and rinse water
- Raw steel collection areas
- Paints and painting equipment
- Vehicle and equipment maintenance areas
- Hazardous waste storage areas
- Transporting chemicals to storage areas
- Finished products (galvanized)
- Wooden pallets and empty drums

Good Housekeeping

Minimize exposure of potential *pollutant* sources to precipitation. Prevent *pollutants*, including debris, from coming into contact with precipitation.

Examples of *BMPs* for exposure minimization include, but are not limited to:

- Covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected
- Moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds).
- Keeping a dumpster lid closed

Erosion and Sediment Control Plan

An Erosion and Sediment Control plan addressing the storm water run-on and run-off control systems in all areas of the facility must be developed by a qualified person and implemented by the *owner or operator*.

The plan must be prepared in accordance with the New York Standards and Specifications for Erosion and Sediment Control, 2016, or equivalent. Consider using sediment traps, vegetated swales and strips, catch basin filters and sand filters to facilitate settling or filtering of sediments. Consider using green infrastructure practices such as vegetated swales and constructed wetlands to reduce export of metals in *stormwater*.

Area Specific BMPs

Metal Fabricating Areas

The SWPPP shall describe and provide for implementation of measures for maintaining clean, dry, orderly conditions. The SWPPP shall document considerations of the following *BMPs* (or their equivalent):

- Use of dry clean up techniques shall be considered in the plan
- Sweep fabrication areas frequently to avoid heavy accumulation of steel ingots, fines, and scrap.
- Absorb dust through a vacuum system to avoid accumulation on roof tops and onto the ground.
- Sweep all accessible paved areas on a regular basis.
- Maintain floors in a clean and dry condition using dry cleanup techniques.
- Remove waste and dispose of regularly
- Train employees on good housekeeping measures

Storage Areas for Raw Materials

The SWPPP shall describe and provide for implementation of measures to keep these areas free of conditions that could cause spills or leakage of materials. The SWPPP shall document considerations of the following *BMPs* (or their equivalents) :

- Store materials in a covered area whenever possible
- Organize storage areas so there is easy access in case of a spill.
- Label stored materials to aid in identifying spill contents
- Minimize the amount of material stored to avoid corrosive activity from long-term exposed materials
- Dike or berm the area to prevent or minimize run-on.
- Keep area neat and orderly; stack neatly on pallets or off the ground.
- Cover exposed materials.
- Describe & implement measures controlling or recovering scrp metals, fines, and iron dust including measures for containing materials within storage handling areas

Lubricating & Hydraulic Fluid Operations

The SWPPP shall document consideration of using devices or monitoring equipment or other devices to detect and control leaks /overflows. Consider the installation of perimeter controls such as dikes, curbs, grass filter strips, or other equivalent measures.

Chemical Storage Areas

The SWPPP shall describe and provide for implementation of proper storage methods that prevent *stormwater* contamination and accidental spillage. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- The plan should include a program to inspect containers and identify proper disposal methods.
- Store drums as close to operational building as possible.
- Label all drums with proper warning and handling instructions.
- Train forklift operators to avoid puncturing drums.

Receiving Unloading & Storage Areas

The SWPPP shall describe and provide for implementation of measures to prevent spills and leaks; plan for quick remedial clean up and instruct employees on clean up techniques and procedures. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters.
- Close storm drains during loacing/unloading activities in surrounding areas.
- Use a dead-end sump where materials could be directed.
- Inspect containers for leaks or damage prior to loading/unloading.

- Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks.
- Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on.
- Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials.
- Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment.
- Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks.
- For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank
- Where liquid or powdered materials are transferred in bulk to/from truck or rail cars, ensure hose connection points at storage containers are inside containment areas, or drip pans are used in areas where spillage may occur which are not in a containment area.
- Enclose material handling systems.
- Cover materials entering and leaving areas.
- Use dry cleanup methods instead of washing the areas down.
- Regularly sweep area to minimize debris on the ground.
- Provide dust control if necessary. When controlling dust, sweep and/or apply water or materials that will not impact surface or ground water.
- Develop and implement Spill Prevention, Containment, and Countermeasure (SPCC) plans.
- Train employees in spill prevention, control, cleanup, and proper materials management techniques

Equipment Storage Areas

The SWPPP shall describe and provide for implementation of measures for preparing equipment for storage and the proper method to store equipment. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Store Paint and painting equipment to minimize exposure to stormwater.
- Vehicles should be stored indoors when possible.
- If stored outdoors, use gravel, concrete, or other stabilized surfaces to minimize or prevent heavy equipment from creating ditches or other conveyances that would cause sedimentation runoff and increase TSS loadings.
- Provide covering for outdoor storage areas.
- Divert drainage to the grass swales, filter strips, retention ponds, or holding tanks.
- Direct drainage systems away from high traffic areas into collection systems.
- Clean equipment prior to storage

Metal Working Fluid Storage Areas

The SWPPP shall describe and provide for implementation of measures for storage of metal working fluids. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Use pumps, spigots, and funnels when transferring metal working fluid to reduce the amount of lost fluid and the risk of spilling fluids.
- Fix leaking seals and gaskets to prevent leaks.
- Store used metal working fluid with fine metal dust indoors.
- Use tight sealing lids on all fluid containers.
- Use straw, clay absorbents, sawdust, or synthetic absorbents to confine or contain any spills.
- Establish recycling programs for used fluids when possible.
- Conduct daily inspections of each machine to identify problems and trends and reduce fluid waste

Cleaners & Rinse Water

The SWPPP shall describe and provide for implementation of measures to control/cleanup spills of solvents and other liquid cleaners. The SWPPP shall document considerations of the following *BMPs* (or their equivalents):

- Control sand buildup and disbursement from sand-blasting operations.
- Prevent exposure of recyclable wastes.
- Substitute environmentally benign cleaners when possible.
- Use drip pans and other spill devices to collect spills or solvents and other liquid cleaners
- Recycle wastewater.
- Store recyclable waste indoors or in covered containers.
- Substitute nontoxic cleaning agents when possible.

Inspections

In addition to Inspections required in Part IV. Metal fabricators shall at a minimum include the following areas for inspection:

- Raw metal storage areas
- Finished product storage areas
- Material and chemical storage areas
- Recycling areas
- Loading and unloading areas
- Equipment storage areas
- Paint areas
- Vehicle fueling and maintenance areas.

Employee Training

In addition to training required in Part II.A.8, At minimum, personnel must be trained to:

- Control pollutants at the source
- Maintain an organized work environment to allow immediate access to spills
- Properly store and label equipment and solvents and other materials

Comprehensive Site Inspection

In addition to the requirements contained in Part IV.A, the site compliance evaluation shall also include inspections of:

- Areas associated with the storage of raw metals
- Storage of spent solvents and chemicals
- Outdoor paint areas
- Roof drainage.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Metal fabricating facilities are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-AA 1.

Sector VII-AA-1 *Benchmark Monitoring* Requirement	
***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Fabricated Metal Products Except Coating (SIC 3411-3471, 3482-3499, 3911-3915)	
Total Nitrogen (TN)*	6 mg/L
Total Recoverable Aluminum	750 ug/L
Total Recoverable Iron	1 mg/L
Total Recoverable Zinc	110 ug/L
Fabricated Metal Coating & Engraving (SIC 3479)	
Total Nitrogen (TN)*	6 mg/L
Total Recoverable Zinc	110 ug/L
* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen	

Sector AB – Transportation Equipment, Industrial & Commercial Machinery

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from transportation equipment, industrial or commercial machinery manufacturing facilities (commonly described by SIC Major Group 35 (except SIC Code 357 - computer and office equipment covered by Sector AC), and SIC Major Group 37 (except SIC Code 373 - ship and boat building and repair covered by Sector R)).

SWPPP Requirements in Addition to Part III

Site Map

The site map shall identify where any of the following may be exposed to precipitation/surface runoff:

- Vents and stacks from metal processing and similar operations.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

No *Benchmark Monitoring* or reporting is required for this sector.

Sector AC – Electronic, Electrical Equipment & Components, Photographic & Optical Goods

Applicability

The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from facilities that manufacture:

- Electronic and other electrical equipment and components, except computer equipment (SIC Major Group 36)
- Measuring, analyzing, and controlling instruments
- Photographic, medical, and optical goods
- Watches and clocks (SIC Major Group 38)
- Computer and office equipment (SIC Code 357).

Special Conditions

No Exposure of Copper Sources

If the facility discharges to a Copper Impaired waterbody, the owner or operator shall prevent the exposure of copper sources and copper containing materials or processes to *stormwater*. These materials shall be protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

Numeric Effluent Limitations

No Numeric Effluent Limits specified for this sector.

Benchmarks

Facilities under this sector are required to monitor their *stormwater discharges* for the *pollutants* of concern listed in Table VII-AC-1.

Sector VII-AC-1
***Benchmark Monitoring* Requirement**

***Pollutants* of Concern**	***Benchmark Monitoring* Cut-off Concentration**
Electronic and Other Electrical Equipment and Components, Except Computer Equipment (SIC Major Group 36); Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks (SIC Major Group 38) and Computer and Office Equipment (SIC Code 357)	
Total Suspended Solids (TSS)	100 mg/L
Total Recoverable Copper	12 ug/L
Total Recoverable Lead	69 ug/L

Appendix A – Definitions and Acronyms

Acronyms

ACR – Annual Certification Report
BOD5 – Biochemical Oxygen Demand (5-day test)
BMP – Best Management Practice
BAT – Best Available Technology Economically Achievable
BPT - Best Practicable Technology
CBS - Chemical Bulk Storage
CFR – Code of Federal Regulations
COD – Chemical Oxygen Demand
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
CWT – Centralized Waste Treatment
DMR – Discharge Monitoring Report
ECL - Environmental Conservation Law
ELG – Effluent Limitations Guidelines
EPA – U. S. Environmental Protection Agency
EPCRA – Emergency Planning and Community Right-to-know Act
MDL - Method Detection Limit
MGD – Million Gallons per Day
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NRC – National Response Center
NTU – Nephelometric Turbidity Unit
PBS - Petroleum Bulk Storage
PQL - Practical Quantitation Limit
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SIC – Standard Industrial Classification
SPCC – Spill Prevention, Control, and Countermeasure
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
USGS – United States Geological Survey

Definitions

Note: Additional definitions are provided within the Part VII industrial sectors for definitions that are specific for those industries.

Alternative General Permit - is a general permit different from the MSGP that covers some or all of the authorized discharges.

Best Management Practices (BMPs) - means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the *State*. *BMPs* also include treatment requirements (if determined necessary by the *owner or operator*), operating procedures, and practices to control plant site runoff, spillage and leaks, sludge or waste disposal, or drainage from raw material storage.

Benchmark Monitoring – means sampling and analyses of *stormwater discharges* for parameters specified in Part VII for specific sectors.

Benchmark Monitoring Cut-off Concentrations – means *pollutant* levels that are intended to provide a guideline for the *owner or operator* to determine the overall effectiveness of the SWPPP in controlling the *discharge* of *pollutants* to receiving waters. The *benchmark* concentrations are not *effluent limitations*. Therefore, a *benchmark* exceedance is not a permit violation, but does, however, signal the need for the *owner or operator* to evaluate potential sources of *stormwater* contaminants at the facility.

Best Practicable Control Technology Currently Available (BPT) – means the first level of technology-based standards established by the CWA to control *pollutants discharged* to waters of the U.S. BPT effluent limitations guidelines are generally based on the average of the best existing performance by facilities within an industrial category or subcategory.

Co-located Industrial Activities - occurs when a facility has industrial activities included in more than one industrial sector. *Stormwater discharges* from co-located activities must comply with requirements for all relevant sectors.

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.

Control Measure - refers to any BMP *stormwater* control or other method (including *non-numeric effluent limitations*) used to prevent or reduce the *discharge* of *pollutants* to Surface *Waters of the State*.

Corrective Action - any action taken, or required to be taken, to (1) repair, modify, or replace any control measure used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; or (3) remedy a permit violation.

Department - means the New York State *Department* of Environmental Conservation as well as meaning the *Department*'s designated agent.

Discharge(s) - means any addition of any *pollutant* to *waters of the State* through an outlet or *point source*.

Discharge Monitoring Report (DMR) - means a report submitted by the *owner or operator* to the *Department* summarizing the effluent monitoring results obtained by the *owner or operator* over periods of time as specified in the *SPDES* permit.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the *Environmental Conservation Law*.

Effluent Limitation - means any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents which are *discharged* into or allowed to run from an outlet or point source into waters of the State promulgated by the federal government.

Effluent Limitation Guideline (ELG) - means toxic or pretreatment *effluent limitations* contained in 40 CFR Parts 405 to 471 (see 6 NYCRR 750-1.25 of 6 NYCRR Part 750).

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the New York Standards and Specifications for Erosion and Sediment Control (2016) and/or the New York State Stormwater Management Design Manual (2015), and will provide an equal or greater degree of water quality protection.

General *SPDES* permit - means a *SPDES* permit issued pursuant to ECL section 70-0017(6) and 6 NYCRR 750-1.21 authorizing a category of *discharges*.

Facility or Activity - means any SPDES "point source" (including land or appurtenances thereto) that is subject to regulation under the SPDES program. See 40 CFR 122.2.

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.

Groundwater - 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.

Hotspot – Area where land use or activities generate highly contaminated runoff, with concentrations of *pollutants* in excess of those typically found in stormwater.

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

Individual *SPDES* Permit - means a *SPDES* "permit" issued to a single facility in one location in accordance with ECL Article 17 and 6 NYCRR Part 750 (as distinguished from a general *SPDES* permit).

Industrial Activity - the 11 categories of industrial activities included in the definition of "*stormwater discharges* associated with *industrial activity*."

Industrial Waste - means any liquid, gaseous, solid or waste substance, or a combination thereof, resulting from any process of industry, manufacturing, trade, or business or from the development or recovery of any natural resources, that may cause or might reasonably be expected to cause pollution of the waters of the State in contravention of the standards adopted pursuant to ECL Article 17 and 6 NYCRR Parts 700 et seq.

Measurable Storm Event - a storm event with at least 0.1 inch of precipitation that produces runoff.

Method Detection Limit - means the level at which the analytical procedure referenced is capable of determining with a 99 percent probability that the substance is present. The precision at this level is plus or minus 100 percent.

Minimize – means reduce and/or eliminate to the extent achievable using *control measures* that are technologically available and economically practicable and achievable in the light of best industry practice.

Municipality - means any county, town, city, village, district corporation, special improvement district, sewer authority or agency thereof.

Municipal Separate Storm Sewer System (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):

1. 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 *waters of the United States*;

2. Designed or used for collecting or conveying *stormwater*;

3. Which is not a combined sewer; and

4. 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).

No exposure - all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

Other wastes - means garbage, refuse, decayed wood, sawdust, shavings, bark, sand, lime, cinders, ashes, offal, oil, tar, dyestuffs, acids, chemicals, ballast and all other discarded matter not sewage or industrial waste that may cause or might reasonably be expected to cause pollution of the waters of the State in contravention of the standards and guidance values adopted pursuant to ECL Article 17 or 6 NYCRR Parts 700 et seq.

Outfall - means the terminus of a sewer system, or the point of emergence of any waterborne sewage, *industrial waste* or other wastes or the effluent therefrom, into the waters of the *State*.

Owner or Operator - means the *owner or operator* of any facility or activity subject to regulation under 6 NYCRR Part 750. In accordance with 6 NYCRR 750-1.6(a), when a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit

Person or Persons - means any individual, public or private corporation, political subdivision, government agency, *municipality*, partnership, association, firm, trust, estate or any other legal entity whatsoever.

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*. The definition of point source for the purposes of the MSGP includes discharges of stormwater resulting from structures which increase imperviousness of the ground which acts to collect runoff, with runoff being conveyed along the resulting or grading patterns.

Pollutant(s) - 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 ECL Article 17 or 6 NYCRR Parts 700 et seq.

Primary Industrial Activity - The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the *primary industrial activity*. The primary industrial determination is based on the value of receipts or revenues or, if such information is not available for a particular facility, the number of employees or production rate for each process may be compared.

Qualified Person - A qualified person may be either a facility employee or hired consultant who is familiar with the day-to-day operations associated with their assigned responsibilities at the facility. The qualified person possesses the knowledge and skills to assess conditions, operations and activities at the facility that could impact stormwater quality and can evaluate the effectiveness of control measures being implemented as part of the requirements of the permit. The owner or operator may designate themselves and/or more than one individual as the qualified person.

If the control measures include Erosion and Sediment controls, then the person selected to inspect the erosion & sediment controls must be knowledgeable in the principles and practices of erosion and sediment control and must receive 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 qualified person must receive four (4) hours of training, every three (3) years.

Note: Inspections of any post-construction *stormwater* management practices that include structural components, such as a dam for an impoundment, must be performed by a Qualified Professional.

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 in order to prepare a SWPPP that conforms to the New York State *Stormwater* Management Design Manual (2015) . All components of the SWPPP that involve the practice of engineering, as defined in Article 145 of the NYS Education Law, must be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Qualifying Storm Event – a storm event with at least 0.1 inch of precipitation (defined as a "measurable" event), providing the interval from the preceding measurable storm is at least 72 hours. The 72-hour storm interval is waived if the preceding measurable storm did not result in a *stormwater discharge* (e.g., a storm events in excess of 0.1 inches may not result in a *stormwater discharge* at some facilities), or if the *owner or operator* is able to document that less than a 72 hour interval is representative for local storm events during the sampling period.

Runoff Coefficient - the fraction of total rainfall that will appear at the conveyance as runoff.

Run-on - sources of stormwater that drain from land located upslope or upstream from, and adjacent to, the facility.

Significant Materials - includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with *stormwater discharges*.

State - means the State of New York.

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*.

Stormwater - means that portion of precipitation that, once having fallen to the ground, is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of

surface features, which flows or will flow off the land by surface runoff to waters of the *State*.

Stormwater Discharges Associated with Industrial Activity - the *discharge* from any conveyance that is used for collecting and conveying *stormwater* and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include *discharges* from facilities or activities excluded from the *NPDES* program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, *stormwater discharges* from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR Part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where *industrial activity* has taken place in the past and *significant materials* remain and are exposed to *stormwater*. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with *stormwater* drained from the above described areas. Industrial facilities include those that are federally, *State*, or municipally owned or operated that meet the description of the facilities listed in Appendix D of this permit. The term also includes those facilities designated under the provisions of 40 CFR 122.26(a)(1)(v).

Stormwater Pollution Prevention Plan (SWPPP) – A facility specific plan for stormwater discharges associated with the industrial activity and areas of no exposure occurring at the facility. The SWPPP is intended to document the selection, design and installation of stormwater control measures to meet the permit's requirements. The SWPPP is a living document and must be kept up-to-date throughout permit coverage as changes and updates occur.

Surface Waters of the State - must 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 or underground 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. A discharge to a storm sewer must be regulated as a discharge at the point where the storm sewer discharges to surface waters of the State.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the New York Standards and Specifications for Erosion and Sediment Control (2016), 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) - means 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 and still meet water quality standards, and an allocation of that amount to the *pollutant*'s sources. A TMDL stipulates waste load allocations (WLAs) for *point source discharges*, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in accordance with ECL Article 17 and 6 NYCRR Part 700 et seq.

Appendix B - Sectors of Industrial Activity Covered by this Permit

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector A: Timber Products	
2411	Log Storage and Handling (Wet deck storage areas are only authorized if no chemical additives are used in the spray water or applied to the logs).
2421	General Sawmills and Planning Mills
2426	Hardwood Dimension and Flooring Mills
2429	Special Product Sawmills, Not Elsewhere Classified
2431-2439 (except 2434 - see Sector W)	Millwork, Veneer, Plywood, and Structural Wood
2441, 2448, 2449	Wood Containers
2451, 2452	Wood Buildings and Mobile Homes
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, Not Elsewhere Classified
Sector B: Paper and Allied Products	
2611	Pulp Mills
2621	Paper Mill
2631	Paperboard Mills
2652-2657	Paperboard Containers and Boxes
2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
Sector C: Chemical and Allied Products	
2812-2819	Industrial Inorganic Chemicals
2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass
2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; In Vitro and In Vivo Diagnostic Substances; Biological Products, Except Diagnostic Substances
2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
2861-2869	Industrial Organic Chemicals
2873-2879	Agricultural Chemicals
2891-2899	Miscellaneous Chemical Products
2911	Petroleum Refineries
3952 (limited to list)	Inks and Paints, including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector D: Asphalt Paving and Roofing Materials and Lubricants	
2951, 2952	Asphalt Paving and Roofing Materials
2992, 2999	Miscellaneous Products of Petroleum and Coal
Sector E: Glass Clay, Cement, Concrete, and Gypsum Products	
3211	Flat Glass
3221, 3229	Glass and Glassware, Pressed or Blown
3231	Glass Products Made of Purchased Glass
3241	Hydraulic Cement
3251-3259	Structural Clay Products
3261-3269	Pottery and Related Products
3271-3275	Concrete, Gypsum and Plaster Products
3281	Cut Stone and Stone Products
3291-3299	Abrasive, Asbestos, and Miscellaneous Non-metallic Mineral Products
Sector F: Primary Metals	
3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
3321-3325	Iron and Steel Foundries
3331-3339	Primary Smelting and Refining of Nonferrous Metals
3341	Secondary Smelting and Refining of Nonferrous Metals
3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
3363-3369	Nonferrous Foundries (Castings)
3398, 3399	Miscellaneous Primary Metal Products
Sector G: Metal Mining (Ore Mining and Dressing)	
1011	Iron Ores
1021	Copper Ores
1031	Lead and Zinc Ores
1041, 1044	Gold and Silver Ores
1061	Ferroalloy Ores, Except Vanadium
1081	Metal Mining Services
1094, 1099	Miscellaneous Metal Ores
Sector H: [Reserved]	
Sector I: Oil and Gas Extraction and Refining	
1311	Crude Petroleum and Natural Gas
1321	Natural Gas Liquids
1381-1389	Oil and Gas Field Services

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector J: Mineral Mining and Dressing	
1411	Dimension Stone
1422-1429	Crushed and Broken Stone, Including Rip Rap
1442, 1446	Sand and Gravel
1455, 1459	Clay, Ceramic, and Refractory Materials
1474-1479	Chemical and Fertilizer Mineral Mining
1481	Nonmetallic Minerals Services, Except Fuels
1499	Miscellaneous Nonmetallic Minerals, Except Fuels
Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities	
HZ	Hazardous Waste Treatment Storage or Disposal
Sector L: Landfills and Land Application Sites	
LF	Landfills, Land Application Sites, and Non-Compliant Landfills
Sector M: Automobile Salvage Yards	
5015	Automobile Salvage Yards
Sector N: Scrap Recycling Facilities	
5093	Scrap Recycling Facilities, Including Transfer Stations Accepting Household Recyclables
4499 (limited to list)	Dismantling Ships, Marine Salvaging, and Marine Wrecking - Ships For Scrap
Sector O: Steam Electric Generating Facilities	
SE	Steam Electric Generating Facilities
Sector P: Land Transportation and/or Warehousing	
4011, 4013	Railroad Transportation
4111-4173	Local and Highway Passenger Transportation
4212-4231	Motor Freight Transportation and/or Warehousing
4311	United States Postal Service
5171	Petroleum Bulk Stations and Terminals
Sector Q: Water Transportation	
4412-4499(except 4499 facilities as specified in Sector N)	Water Transportation, Marinas, Yacht Clubs
Sector R: Ship and Boat Building or Repairing Yards	
3731, 3732	Ship and Boat Building or Repairing Yards
Sector S: Air Transportation	
4512-4581	Air Transportation Facilities

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector T: Treatment Works	
TW	Treatment Works
Sector U: Food and Kindred Products	
2011-2015	Meat Products
2021-2026	Dairy Products
2032-2038	Canned, Frozen and Preserved Fruits, Vegetables & Food Specialties
2041-2048	Grain Mill Products
2051-2053	Bakery Products
2061-2068	Sugar and Confectionery Products
2074-2079	Fats and Oils
2082-2087	Beverages
2091-2099	Miscellaneous Food Preparations and Kindred Products
2111-2141	Tobacco Products
Sector V: Textile Mills, Apparel, and Other Fabric Product Manufacturing, Leather and Leather Products	
2211-2299	Textile Mill Products
2311-2399	Apparel and Other Finished Products Made From Fabrics and Similar Materials
3131-3199 (3111 - see Sector Z)	Leather and Leather Products, except Leather Tanning and Finishing
Sector W: Furniture and Fixtures	
2434	Wood Kitchen Cabinets
2511-2599	Furniture and Fixtures
Sector X: Printing and Publishing	
2711-2796	Printing, Publishing, and Allied Industries
Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries	
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052, 3053	Gaskets, Packing, and Sealing Devices and Rubber and Plastics Hose and Belting
3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
3081-3089	Miscellaneous Plastics Products
3931	Musical Instruments
3942-3949	Dolls, Toys, Games and Sporting and Athletic Goods
3951-3955 (except 3952 facilities specified in Sector C)	Pens, Pencils, and Other Artists' Materials
3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal. Miscellaneous Manufacturing Industries.
3991-3999	Miscellaneous Manufacturing Industries.

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector Z: Leather Tanning and Finishing	
3111	Leather Tanning, Currying and Finishing
Sector AA: Fabricated Metal Products	
3411–3499	Fabricated Metal Products, Except Machinery and Transportation Equipment
3911–3915	Jewelry, Silverware, and Plated Ware
Sector AB: Transportation Equipment, Industrial or Commercial Machinery	
3511-3599 (except 3571-3579 - see Sector AC)	Industrial and Commercial Machinery (Except Computer and Office Equipment).
3711-3799 (except 3731, 3732 - see Sector R)	Transportation Equipment (Except Ship and Boat Building and Repairing)
Sector AC: Electronic, Electrical, Photographic, and Optical Goods	
3571-3579	Computer and Office Equipment
3612-3699	Electronic, Electrical Equipment and Components, Except Computer Equipment
3812-3873	Measuring, Analyzing and Controlling Instrument; Photographic and Optical Goods

Appendix C - Sectors Subject to Benchmark Monitoring Requirements

INDUSTRIAL SECTORS SUBJECT TO BENCHMARK MONITORING		
Industry Sector [1]	**Industry Sub-sector**	**Benchmark Monitoring Parameters**
A	General Sawmills and Planing Mills	TSS, COD, Zinc, TN, Phosphorus
	Wood Preserving Facilities	Arsenic, Chromium, Copper
	Log Storage and Handling	TSS
	Hardwood Dimension and Flooring Mills	TSS, COD
B	Paperboard Mills	COD
C	Industrial Inorganic Chemicals	Aluminum, Iron, TN
	Plastics, Synthetic Resins, etc	Zinc
	Soaps, Detergents, Cosmetics, Perfumes	TN, Zinc
	Agricultural Chemicals	TN, Iron, Lead, Zinc, Phosphorus
	Petroleum Refining	Oil & Grease, Lead, Zinc, BTEX
D	Asphalt Paving and Roofing Materials	TSS
E	Clay Products	Aluminum
	Concrete Products	TSS, pH, Iron
F	Steel Works, Blast Furnaces, and Rolling ... and Finishing Mills	Aluminum, Zinc
	Iron and Steel Foundries	Aluminum, TSS, Copper, Iron, Zinc
	Nonferrous Rolling, Drawing & Extruding	Copper, Zinc
	Nonferrous Foundries (Castings)	Copper, Zinc
G [2]	Ore Mining and Dressing	TSS, COD, pH, turbidity, metals
H	[Reserved]	
I	Oil and Gas Extraction	TSS, Chlorides, pH, [4]
J	Sand and Gravel Mining	TSS, TN, Iron, Zinc, Phosphorus
	Dimension and Crushed Stone and Non- metallic Minerals (except fuels)	TSS
K	Hazardous Waste Treatment, Storage or ..... Disposal	TSS, COD, TN, Arsenic, Cadmium, Cyanide, Lead, Magnesium, Mercury, Selenium, Silver

1 - Table does not include parameters for compliance monitoring under *effluent limitations guidelines*.
2 - See Sector G (Part VII.G) for additional monitoring *discharges* from waste rock and overburden piles from active ore mining or dressing facilities which includes TSS, COD, turbidity, pH, hardness, and metals.
3 - Monitoring requirement for airports with deicing activities utilizing more than 100 tons of urea or more than 100,000 gallons of glycol per year.
4 - BTEX is Benzene, Ethylbenze, Toluene and Xylene.

INDUSTRIAL SECTORS SUBJECT TO BENCHMARK MONITORING (Continued)		
Industry Sector [1]	**Industry Sub-sector**	**Benchmark Monitoring Parameters**
L	Landfills, Land Application Sites, and Open Dumps	Iron, TSS, TN, Phosphorus
	Landfills, Land Application Sites and Open Dumps, Except Municipal Solid Waste Landfill Sites Closed in accordance with 40 CFR 258.60	Iron, TSS
M	Automobile Salvage Yards	TSS, Oil & Grease, Aluminum, Iron, Lead, BTEX [4]
N	Scrap Recycling/Waste Recycling Facilities .. and Facilities Engaged in Ship Dismantling, Marine Salvaging & Marine Wrecking for Scrap	TSS, COD, Oil & Grease, Aluminum, Cadmium, Copper, Chromium, Iron, Lead, Zinc
	Scrap & Waste Recycling Facilities which .... include *Stormwater Discharges* from Shredder Fluff Storage Areas	TSS, COD, Oil & Grease, Aluminum, Cadmium, Copper, Chromium, Iron, Lead, Zinc, Mercury, PCBs, BTEX [4]
O	Steam Electric Generating Facilities	Iron, Oil & Grease, PCBs
P	Land Transportation and/or Warehousing, including Transfer Stations with vehicle maintenance facilities	Oil & Grease, COD, BTEX [4]
Q	Water Transportation Facilities	Aluminum, Iron, Zinc, Lead
S	Airports with deicing activities [3]	COD, BOD, TN, pH
T	Treatment Works	COD
U	Grain Mill Products	TSS, TN, Phosphorus
	Fats and Oils Products	BOD, COD, TSS, TN, Phosphorus
Y	Rubber Products	Zinc
Z	Leather Tanning and Finishing	TN, Chromium
AA	Fabricated Metal Products Except Coating	TN, Aluminum, Iron, Zinc
	Fabricated Metal Coating and Engraving	TN, Zinc
AC	Electronic, Electrical Equipment and Components, Photographic & Optical Goods	TSS, Copper, Lead

1 - Table does not include parameters for compliance monitoring under *effluent limitations guidelines*.
2 - See Sector G (Part VII.G) for additional monitoring *discharges* from waste rock and overburden piles from active ore mining or dressing facilities which includes TSS, COD, turbidity, pH, hardness, and metals.
3 - Monitoring requirement for airports with deicing activities utilizing more than 100 tons of urea or more than 100,000 gallons of glycol per year.
4 - BTEX is Benzene, Ethylbenze, Toluene and Xylene.

Appendix D - Compliance Monitoring Requirements - Industrial Activities Subject to Effluent Limitation Guidelines

Effluent limitation guidelines applicable to *discharges* that may be eligible for permit coverage	
Effluent Limitation Guideline	**Sectors With Affected Facilities**
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas (40 CFR Part 429, Subpart I (2002) (established January 26, 1981))	A
Contaminated runoff from phosphate fertilizer manufacturing facilities (40 CFR Part 418 Subpart A (2002) (established April 8, 1974))	C
Runoff from asphalt emulsion facilities (40 CFR Part 443 Subpart A (2002) (established July 24, 1975))	D
Runoff from material storage piles at cement manufacturing facilities (40 CFR Part 411 Subpart C (2002) (established February 23, 1977))	E
Mine dewatering *discharges* at crushed stone mines (40 CFR Part 436, Subpart B)	J
Mine dewatering *discharges* at construction sand and gravel mines (40 CFR Part 436, Subpart C)	J
Mine dewatering *discharges* at industrial sand mines (40 CFR Part 436, Subpart D)	J
Runoff from landfills, (40 CFR Part 445, Subpart A and B (2002) (established February 2, 2000))	K & L
Coal pile runoff at steam electric generating facilities (40 CFR Part 423 (2002) (established November 19, 1982))	O
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures (40 CFR Part 449, (established May 16, 2012))	S

Appendix E - List of DEC Regional Offices

List of NYS DEC Regional Offices			
Region	**Counties Covered**	**DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators**	**DIVISION OF WATER (DOW) Water (SPDES) Program Regional Water Manager**
1	Nassau and Suffolk	SUNY @ Stony Brook 50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0365	SUNY @ Stony Brook 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 Ave., Suite 1W Whiteplains, NY 10603-2860 Tel. (914) 428-2505
4	Albany, Columbia , Delaware , Greene , Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1130 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 NYS Route 86 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-0220 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 Road Avon, 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	700 Delaware Avenue Buffalo, NY 14209 Tel. (716) 851-7165	700 Delaware Avenue Buffalo, NY 14209 Tel. (716) 851-7070

Appendix F – Pollutant(s) of Concern for Impaired Waterbodies Reference Table

Pollutant(s) of Concern for Impaired Waterbodies Reference Table		
Pollutant of Concern Causing Impairment	**Applicable Benchmark or Effluent Limit**	**Sector**
Acid/Base (pH)	pH	A, D, E, G, I, J, K, L, S
Ammonia	Total Nitrogen (TN)	A, C, J, K, L, U, Z, AA
	Ammonia	K, L, S
	Nitrogen	S
Biological Impacts	Aluminum	C, E, F, M, N, Q, AA
	Arsenic	A, G, K
	Cadmium	G, K, N
	Beryllium	G
	Chromium	A, K, N, Z
	Copper	A, F, G, N, AC
	Cyanide	K
	Iron	C, E, F, G, J, L, M, N, O, Q, AA
	Lead	C, G, K, M, N, Q, AC
	Magnesium	K
	Manganese	G
	Mercury	G, K, N
	Nickel	G
	Selenium	G, K
	Silver	G, K
	Zinc	A, C, F, G, J, K, L, N, Q, Y, AA
	Chlorides	I
	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Cadmium	Cadmium	G, K, N
Copper	Copper	A, F, G, N, AC
Cyanide	Cyanide	K
Garbage & Refuse	Oil & Grease	C, D, M, N, O, P

Pollutant(s) of Concern for Impaired Waterbodies Reference Table (Continued)		
Pollutant of Concern Causing Impairment	**Applicable Benchmark or Effluent Limit**	**Sector**
Low D.O. /Oxygen Demand	Biochemical Oxygen Demand (BOD)	K, L, S, U
	Chemical Oxygen Demand (COD)	A, B, G, K, N, P, S, T, U
	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
Mercury	Mercury	G, K, N
Nitrogen	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
Nutrients	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Oils & Floating Substances	Oil & Grease	C, D, M, N, O, P
PCBs	PCBs	N, O
Phosphorus	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Salinity	Chlorides	I
Silt/Sediment	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Turbidity	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC

Appendix G – Standard Permit Conditions

For the purposes of this SPDES general permit examples of contractors and subcontractors include: Third-party maintenance and construction contractors.

1. Duty to Comply

The owner or operator, and all contractors or subcontractors, must comply with all terms and conditions of this SPDES general permit. Any non-compliance with the terms and conditions of this SPDES general permit constitutes a violation of the New York State Environmental Conservation Law, and its implementing regulations, and is grounds for enforcement action. Filing of a request for termination of coverage under this SPDES general permit, or a notification of planned changes or anticipated non-compliance, does not limit, diminish or stay compliance with any terms and conditions of this SPDES general permit.

2. Need to Halt or Reduce Activity is Not a Defense

The necessity to halt or reduce the activity regulated by this SPDES general permit, in order to maintain compliance with the conditions of this SPDES general permit, must not be a defense in an enforcement action.

3. Penalties

There are substantial criminal, civil, and administrative penalties associated with violating the terms and conditions of this SPDES general 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.

4. False Statements

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 SPDES general permit, including monitoring reports or reports of compliance or noncompliance must, upon conviction, be punished in accordance with New York State Environmental Conservation Law §71-1933 and or New York State Penal Law Articles 175 and 210.

5. Reopener Clause

Upon issuance of this SPDES general permit, a determination has been made on the basis of a submitted Notice of Intent, plans, or other available information, that compliance with the specified general permit terms and conditions will reasonably protect classified water use and assure compliance with applicable water quality standards. Satisfaction of the conditions of this SPDES general permit notwithstanding, if operation pursuant to this SPDES general permit causes or contributes to a condition in contravention of State water quality standards or guidance values, or if the Department determines that a modification is necessary to prevent impairment of the best use of the waters or to assure maintenance of water quality standards or compliance with other provisions of New York State Environmental Conservation Law Article 17 or the Clean Water Act, or any regulations adopted pursuant thereto, the Department may require such modification and the Commissioner may require

abatement action to be taken by the owner or operator and may also prohibit such operation until the modification has been implemented.

6. Duty to Mitigate

The owner or operator, and its contractors and subcontractors, must take all reasonable steps to minimize or prevent any discharge in violation of this SPDES general permit which has a reasonable likelihood of adversely affecting human health or the environment.

7. Requiring Another General Permit or Individual SPDES Permit

The Department may require any discharger authorized to discharge in accordance with this SPDES general permit to apply for and obtain an individual SPDES permit or apply for authorization to discharge in accordance with another general permit.

a. Cases where an individual SPDES permit or authorization to discharge in accordance with another general permit may be required include, but is not limited to the following:

(1) the discharger is not in compliance with the conditions of this SPDES general permit or does not meet the criteria for coverage under this SPDES general permit;

(2) a change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;

(3) new effluent limitation guidelines or new source performance standards are promulgated that are applicable to point sources authorized to discharge in accordance with this SPDES general permit;

(4) existing effluent limitation guidelines or new source performance standards that are applicable to point sources authorized to discharge in accordance with this SPDES general permit are modified;

(5) a water quality management plan containing requirements applicable to such point sources is approved by the Department;

(6) circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under this SPDES general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary;

(7) the discharge is in violation of section 17-0501 of the New York State Environmental Conservation Law;

(8) the discharge(s) is a significant contributor of pollutants. In making this determination, the Department may consider the following factors:

(a) the location of the discharge(s) with respect to waters of New York State;

(b) the size of the discharge(s);

(c) the quantity and nature of the pollutants discharged to waters of New York State; and

(d) other relevant factors including compliance with other provisions of New York State Environmental Conservation Law Article 17, or the Clean Water Act.

b. When the Department requires any discharger authorized by this SPDES general permit to apply for an individual SPDES permit as provided for in this subdivision, it must notify the discharger in writing that a permit application is required. This notice must include a brief statement of the reasons for this decision, an application form, a statement setting a time for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from the owner or operator's receipt of the notification letter, whereby the authorization to discharge under this SPDES general permit must be terminated. The Department may grant additional time upon demonstration, to the satisfaction of the Regional Water Manager, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with 6 NYCRR Part 621.

c. When an individual SPDES permit is issued to a discharger authorized to discharge under this SPDES general permit for the same discharge(s), this SPDES general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual SPDES permit unless termination is earlier in accordance with 6 NYCRR Part 750.

8. Duty to Provide Information

The owner or operator must furnish to the Department, within five (5) business days, unless otherwise set forth by the Department, any information that the Department may request to determine whether cause exists to determine compliance with this SPDES general permit or to determine whether cause exists for requiring an individual SPDES permit in accordance with 6 NYCRR 750-1.21(e) (see 7. Requiring Another General Permit or Individual Permit). The owner or operator must make available to the Department, for inspection and copying, or furnish to the Department within 25 business days of receipt of a Department request for such information, any information retained in accordance with this SPDES general permit. Where the owner or operator becomes aware that it failed to submit any relevant facts on the Notice of Intent, or submitted incorrect information in a Notice of Intent or in any report to the Department, the owner or operator must promptly submit such facts or corrected information to the Department.

9. Extension

In the event a new SPDES general permit is not issued and effective prior to the expiration of this SPDES general permit, and this SPDES general permit is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, then the owner or operator with coverage under this SPDES general permit may continue to operate and discharge in accordance with the terms and conditions of this SPDES general permit until a new SPDES general permit is issued and effective.

10. Signatories and Certification

The Notice of Intent, Notice of Termination and reports required by this SPDES general permit must be signed as provided in 40 CFR §122.22.

a. All Notices of Intent and Notices of Termination must be signed as follows:

(1) For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) 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

(b) 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 Notice of Intent or Notice of Termination requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: The Department does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §122.22(a)(1)(i). The Department will presume that these responsible corporate officers have the requisite authority to sign the Notice of Intent or Notice of Termination unless the corporation has notified the Department to the contrary. Corporate procedures governing authority to sign a Notice of Intent or Notice of Termination may provide for assignment or delegation to applicable corporate positions under 40 CFR §122.22(a)(1)(ii) rather than to specific individuals.

(2) For a partnership or sole proprietorship. By a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

b. All reports required by this SPDES general permit, and other information requested by the Department, must be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in (a);

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, 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

(3) The written authorization is submitted to the Department.

c. Changes to authorization. If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility or activity, a new authorization satisfying the requirements of (b) must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. Certification. Any person signing a document under (a) or (b) must make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

e. Electronic reporting. If documents described in (a) or (b) are submitted electronically by or on behalf of the activity with coverage under this SPDES general permit, any person providing the electronic signature for such documents

must meet all relevant requirements of this section, and must ensure that all of the relevant requirements of 40 CFR Part 3 (including, in all cases, subpart D to Part 3) (Cross-Media Electronic Reporting) and 40 CFR Part 127 (NPDES Electronic Reporting Requirements) are met for that submission.

11. Inspection & Entry

The owner or operator must allow the Department, the USEPA Regional Administrator, the applicable county health department, or any authorized representatives of those entities, upon the presentation of credentials and other documents as may be required by law, to:

a. enter upon the owner 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 SPDES general permit;

b. have access to and copy, at reasonable times, any records that must be kept under the conditions of this SPDES general permit, including records required to be maintained for purposes of operation and maintenance;

c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this SPDES general permit;

d. sample or monitor at reasonable times, for the purposes of assuring SPDES general permit compliance or as otherwise authorized by the Clean Water Act or New York State Environmental Conservation Law, any substances or parameters at any location; and

e. enter upon the property of any contributor to the regulated facility or activity under authority of the owner or operator.

12. Confidentiality of Information

The following must not be held confidential: this SPDES general permit, the fact sheet for this SPDES general permit, the name and address of any owner or operator, effluent data, the Notice of Intent, and information regarding the need to obtain an individual permit or an alternative general permit. This includes information submitted on forms themselves and any attachments used to supply information required by the forms (except information submitted on usage of substances). Upon the request of the owner or operator, the Department must make determinations of confidentiality in accordance with 6 NYCRR Part 616, except as set forth in the previous sentence. Any information accorded confidential status must be disclosed to the Regional Administrator upon his or her written request. Prior to disclosing such information to the Regional Administrator, the Department will notify the Regional Administrator of the confidential status of such information.

13. Other Permits May Be Required

Nothing in this SPDES general permit relieves the owner or operator from a requirement to obtain any other permits required by law.

14. Department Orders or Civil Decrees/Judgments

The issuance of this SPDES general permit by the Department, and the coverage under this SPDES general permit by the owner or operator, does not supersede, revoke, or rescind any existing order on consent or civil Decree/Judgment, or modification to any such documents or to any order issued by the Commissioner, or any of the terms, conditions, or requirements contained in such order or modification therefore, unless expressly noted.

15. Property Rights

Coverage under this SPDES general permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations, nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the discharge authorized.

16. Compliance with Interstate Standards

If the activity covered by this SPDES general permit originates within the jurisdiction of an interstate water pollution control agency, then the activity must also comply with any applicable effluent standards or water quality standards promulgated by that interstate agency and as set forth in this SPDES general permit for such activities.

17. Oil & Hazardous Substance Liability

Coverage under this SPDES general permit does not affect the imposition of responsibilities upon, or the institution of any legal action against, the owner or operator under section 311 of the Clean Water Act, which must be in conformance with regulations promulgated pursuant to section 311 governing the applicability of section 311 of the Clean Water Act to discharges from facilities with NPDES permits, nor must such issuance preclude the institution of any legal action or relieve the owner or operator from any responsibilities, liabilities, or penalties to which the owner or operator is or may be subject pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. section 9601 et seq. (CERCLA).

18. Severability

The provisions of this SPDES general permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, must not be affected thereby.

19. Department Approved Forms

The owner or operator must provide all relevant information that is requested by the Department, and required by this SPDES general permit, on all Department approved forms.

APPENDIX E

SPDES Individual Permit #NY0034959

New York State Department of Environmental Conservation
Division of Environmental Permits
NYSDEC HEADQUARTERS
625 BROADWAY
ALBANY, NY 12233
(518) 402-9167

SPDES PERMIT RENEWAL

2/1/2022

MARIO CANGEMI
BARTON MINES CORPORATION
PO BOX 400
NORTH CREEK NY 12853

Permittee Name: BARTON MINES CORPORATION
Facility Name: RUBY MOUNTAIN GARNET MINE
Ind. Code: 1499 County: WARREN
DEC ID: 5-5230-00002/00003 SPDES No.: NY0034959
Permit Effective Date: 2/1/2022
Permit Expiration Date: 1/31/2027

Dear Permittee,

The State Pollutant Elimination System (SPDES) permit renewal for the facility referenced above is approved with the new effective and expiration dates. This letter together with the previous valid permit for this facility effective on 02/01/2017 and any subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued permit(s).

As a reminder, SPDES permits are renewed at a central location in Albany in order to make the process more efficient. All other concerns with your permit, including applications for permit modification or transfer to a new owner, a name change, and other questions, should be directed to:

Regional Permit Administrator
NYSDEC Region 5 Headquarters
1115 St Rte 86
Ray Brook, NY 12977-0296
(518) 897-1236

If you have already filed an application for modification of your permit, it will be processed separately by that office.

If you have questions concerning this permit renewal, please contact Michael R Schaefer at (518) 402-9167.

Sincerely,

Scott Sheeley
Permit Administrator

cc:
RPA
BWC
RWE
File
BWP
EPA

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT
Special Conditions (Part 1)

First3.99

Industrial Code:	1499	SPDES Number:	NY- 003 4959
Discharge Class (CL):	01	DEC Number:	5-5230-00002/00003-1
Toxic Class (TX):	T	Effective Date (EDP):	02/01/02
Major Drainage Basin:	11	Expiration Date (ExPD):	02/01/07
Sub Drainage Basin:	04	Modification Dates:	06/01/02
Water Index Number:	H-429	Attachment(s):	General Conditions (Part II) Date: 11/90
Compact Area:			

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: Barton Mines Company, L.L.C. Attention: Gordon Hersey, Executive Vice President
Street: P.O. Box 400
City: North Creek State: NY Zip Code: 12853
is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: Ruby Mountain Garnet Mine
Location (C,T,V): Johnsburg (T) County: Warren
Facility Address: P.O. Box 400
City: North Creek State: NY Zip Code: 12853
NYTM -E: 572.4 NYTM - N: 4842.8
From Outfall No.: 001 at Latitude: 43 ° 43 ′ 45 ″ & Longitude: 74 ° 07 ′ 00 ″
into receiving waters known as: Thirteenth Brook Class: C (T)
and; (list other Outfalls, Receiving Waters & Water Classifications)

002 Unnamed subtributary of Thirteenth Brook - Class D

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in Special Conditions (Part I) and General Conditions (Part II) of this permit.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: Barton Mines Company, L.L.C.
Street: P.O. Box 400
City: North Creek State: NY Zip Code: 12853
Responsible Official or Agent: Gordon Hersey, Executive Vice President Phone: (518) 251-2296

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

Bureau of Water Permits
Anita Gabalski, NYSDOH
William Lupo

Deputy Regional Permit Administrator: Walter L. Haynes

Address:
220 Hudson Street, P.O. Box 220
Warrensburg, NY 12885

Signature: Walter L. Haynes Date: 05/03/02

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning EDPM

and lasting until ExDP

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
001 - Process Water and Runoff					
Flow	Monitor	Monitor	GPD	Monthly	Totalizer & Recorder
Solids, Suspended	30	50	mg/l	Monthly	Grab
pH (Range)	6.0-9.0		SU	Monthly	Grab
Oil & Grease	NA	15	mg/l	Monthly	Grab
Aluminum, Dissolved	NA	*	mg/l	Monthly	Grab
Iron, Total	NA	*	mg/l	Monthly	Grab
Manganese, Total	NA	4.0	mg/l	Monthly	Grab
Nickel, Total	NA	.14	mg/l	Monthly	Grab
Phenols (4AAP)	NA	*.	mg/l	Monthly	Grab
Ammonia (as N)	NA	9.1	mg/l	Monthly	Grab
Nitrate-Nitrite (as N)	NA	*	mg/l	Monthly	Grab
Floride, Total	NA	*	mg/l	Monthly	Grab
Stream Monitoring					
Flow	NA	Monitor	GPD	Monthly	Instantaneous

*The limit for this parameter shall be computed using the following equation:

$$X_E = \frac{(Q_{RS} + Q_E) \times X_{WQ}}{Q_E}$$

Where: X_E = Effluent Limit
X_{WQ} = Water Quality Standard
Q_{RS} = Flow of Receiving Stream
Q_E = Flow of Effluent

The following water quality standards (X_{WQ}) shall be used in this computation:

Aluminum X_{WQ} = 0.1 mg/l
Iron X_{WQ} = 0.3 mg/l
Phenols X_{WQ} = 0.005 mg/l
Nitrite X_{WQ} = 0.02 mg/l
Fluoride, Total X_{WQ} = 0.54 mg/l

Water Treatment Chemicals (WTC) The use of Calgon products CAT-FLOC 2973 and WT2439 as described in the January 19, 1998 letter to Mr. Al Matrose from Mr. David K. Thom is hereby approved in the facility's retention ponds. Any new or increased use of a WTC requires Department review and authorization before use and discharge. At a minimum the permittee must notify the Department in writing of its intent to change WTC use. The form entitled, WTC Usage Notification for SPDES Permittees, should be used for this purpose.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning EDPM

and lasting until ExDP

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
002 Seepage from Seepage Return Pond					
Flow	NA	Monitor	GPD	Quarterly	Estimate
Solids, Suspended	NA	20	mg/l	Quarterly	Grab
pH (range)	6.5-8.5		SU	Quarterly	Grab
Oil & Grease	NA	15	mg/l	Quarterly	Grab
Aluminum, Total	NA	4.0	mg/l	Quarterly	Grab
Iron, Total	NA	0.3	mg/l	Quarterly	Grab
Manganese, Total	NA	4.0	mg/l	Quarterly	Grab
Nickel, Total	NA	.07	mg/l	Quarterly	Grab
Total phenols (4AAP)	NA	0.005	mg/l	Quarterly	Grab
Ammonia (as N)	NA	1.5	mg/l	Quarterly	Grab
Copper, Total	NA	0.016	mg/l	Quarterly	Grab
Zinc, Total	NA	0.28	mg/l	Quarterly	Grab
Fluoride, Total	NA	2.1	mg/l	Quarterly	Grab
Barium, Total	NA	1.5	mg/l	Quarterly	Grab

ACTION LEVEL REQUIREMENTS (TYPE I)

The parameters listed below have been reported present in the discharge but at levels that currently do not require water quality or technology based limits. Action levels have been established which, if exceeded, will result in reconsideration or water quality or technology based limits.

Routine action level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If submission of DMR's is not required by this permit, the results shall be maintained in accordance with instructions on the RECORDING, REPORTING AND MONITORING page of this permit.

If any of the action levels is exceeded, the permittee shall undertake a short-term, high-intensity monitoring program for this parameter. Samples identical to those required for routine monitoring purposes shall be taken on each of at least three operating days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the action level was first exceeded. Results may be appended to the DMR or transmitted under separate cover to the addresses listed on the RECORDING, REPORTING AND MONITORING page of this permit. If levels higher than the actions levels are confirmed the permit may be reopened by the Department for consideration of revised action levels or effluent limits.

The permittee is not authorized to discharge any of listed parameters at levels which may cause or contribute to a violation of water quality standards.

			Minimum Monitoring Requirements	
Outfall Number & Effluent Parameter	**Action Level**	**Units**	**Measurement Frequency**	**Sample Type**
001				
Barium, Total	1.5	mg/l	Quarterly	Grab
Copper, Total	0.15	mg/l	Quarterly	Grab
Zinc, Total	0.90	mg/l	Quarterly	Grab

SPECIAL CONDITIONS - BEST MANAGEMENT PRACTICES (SMALL FACILITIES)

1. The permittee shall develop a Best Management Practices (BMP) plan to prevent, or minimize the potential for, release of significant amounts of toxic or hazardous pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and storm water discharges including, but not limited to, drainage from raw material storage. Completed BMP plans shall be submitted within 6 months of EDPM to the Regional Water Engineer at the address shown on the Recording, Reporting and Additional Monitoring Requirements page. The BMP plan shall be implemented within 6 months of submission.

2. Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (1) above, unless a new deadline is set explicitly by such permit modification or renewal.

3. The BMP plan shall be documented in narrative form and shall include any necessary plot plans, drawings or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the plan and may be incorporated by reference. USEPA guidance for development of storm water elements of the BMP is available in the September 1992 manual "Storm Water Management for Industrial Activities," USEPA Office of Water Publication EPA 832-R-92-006 (available from NTIS, (703)487-4650, order number PB 92235969). A copy of the BMP plan shall be maintained at the facility and shall be available to authorized Department representatives upon request. The BMP plan shall include the following BMP's:

a. BMP Committee	e. Inspections and Records	i. Security
b. Reporting of BMP Incidents	f. Preventive Maintenance	j. Spill prevention & response
c. Risk Identification & Assessment	g. Good Housekeeping	k. Erosion & sediment control
d. Employee Training	h. Materials Compatibility	l. Management of runoff

Note that for some facilities, especially those with few employees, some of the above BMP's may not be applicable. It is acceptable in these cases to indicate "Not Applicable" for the portion(s) of the BMP plan that do not apply to your facility, along with an explanation.

4. The BMP plan shall be reviewed annually and shall be modified whenever: (a) changes at the facility materially increase the potential for significant releases of toxic or hazardous pollutants, (b) actual releases indicate the plan is inadequate or (c) a letter from the Regional Water Engineer highlights inadequacies in the plan..

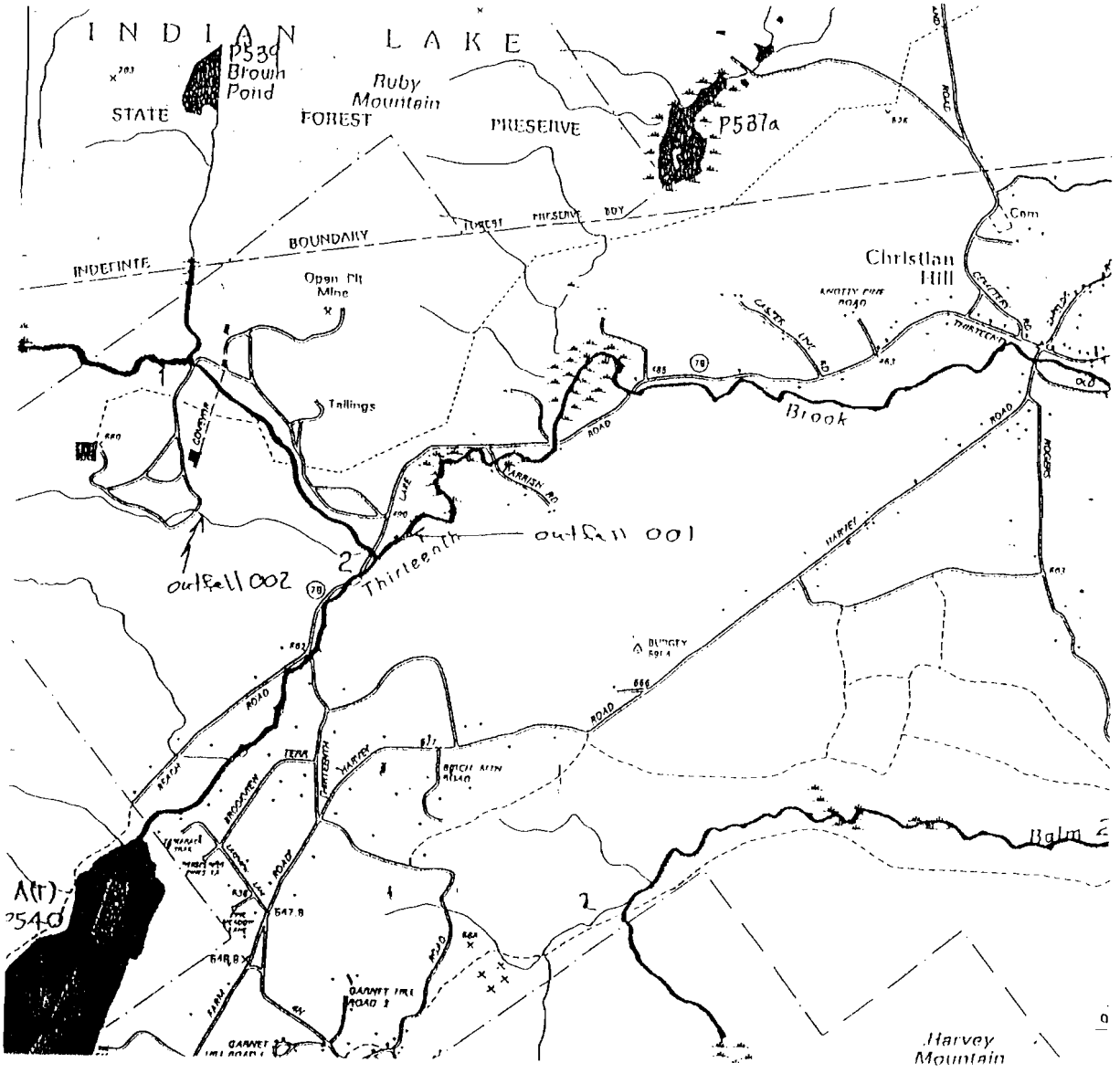
DEFINITIONS OF DAILY AVERAGE AND DAILY MAXIMUM

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when measuements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) indicated below: (Show sampling locations and outfalls with sketch or flow diagram as appropriate) for 001 from effluent flow downstream of seepage return dam prior to discharge to Thirteenth Brook. For 002 from seepage from seepage return pond, prior to discharge to unnamed subtributary of Thirteenth Brook.



DISCHARGE NOTIFICATION REQUIREMENTS

(a) Except as provided in (c), (f) and (g) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed within 90 days of the Effective Date of this Modification.

(b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.

(c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.

(d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY_____

OUTFALL No. :____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: ( ) - ### - ####

OR:

NYSDEC Division of Water Regional Office Address :

NYSDEC Division of Water Regional Phone: ( ) - ### -####

(e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of three years.

(f) If, upon November 1, 1997, the permittee has installed signs that include the information required by 17-0815-a(2)(a) of the ECL, but do not meet the specifications listed above, the permittee may continue to use the existing signs for a period of up to five years, after which the signs shall comply with the specifications listed above.

(g) All requirements of the Discharge Notification Act, including public repository requirements, are waived for any outfall meeting any of the following circumstances, provided Department notification is made in accordance with (h):

(i) such sign would be inconsistent with any other state or federal statute;

(ii) the Discharge Notification Requirements contained herein would require that such sign could only be located in an area that is damaged by ice or flooding due to a one-year storm or storms of less severity;

(iii) instances in which the outfall to the receiving water is located on private or government property which is restricted to the public through fencing, patrolling, or other control mechanisms. Property which is posted only, without additional control mechanisms, does not qualify for this provision;

(iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or

(v) instances in which the discharge from the outfall is located in the receiving water, two-hundred or more feet from the shoreline of the receiving water.

(h) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the waiver criteria listed in (g) above, notification (form enclosed) must be made to the Department's Bureau of Water Permits, Central Office, of such fact, and, provided there is no objection by the Department, a sign and DMR repository for the involved outfall(s) are not required. This notification must include the facility's name, address, telephone number, contact, permit number, outfall number(s), and reason why such outfall(s) is waived from the requirements of discharge notification. The Department may evaluate the applicability of a waiver at any time, and take appropriate measures to assure that the ECL and associated regulations are complied with.

(i) The permittee shall periodically inspect the outfall identification signs in order to ensure that they are maintained, are still visible and contain information that is current and factually correct.

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. **Also**;

[x] (if box is checked) monitoring information required by this permit shall be summarized and reported by submitting completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

Send the **original** (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Wastewater Facilities Operations
50 Wolf Road
Albany, New York 12233-3506

Phone: (518) 457-3790

Send the **first copy** (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
Hudson Street Extension
Warrensburg, New York 12885

c) A monthly "Wastewater Facility Operation Report..." (form 92-15-7) shall be submitted (if box is checked) to the [ ] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency listed above.

d) **Noncompliance** with the provisions of this permit shall be reported to the Department as prescribed in the attached General Conditions (Part II)

e) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

f) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.

g) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

h) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.

i) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences , The Nelson A. Rockerfeller Empire State Plaza, Albany, New York 12201.

APPENDIX F

Notice of Intent

- **Owner/Operator Certification Form for eReports**
- **eNOI (Submitted 2023)**

Multi-Sector General Permit (MSGP) Notice of Intent GP-0-23-001

version 1.4

(Submission #: HPS-N3JD-3RC14, version 1)

Details

Submitted	6/5/2023 (0 days ago) by MICHAEL VANFLUE
Alternate Identifier	NYR00F623
Submission ID	HPS-N3JD-3RC14
Status	Submitted

Form Input

Owner Information

Owner/Operator Name
Barton Mines Company, LLC.

What type of organization owns the facility?
LLC

Department of State ID Number
2094216

The Department of State ID can be found using the following link:
Department of State | Division of Corporations

Owner/Operator Address

PO Box 400

North Creek, NY 12853

Owner/Operator Contact Information

First and Last Name	Phone	Email
Mario	5182512296	mcangemi@barton.com

Billing Information

Please only check yes if the annual fee bill is to go to another location than the owner/operator address.

Is the Billing Information different that the Owner/Operator Information?
No

Facility Information

Facility Name
Barton Mines

Facility Physical Location

147 Ruby Mountain Road

North Creek, NY 128843

Warren

Facility Location
43.73111420335398,-74.11086342741912

Has this facility been assigned a SPDES ID under previous versions of the MSGP?
Yes

SPDES ID
NYR00F623

Eligibility Information

1. Does your facility meet all eligibility requirements listed in Part I.B of the MSGP to gain coverage under this general permit?
Yes

2. Does your facility conduct any activities listed in Part I.C of the SPDES Multi-Sector General Permit which would make your facility ineligible for coverage under this general permit?
No

3. Has a Stormwater Pollution Prevention Plan (SWPPP) been prepared for this facility in accordance with the requirements of the MSGP GP-0-23-001?
Yes

4. Where will the SWPPP be located?
On site at the facility

Waterbody Information (1 of 1)

Waterbody locator
Please use the stormwater interactive mapper to find the name of the waterbody. Start to type the name in the dropdown box to get to the waterbody name. The map is also used to answer other questions on this page.
Stormwater Interactive Map

1. Provide the name of the nearest surface waterbody into which site runoff will discharge.
Thirteenth Brook and tribs - 1104-0030

2. Has the surface waterbody been identified as an impaired waterbody on the CWA 303(D) list or in a watershed for which a Total Maximum Daily Load (TMDL) strategy has been approved?
No

3. Does site runoff enter a Municipal Separate Storm Sewer System (MS4) including roadside drains, swales, ditches, culverts, etc.?
No

Outfall Information

1. What is the facilities primary SIC Code?
1499 - Miscellaneous Nonmetallic Minerals, Except Fuels

2. Are there other SIC codes?
No

3. Does the facility fall under sectors A, C, D, E, J, K, L, O or S?
Yes

3A. What sector does the facility fall under?
J

Outfall and Sector Information

Outfall #	SIC and Sector Codes	EPA Point Source	Acres	Latitude	Longitude
001	1499-J	Y	6.00	43.734	-74.115
002	1499-J	Y	8.00	43.735	-74.116
003	1499-J	Y	39.00	43.732	-74.111
004	1499-J	Y	3.00	43.729	-74.106

Outfall #	SIC and Sector Codes	EPA Point Source	Acres	Latitude	Longitude
005	1499-J	Y	2.00	43.734	-74.114
006	1499-J	Y	6.80	43.729	-74.116

4. Is a Representative Outfall Waiver being requested in accordance with Part IV.G? If the facility currently has a waiver, to continue the waiver, answer yes.
Yes

Representative Outfall Information (1 of 1)

Representative Outfall: `RO_Number`

1. Are substantially identical industrial activities being conducted in the areas discharging to the outfall that is being sampled and the outfall(s) for which a sampling waiver is being requested?
Yes

2. Are similar stormwater controls being implemented in the drainage area(s) discharging to the outfall being sampled and the outfall(s) for which the waiver is being claimed?
Yes

3. Do any of the outfalls for which the waiver is being claimed discharge to an impaired waterbody where the cause of the impairment is a pollutant of concern included in the benchmarks and/or effluent limitations to with the facility is subject to in Part VII of the MSGP?
No

Representative Outfall

Representative Outfall Number	Drainage Area (Ac)	Impervious Area (Ac)	Area of Exposed Materials (Ac)	Level of Industrial Activity
003	34.10	0.70	29.80	High

Represented Outfalls

Outfall #	Drainage Area (Ac)	Impervious Area (Ac)	Area of Exposed Materials (Ac)	Level of Industrial Activity
001	30.4	5.8	13.5	High
002	20.0	0.4	0.4	Low
004	6.1	1.2	1.2	Low

Outfall #	Drainage Area (Ac)	Impervious Area (Ac)	Area of Exposed Materials (Ac)	Level of Industrial Activity
005	10.1	8.6	9.4	High
006	6.8	0.8	0.8	Low

4. Provide a short description of why the outfall chosen as a representative outfall represents the worst case scenario (e.g. more industrial activity in the drainage area, more impervious area, etc.)
The primary pollutant from the site is rock-by-product and sediment created when extracting the rock. The drainage area contributing to Outfall No. 3 includes the entirety of the rock extraction area (quarry). Additionally, Outfall No.3 has over half of the total area of industrial activity that is exposed to stormwater, making it the worst case scenario.

CERTIFICATION

The MSGP Owner/Operator has read and understands the MSGP as it pertains to permit requirements as well as the timeframes for compliance set forth in the permit.
Yes

I am a member of the corporation's executive team, a partner in the partnership, the sole proprietor of the business, or the ranking elected official of the municipality and will be submitting under my name.
No

As a representative of the MSGP covered facility, you cannot sign the Notice of Intent. Please download the certification form from the link below. Have the Corporate Executive, Partner, Ranking Elected Official or Principal Executive Officer complete and sign the certification form. Upload form to your computer and attach to this NOI.
This certification form must be signed and uploaded every time this form is submitted, unless a Corporate Executive Officer, Ranking Elected Official, Partner or Sole Proprietor is going to electronically sign and submit the form.
Certification Form

Attach completed certification form.
> SWPP NOI_signed.pdf - 06/05/2023 11:44 AM
> **Comment**
> NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
6/5/2023 11:44 AM	SWPP NOI_signed.pdf	Attachment	MICHAEL VANFLUE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water
625 Broadway, Albany, New York 12233-3500
P: (518) 402-8233 I F: (518) 402-9029
www.dec.ny.gov

Owner/Operator Certification Form for eReports

SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (GP-0-23-001)

Instructions
Please review Appendix G.10 before signing this form. A signature by an unauthorized person will delay permit coverage for your facility.

This form must be signed by one of the following:

1. For a corporation: by a responsible corporate officer
2. For a partnership: by a general partner
3. For a sole proprietorship: by the proprietor
4. For a municipality, state, federal or other public agency: by a principal executive officer or ranking elected official

Facility Name: Barton Mines

eReport Submission Number: HPS-N3JD-3RC14

Owner/Operator Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mario Cangemi	Dir. of HSE	Barton Mines
Name (please print or type)	Title	Organization

Mario J Cangemi — Signature

4/7/2023 — Date

APPENDIX G

Letter Regarding “Godzilla Pond” (August 2015, LA Group, P.C.)

The LA GROUP
Landscape Architecture & Engineering P.C.
People. Purpose. Place.
40 Long Alley
Saratoga Springs
NY 12866

p: 518-587-8100
f: 518-587-0180
www.thelagroup.com

August 31, 2015

Mike Dauphinais
New York State Environmental Conservation
232 Golf Course Road
Warrensburg, NY 12885

RE: Barton Mines – Stormwater Ponds

Dear Mr. Dauphinais:

In 2014 the LA Group was retained by Barton Mines Company, LLC to conduct a stormwater analysis for the Barton Mines site at Ruby Mountain Road in North Creek, New York. The intent of the analysis was to provide recommendations to improve stormwater quality at their site. The analysis recommended that stormwater ponds be constructed throughout the site, with each pond designated a name for ease of referencing the ponds. Of the recommended ponds the Little Crusher, Big Crusher, Frog, Guppy, and Last Chance Pond have been constructed, along with the Hoover Dam.

Sizing of the basins was determined by calculating the Water Quality Volume based on NYSDEC Stormwater Management criteria. Subcatchment areas contributing to each pond and surface cover type were determined by an aerial survey conducted in 2012. A conservative approach was taken and assumed that the cover type of the active quarry was impervious, with a 98 Curve Number (CN).

The proposed Godzilla pond subcatchment area included the majority of the active quarry. It was assumed that runoff from the quarry would discharge to the Ruby Mountain Road ditch and into the Last Chance Pond, prior to discharging to Brown Ponds Brook. Since the completion of the analysis the LA Group has visited the site to observe progress of the construction of the ponds. Per conversations with Barton Mines employees and observations during the site visits it appears that during storm events that less runoff from the active quarry discharges to Ruby Mountain Road than assumed. It appears that a large portion of runoff from the quarry infiltrates through the base of the quarry and does not contribute to runoff. Runoff that does not infiltrate is treated by the Last Chance Pond.

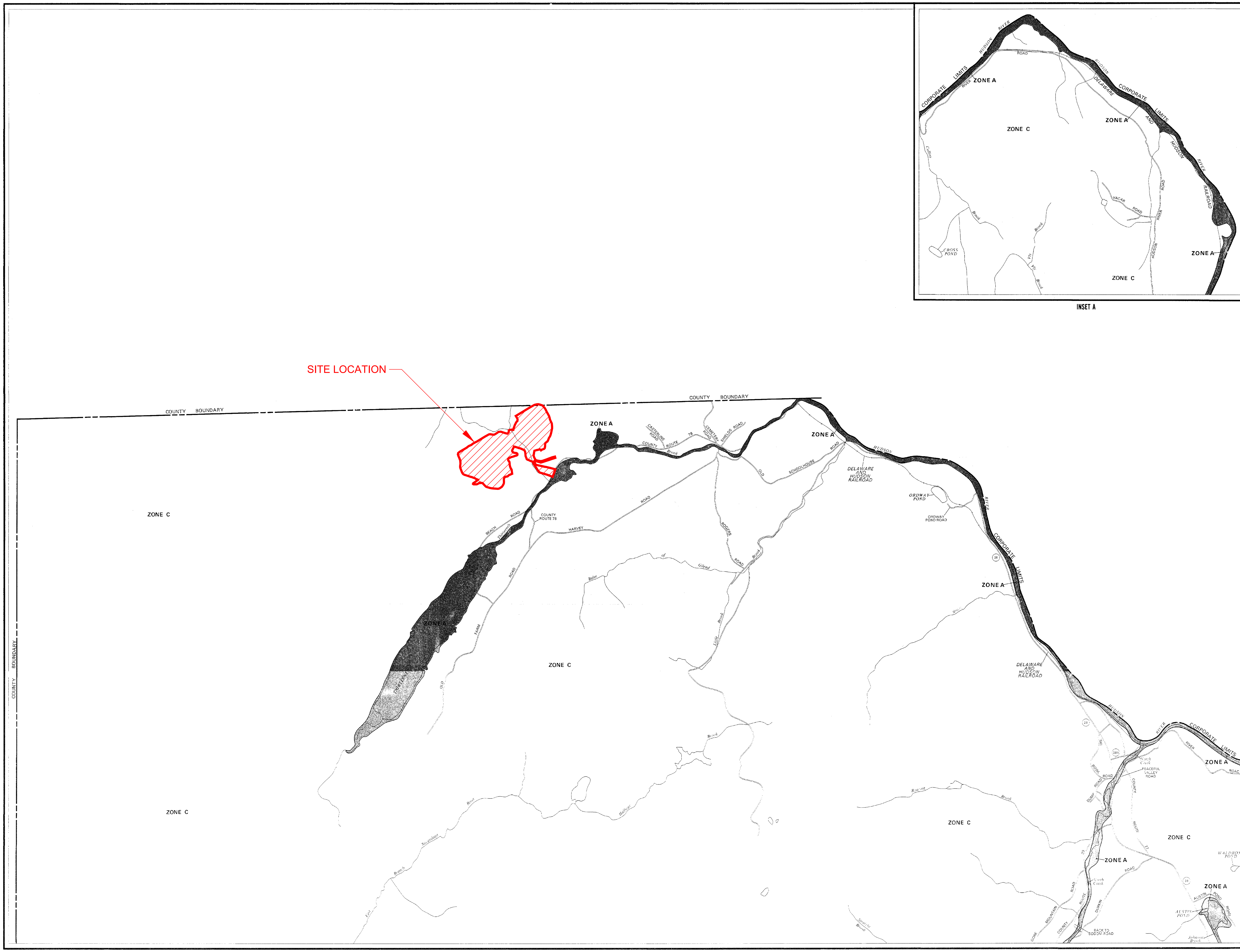
It is the LA Group's understanding that NYSDEC has issued a consent order to Barton Mines to construct the ponds recommended in the stormwater analysis. The LA Group proposes that the construction of the Godzilla Pond be postponed. Current stormwater improvements at the site appear to be performing adequately. The LA Group recommends the necessity of the Godzilla Pond be readdressed in the future as mining continues in the quarry to confirm that the quarry floor continues to infiltrate stormwater runoff.

Sincerely,

Douglas B. Heller, P.E.
Civil Engineer
dheller@thelagroup.com

APPENDIX H

FIRM Map - FEMA



KEY TO MAP

Zone Designations*: ZONE C / ZONE A / ZONE C

Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

A flood insurance map displays the zone designations for a community according to areas of designated flood hazards. The zone designations used by FEMA are:

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
AUGUST 27, 1976

FLOOD HAZARD BOUNDARY MAP REVISIONS:
JULY 1, 1977

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 1, 1985

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE

2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
JOHNSBURG, NEW YORK
WARREN COUNTY

PANEL 25 OF 75
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
360875 0025 B

EFFECTIVE DATE:
MAY 1, 1985

Federal Emergency Management Agency

APPENDIX I

Annual Reporting

- **Owner/Operator Certification Form for eReports**
- **Sample Annual Certification Report**
- **Annual Comprehensive Site Compliance Evaluation Report Form**
- **Dry Weather Flow Inspection Report**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water
625 Broadway, Albany, New York 12233-3500
P: (518) 402-8233 | F: (518) 402-9029
www.dec.ny.gov

Owner/Operator Certification Form for eReports

SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004)

Instructions
Please review Appendix H.8 before signing this form. A signature by an unauthorized person will delay permit coverage for your facility.

This form must be signed by one of the following:

1. For a corporation: by a responsible corporate officer
2. For a partnership: by a general partner
3. For a sole proprietorship: by the proprietor
4. For a municipality, state, federal or other public agency: by a principal executive officer or ranking elected official
5. By a duly authorized representative of a person described in 1-4 above.

Facility Name: _____

eReport Submission Number: _____

Owner/Operator Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (please print or type)	Title	Organization
_____	_____	_____

Signature	Date
_____	_____

MSGP Annual Certification Report

version 3.2

(Submission #: HPN-8F6K-HCFYH, version 1)

Details

Originally Started By	MICHAEL VANFLUE
Alternate Identifier	NYR00F623
Submission ID	HPN-8F6K-HCFYH
Submission Reason	New
Status	Draft

Form Input

FACILITY INFORMATION

SECTION I

1. Permit ID #:
NYR00F623

2. Report for Calendar Year
2022

3. Owner Name
Barton Mines Company, LLC.

4. Facility Name
Barton Mines

GENERAL INFORMATION

SECTION II

1. Number of stormwater outfalls at the facility that are from areas of industrial activity?
6

2. Did the facility claim any monitoring waiver(s)?
Yes

2a. Which waiver(s) were claimed for the reporting year?
Representative Outfall

3. Is the information provided in your latest Notice of Intent (NOI) submission still accurate?
Yes

4. Has a comprehensive site compliance inspection and evaluation been conducted at the facility in the reporting year?
Yes

4a. Were any significant findings made during the comprehensive site inspection?
NONE PROVIDED

5. Is the facility's Stormwater Pollution Prevention Plan (SWPPP) kept up to date and modified when necessary?
Yes

QUARTERLY VISUAL MONITORING

SECTION III (Part IV.E)

1. Were the required quarterly visual examinations of stormwater performed during the reporting period?
Yes

2. Did any of the quarterly visual examinations have observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators of stormwater pollution and contamination?
NONE PROVIDED

ANNUAL DRY WEATHER FLOW INSPECTION

SECTION IV (Part IV.C)

1. Was the annual dry weather flow inspection performed during this reporting period?
NONE PROVIDED

MONITORING - BENCHMARK

SECTION V (Part IV.F.1.a)

1. Is benchmark monitoring required by the permit at the facility?
Yes

2. Were there any monitoring problems? (Answer "Yes" if storm event criteria was not met or if the laboratory indicated quality assurance/quality control problems).
NONE PROVIDED

3. Were any sampling results from the reporting year higher than the benchmark cut-off concentrations listed in the permit?
NONE PROVIDED

MONITORING - EFFLUENT LIMITATIONS

SECTION VI (Part IV.F.1.b & Part IV.F.1.d)

1. Is Effluent Limitation monitoring required by the permit at the facility?
No

MONITORING - IMPAIRED WATERBODIES

SECTION VII

1. Is monitoring required for discharges to impaired waterbodies? (Part IV.F.1.c).
No

SUMMARY

SECTION VIII

Describe any facility changes and/or problems not previously described on this form. List actions taken to improve the quality of the stormwater discharge from the facility.
NONE PROVIDED

CERTIFICATION

Download certification form from the link below. Complete and sign. Upload form to your computer and attach to ACR.
THE CERTIFICATION FORM MUST BE SIGNED AND UPLOADED EVERY TIME THE FORM IS SUBMITTED OR MODIFIED
Certification Form

Attach completed certification form

NONE PROVIDED

Comment

NONE PROVIDED

Annual Comprehensive Compliance Site Evaluation Report Form
Barton Mines Company, LLC
Ruby Mountain Garnet Mine – SWPPP
MSGP GP-0-23-001

Reporting Period: _____ - *save report for a minimum of 5 years*

Inspector's Name: _____ Inspection Date: _____

Is Inspector familiar with site operations, BMPs, SWPPP, and possess adequate inspection skills?
Yes _____ No_____

Weather Conditions: _____

Inspection Areas
Inspection areas shall include, but not be limited to:

a) Industrial materials, residue or trash on the ground that could contaminate or be washed away in stormwater;

b) Leaks or spills from industrial equipment, drums, barrels, tanks or similar containers;

c) Examination of all outfall locations, to determine the presence of unauthorized non-stormwater discharges or authorized non-stormwater discharges that are not certified;

d) Off-site tracking of industrial materials or sediment where vehicles enter or exit the site;

e) Tracking of material away from the area where it originates including from areas of no exposure to exposed areas;

f) Evidence of, or the potential for, pollutants entering the drainage system.

g) Inspection of areas found to be the source of pollutants observed during visual and analytical monitoring done during the year;

h) Stormwater BMPs identified in the SWPPP must be observed to ensure that they are operating correctly.

Major Observations

a) Locations of discharges of pollutants from site, if any:
_____

b) Locations of previously unidentified discharges of pollutants from site, if any:
_____

c) Any evidence of, or the potential for, pollutants entering the drainage system:
_____

d) Source of any discharges and actions taken to address newly identified authorized non-stormwater discharges or elimination of non-authorized discharges:
_____

e) Location of BMPs that need to be maintained:
_____

f) Location(s) of BMPs that fail to operate as designed or proved inadequate for a particular location:
_____

g) Location(s) where additional BMPs are needed that did not exist at the time of inspection: _____

h) Any incidents of noncompliance?: _____
Where an inspection does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit:
_____

i) Observations regarding the physical condition of and around all outfalls, including any flow dissipation devices; and evidence of pollutants in discharges and/or the receiving water:
   a. Outfall 009A: _____
   b. Outfall 015A: _____

j) The required corrective actions to be implemented in accordance with MSGP Part V:
_____

k) Does the SWPPP need to be revised?
   a. Yes _____ No_____

Annual Evaluation

a) How many routine facility inspections did you perform during the reporting period?
_____

b) How many total deficiencies in implementing your SWPPP and complying with your permit were noted in any inspection? _____.
If more than 4, list on the back of this page.

c) Date Deficiencies Corrected (Y or N) Date Corrected:
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____

d) What must you do to correct the deficiencies that remain uncorrected?
_____
_____
_____

e) Were all BMPs you indicated you would be using in your SWPPP, including good housekeeping practices, actually being implemented at the time of the inspections conducted during the reporting period?
    a. Yes _____ No_____

f) If one or more BMPs were not being implemented, were corrective actions taken after the FIRST inspection to find the problem?
    a. Yes _____ No_____ All BMPs were being implemented _____

g) Was/were the same failure(s) to implement a BMP deficiency(ies) noted in more than one inspection?
    a. Yes _____ No_____ No deficiencies were noted on any inspection _____

h) Did any of your routine facility inspections find that one or more of your BMPs were not effective in controlling the pollutant source for which it was designed?
    a. Yes _____ No_____ All BMPs were effective _____

i) If you found one or more ineffective BMP, have they all been replaced with an alternative or modified BMP?
    a. Yes _____ No_____ All BMPs were being effective _____

j) At any time during the reporting period, did you discover any illicit discharges from your facility?
    a. Yes _____ No_____

k) Have all illicit discharges (including any discovered in previous years) been eliminated or permitted?
    a. Yes _____ No_____ Permit applied for _____ No known illicit discharges _____

l) Have any significant spills or leaks occurred at your facility during the reporting period?
    a. Yes _____ No_____

m) If any significant spills or leaks occurred, did they result in either a dry weather discharge or an actual discharge of the spilled or leaked material commingled with storm water (as opposed to the spilled material being washed away by storm water?
    a. Yes _____ No_____

n) Additional comments:
_____
_____
_____
_____
_____
_____

Dry Weather Flow Inspection Form
Barton Mines Company, LLC
Ruby Mountain Garnet Mine – SWPPP
MSGP GP-0-23-001

Requirements:
At least one dry weather flow inspection must be performed each year after a period of 3 days with no precipitation. The objective is to determine the presence of non-stormwater discharges to the stormwater drainage system. Inspection reports shall be filed with the SWPPP records (Appendix M).

Inspection:
Inspector's Name: _____

Inspection Time and Date: _____

Is Inspector familiar with site operations, outfalls, stormwater drainage system and SWPPP?
Yes _____ No_____

Weather Conditions: _____

Major Observations:

Were non-stormwater discharges observed?
Yes _____ No_____

If yes, describe the location and source of the flow:
_____
_____

Is the flow authorized?
Yes _____ No_____

What actions were taken to address the discharge (e.g. methods to eliminate the flow, notify NYSDEC within 14 days, modify SWPPP to add a newly identified authorized flow, apply for SPDES permit, etc.)?
_____
_____
_____
_____

APPENDIX J

Semi-Annual Reporting

- **Owner/Operator Certification Form for eReports**
- **DMR Instructions**
- **Storm Event Data Form**
- **Adverse Climatic Conditions Waiver**
- **Corrective Action Form for Semi-Annual Benchmark Monitoring Exceedances**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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www.dec.ny.gov

Owner/Operator Certification Form for eReports

SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004)

Instructions
Please review Appendix H.8 before signing this form. A signature by an unauthorized person will delay permit coverage for your facility.

This form must be signed by one of the following:

1. For a corporation: by a responsible corporate officer
2. For a partnership: by a general partner
3. For a sole proprietorship: by the proprietor
4. For a municipality, state, federal or other public agency: by a principal executive officer or ranking elected official
5. By a duly authorized representative of a person described in 1-4 above.

Facility Name: _____

eReport Submission Number: _____

Owner/Operator Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (please print or type)	Title	Organization
_____	_____	_____

Signature	Date
_____	_____

IMPORTANT - PLEASE READ BEFORE COMPLETING DMR

Completing Discharge Monitoring Reports (DMRs) for Benchmark or Compliance Monitoring required by the SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004)

General Information

Facilities with benchmark and/or compliance monitoring requirements are required to submit the sampling results for each outfall and sector listed in the Notice of Intent (NOI) form submitted to the Department of Environmental Conservation (the Department) to obtain coverage under the SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, GP-0-17-004 (MSGP). **These results must be submitted to the Department electronically using the NetDMR system.** In cases where a waiver has been approved by the Department to continue using paper DMR forms, they must be submitted to the Department's Albany office, on preprinted DMR forms which the Department provides.

Table I lists monitoring periods and the due dates for the DMRs.

Table I - Monitoring Periods and DMR Due Dates

Monitoring Frequency	Monitoring Period	DMR Due date
Semi Annual	January 1st – June 30th	July 28th
	July 1st – December 31st	January 28th
Quarterly	January 1st – March 31st	April 28th
	April 1st – June 30th	July 28th
	July 1st – September 30th	October 28th
	October 1st – December 31st	January 28th

DMRs are prepared by the Department based upon the information provided in the NOI. The DMR form lists the stormwater discharge outfall and applicable benchmark and/or compliance monitoring requirements for the industrial activities at the facility. Permittees are responsible for knowing the facility's monitoring requirements. If the DMR(s) contains errors, contact the Department immediately so the problem can be corrected before the reporting deadline.

Instructions for Completing DMRs for Benchmark and/or Compliance Monitoring required by the MSGP electronically in NetDMR

Owner/Operators with benchmark and/or numeric effluent limitation monitoring requirements must submit the results of their analysis electronically using EPA's DMR reporting system, NetDMR. To sign up for a NetDMR account, please follow the instructions on the Department's website at the following link: https://www.dec.ny.gov/chemical/8461.html

These instructions highlight the areas of the DMR which typically pertain to facilities covered by the MSGP. Any questions that are not answered by these instructions may be answered by reviewing the DMR Manual or by contacting the Department.

Finding DMRs
Instructions on DEC website: https://www.dec.ny.gov/chemical/104757.html

Review data on DMR page
Make sure that the information under the "Permit" heading is correct. Use the following list to verify the preprinted information.

- "Permit" heading
  - The *PERMIT ID* should match the SPDES ID on the acknowledgment letter received from the Department. If not the same ID, please contact the Department immediately.
  - If the *PERMITEE*, *PERMITTEE ADDRESS*, *FACILITY* or *FACILITY LOCATION*, is incorrect, please submit an NOI with the necessary changes.
  - The *PERMITTED FEATURE* corresponds to the outfall number listed on the NOI. The *DISCHARGE* is a designator based on the SIC code(s). If not correct, please contact the Department immediately.

- "Report Dates & Status" heading
  - Make sure the DMR is for the correct *MONITORING PERIOD*. If you are not viewing the correct DMR, you must return to the DMR selection screen to select the correct DMR.
  - Confirm the *DMR DUE DATE* (date this DMR must be submitted to the Department) is correct. If not correct, please contact the Department immediately.

- Data Section
  - Make sure that all the parameters required by the permit for the facility's sector(s) are listed. If not correct, please contact the Department immediately.
  - Make sure that the limit values are correct. If not correct, please contact the Department immediately.

Completing the DMR
Under the "Principal Executive Officer" heading, enter the FIRST NAME, LAST NAME, TITLE and TELEPHONE of the Principal Executive Officer. NOTE: This can be different from the person signing the DMRs.

The "No Data Indicator (NODI)" section is used for facilities which have no discharge for the entire monitoring period, or who are requesting a waiver. Please see the "No Discharge" and "Use of Waivers" sections below for more information if this applies to your facility.

Enter the DMR *VALUE* data

- The *PARAMETER*s listed in the left-hand column of the DMR match the facility's requirements under the MSGP.
- Fill in all the open *VALUE* boxes with the DMR data. The qualifier preceding the empty *VALUE* field defaults to the equal sign (=). If you need to change it to greater than (>) or less than (<), click on the drop-down arrow to select the correct qualifier.
- Enter only numbers in the *VALUE* boxes. Do not enter letters or other characters – NetDMR will not allow the DMR to be submitted if they are included here.
- Do not use commas.

UNITS

Never change this field. The *UNITS* field defaults to what is listed in the MSGP. You must enter the data on the DMR in the same units as what NetDMR defaults to. If the results of your lab analysis are reported in different units than the units in NetDMR, you must convert the numeric value(s) to the appropriate unit of measurement before entering in in the value field.

FREQ. OF ANALYSIS

The *FREQ. OF ANALYSIS* will default to the permit requirement for this facility. In most cases, this should not be changed. If the facility sampled in a frequency which differs from the permit requirement, use the drop-down arrow to select the correct frequency. If additional analyses were performed during the reporting period, beyond the permit requirements, you must provide an explanation in an attachment to the DMR.

SMPL. TYPE

The *SMPL. TYPE* will default to the permit requirement for this facility. The MSGP only requires *GRAB* samples to be collected, so this will default to "GR" in NetDMR.

Form NODI

- **No Discharge**

If there was no discharge from the outfall during the **entire** monitoring period, this is entered in the **Form NODI** field in the header under "No Data Indicator (NODI)". Use the drop-down menu to choose "C – No Discharge". After selecting this option, the system will enter "C" as the NODI code for the parameter values.

NOTE: This should **only** be used if no stormwater discharged for the **entire** monitoring period. NODI C must not be used to indicate that stormwater samples were not collected due to storms occurring outside of normal business hours, inconvenience of sampling or other failures to collect stormwater samples.

- **Representative Outfall Waiver**

The DMR for the representative outfall (the outfall that was sampled), must be completed in its entirety.

For the outfall(s) where a waiver is being claimed (the outfall(s) not sampled):

1. Open the DMR for the outfall in NetDMR;
2. In the **Form NODI** field in the header under "No Data Indicator (NODI)", use the drop-down menu to select "9 – Conditional Monitoring – Not Required This Period". After selecting this option, the system will enter "9" as the NODI code for the parameter values.;
3. In the Comments field, write "Representative Outfall Claimed at 'XXX'" (where 'XXX' is the *PERMITTED FEATURE* of the outfall that was sampled).

NOTE: For information on representative outfalls, read Part IV.G.3 of the MSGP, beginning on page 39.

- **Inactive/Unstaffed Site Waiver**

DMRs for sites claiming this waiver must attach the Inactive/Unstaffed Waiver Claim form which certifies the dates during the monitoring period when the site was not staffed.

For the outfall(s) where a waiver is being claimed:

1. Open the outfall in NetDMR;
2. In the **Form NODI** field in the header under "No Data Indicator (NODI)", use the drop-down menu to select "2 – Operator Shutdown". After selecting this option, the system will enter "2" as the NODI code for the parameter values.;
3. In the Comments field, write "Inactive/Unstaffed Waiver claimed, see attached".

NOTE: For information on Inactive/Unstaffed sites, read Part IV.G.2, beginning on page 38 of the MSGP.

- **Adverse Climatic Conditions Waiver**

If you are trying to claim this waiver, please call the Department for assistance in submitting your DMR.

NOTE: For information on the Adverse Climatic Conditions Waiver read Part IV.G.1 of the MSGP, beginning on page 38.

COMMENTS

Enter comments and/or explanation of any violations or waivers in the *COMMENTS* field.

ATTACHMENTS

To add an attachment to the DMR submittal, click the "Add Attachment" button and choose the attachment to add from your computer.

- **<u>Storm Event Data</u>**

All permittees must provide storm event documentation using the Storm Event Data Form available on the Department website. This completed form must be attached to the DMR before submission.

- **<u>Waivers</u>**

DMRs must be submitted for all outfalls listed in the NOI submitted to obtain coverage under the MSGP. If a waiver is being claimed, the correct Department form requesting the waiver must be on file with the Department (either submitted with the NOI or attached to the DMR) and noted in the *COMMENTS* field at the bottom of the DMR.

- **Corrective Action Form/Non-Compliance Event Form**

  If results of analysis of a benchmark and/or compliance monitoring sample exceed a cut-off concentration for one or more parameters, the permittee must perform follow-up actions, which may include, submitting the Corrective Action Form to the Department. For more information on the required follow-up actions, please consult the MSGP Part V, beginning on page 41.

Validating DMR

If there are more than 10 parameters in this discharge, advance to the next page using the arrows or clicking on the page number next to "Showing Parameters" # - # of ## and enter the data for all the pages of the DMR. When all the data has been entered for the DMR, click "Save & Continue" at the bottom of the page.

Any "errors" will show up as red. These errors include missing values or values that are above the limit. You must acknowledge the errors by checking the boxes in the *"Edit Check Errors"* section. Once all the data has been entered and any "errors" acknowledged, the status in the header section will be "NetDMR Validated." Once it is validated, click on Sign and Submit.

Sign & Submit DMR

Always click "Check All" for "Include in Submission" and "Add Copy of Submission and Attachments to Email Notification".

Enter your password, then click the "Submit" button. Enter the answer to your secret question and click the "Submit" button. After you have submitted the DMR, you will get a Signing Process" Confirmation number. This confirmation will also be emailed to you.

Important Links:

Notice of Intent (NOI): https://www.dec.ny.gov/docs/water_pdf/msgp017004noi.pdf .

Representative Outfall Waiver Claim Form:
https://www.dec.ny.gov/docs/water_pdf/msgp017repoutflwavr.pdf .
Representative Outfall Waiver Instructions:
https://www.dec.ny.gov/docs/water_pdf/msgp017rowvrinstr.pdf .
Inactive/Unstaffed Waiver Claim Form:
http://www.dec.ny.gov/docs/water_pdf/msgpwaiverunstaff.pdf .
Inactive/Unstaffed Waiver Instructions: http://www.dec.ny.gov/docs/water_pdf/msgpsedf.pdf .
Corrective Action Form: https://www.dec.ny.gov/docs/water_pdf/msgpcaf.pdf .

2002 *DMR Manual for Completing the Discharge Monitoring Report for the State Pollutant Discharge Elimination System (SPDES)*: http://www.dec.ny.gov/docs/water_pdf/dmrmanual.pdf.

Instructions for Completing pre-printed paper DMRs for Benchmark and/or Compliance Monitoring required by the MSGP

Owner/Operators with benchmark and/or numeric effluent limitation monitoring requirements must submit the results of their analysis electronically using EPA's DMR reporting system, NetDMR. To sign up for a NetDMR account, please follow the instructions on the Department's website at the following link: https://www.dec.ny.gov/chemical/8461.html

If you have submitted a waiver from electronic reporting, which has been approved by the Department, you can continue to submit paper DMRs. Only owner/operators who have been approved for this waiver may continue submitting paper DMRs.

Complete instructions for reporting results of analysis on DMRs are included in the 2002 *DMR Manual for Completing the Discharge Monitoring Report for the State Pollutant Discharge Elimination System (SPDES)*, which is available on the Department website at the following link: http://www.dec.ny.gov/docs/water_pdf/dmrmanual.pdf.

The instructions contained herein highlight the areas of the DMR which typically pertain to facilities covered by the MSGP. Any questions that are not answered by these instructions may be answered by reviewing the DMR Manual or by contacting the Department.

The words and phrases which appear in *italics* refer to specific locations or headings on the DMR form received from the Department.

Check the Pre-printed Information on the DMR

Make sure that the preprinted information is correct. Use the following bulleted list to verify the preprinted information.

A sample DMR has been provided to help locate the parts of the DMR referenced in the following instructions. Match the numbers inserted next to the italicized words below with the numbers on the attached sample DMR.

- The owner *NAME*, *ADDRESS*, *FACILITY* and *LOCATION* 1 are correct. If not, please submit an NOI with the necessary changes.
- The *PERMIT NUMBER* 2 matches the SPDES ID on the acknowledgment letter received from the Department. If not, please contact the Department immediately.
- The *DISCHARGE NUMBER* 3 corresponds to the outfall number listed on the NOI submitted for the facility. If not, please contact the Department immediately.
- The *MONITORING PERIOD* 4 is correct. If not, please contact the Department immediately.
- The *PARAMETER*s 5 listed in the left-hand column of the DMR match the facility's requirements in Part VII of the MSGP. If not, please contact the Department immediately.

The NOI form is available on the Department website at the following link: https://www.dec.ny.gov/docs/water_pdf/msgp017004noi.pdf .

Enter the Sample Values and Units

Enter units legibly in blue or black ink. Make decimals look like decimals. Do not use commas.

Data must be reported in the units preprinted on the DMR. If the results of your lab analysis are reported in different units than those preprinted on your DMR, you must convert the numeric value(s) to the appropriate unit of measurement before entering on the DMR.

Enter the sample value results from the lab into the blank SAMPLE MEASUREMENT QUALITY OR CONCENTRATION *value* boxes 6 on the DMR.

Only enter data in blank boxes, do not write in boxes containing asterisks. Do not enter units or other extraneous information (descriptive works or symbols such as "Trace", "ND", "<MDL", "Not Applicable", "None", etc) in the *SAMPLE MEASUREMENT value* boxes. Please note that DMRs may be returned if they are submitted with this extraneous information, including "ND" and "<MDL".

Enter the units for each parameter in the *UNITS* column 7 of the DMR.

Enter the Frequency of Analysis

Enter the sampling frequency in the *FREQUENCY OF ANALYSIS* 8 column located to the right of the sample results and units you entered. The general permit requires analytical sampling on a semi-annual or quarterly frequency, so most permittees will see *Semi-Annual* or *Qtrly* written on their DMR. For semi-annual monitoring, if the outfall was sampled once in the calendar year, report "02/YR" on the DMR. For semi-annual monitoring, if the outfall was sampled twice in the semi-annual monitoring period, please report "03/YR" on the DMR. For semi-annual monitoring, if the outfall was sampled quarterly, please report "04/YR".

For quarterly monitoring, if the outfall was sampled once in the quarter, report "01/90" on the DMR. For quarterly monitoring, if the outfall was sampled twice in the quarter, report "02/90" on the DMR. If additional analyses were performed during the reporting period, beyond the permit requirements, you must provide an explanation in an attachment to the DMR.

Enter the Sample Type

Enter the sample type in the *SAMPLE TYPE* 9 column for each parameter. The general permit only requires *GRAB* samples to be collected, so report "GR" on the DMR.

No Discharge

The *No Discharge* 10 box is located in the upper right hand corner of the DMR. Check this box **only** if no stormwater discharged from the outfall during the **entire** monitoring period. This box should not be checked to indicate that stormwater samples were not collected due to storms occurring outside of normal business hours, inconvenience of sampling or other failures to collect stormwater samples.

Enter Comments and/or Explanation

Enter comments and/or explanation of any violations or waivers in the *COMMENTS AND EXPLANATION OF ANY VIOLATIONS* 11 section as described in the Use of Waivers

section and the Corrective Action Form section below.

Storm Event Data
Along with the DMR, all permittees must provide storm event documentation using the Storm Event Data Form available on the Department website at the following link: http://www.dec.ny.gov/docs/water_pdf/msgpsedf.pdf .

Use of Waivers
DMRs must be submitted for all outfalls listed in the NOI submitted to obtain coverage under the MSGP. If a waiver is being claimed, the correct Department form requesting the waiver must be on file with the Department (either submitted with the NOI or attached to the DMR) and noted in the *COMMENTS AND EXPLANTION OF ANY VIOLATIONS* section at the bottom of the page.

Representative Outfall Waiver
For information on representative outfalls, read Part IV.G.3 of the MSGP, beginning on page 39.

The DMR for the representative outfall (the outfall that was sampled), must be completed in its entirety.

For the outfall(s) where a waiver is being claimed (the outfall(s) not sampled), write "Representative Outfall Claimed at 'XXX'" (where 'XXX' is the *DISCHARGE NUMBER* of the outfall that was sampled) in the *COMMENTS AND EXPLANTIONS OF ANY VIOLATIONS* section at the bottom of the DMR page(s). Sign and date all pages of the DMRs and submit with the Representative Outfall Waiver Claim Form filled out and attached to the DMRs. This form is available on the Department website at the following link: https://www.dec.ny.gov/docs/water_pdf/msgp017repoutflwavr.pdf . Instructions for filling out this form are located at the following link: https://www.dec.ny.gov/docs/water_pdf/msgp017rowvrinstr.pdf . Please contact the Department if you have further questions related to the Representative Outfall Waiver.

Inactive/Unstaffed Site Waiver
For information on Inactive/Unstaffed sites, read Part IV.G.2, beginning on page 38 of the MSGP.

DMRs for sites claiming this waiver must be accompanied by the Inactive/Unstaffed Waiver Claim form which certifies the dates during the monitoring period when the site was not staffed.

For the outfalls(s) where a waiver is being claimed (the outfalls not sampled), write "Inactive/Unstaffed Waiver claimed, see attached" in the *COMMENTS AND EXPLANATION OF ANY VIOLATION* section at the bottom of the DMR page(s).

Sign and date all pages of the DMR(s) and submit with the completed Inactive/Unstaffed Waiver Claim form attached to the packet of DMRs. This form is available on the Department website at the following link: http://www.dec.ny.gov/docs/water_pdf/msgpwaiverunstaff.pdf . Instructions for filling out this form are included with the form. Please contact the Department if you have further questions related to the Inactive/Unstaffed Site Waiver.

Adverse Climatic Conditions Waiver
For information on the Adverse Climatic Conditions Waiver read Part IV.G.1 of the MSGP, beginning on page 38.

The Adverse Climatic Conditions Waiver only applies if the only qualifying storm event(s), in the entire reporting period resulting in storm water discharge, occurred during weather conditions that were dangerous or made it impossible to obtain a sample. This waiver should not be used to indicate that samples were not collected due to inconvenient timing of storms or other failures to collect stormwater samples.

For the outfalls(s) where a waiver is being claimed (the outfalls not sampled), write "Adverse Climatic Waiver claimed, see attached" in the *COMMENTS AND EXPLANATION OF ANY VIOLATION* section at the bottom of the DMR page(s).

Sign and date all pages of the DMR(s) and submit with the completed Adverse Climatic Waiver Claim form attached to the packet of DMRs. This form is available on the Department website at the following link: http://www.dec.ny.gov/docs/water_pdf/msgpwaiveradclim.pdf . Instructions for filling out this form are included with the form. Please contact the Department if you have further questions related to the Adverse Climatic Conditions Waiver.

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

Provide the *NAME* and *TITLE* 12 of the person who is the owner or operator or the duly authorized representative per Appendix H.8 of the permit (beginning on page 198).

Signature and Certification

All DMRs shall be signed (use only black or blue ink) by the person who is authorized to sign the DMR. Each page of the DMR must have an original (not a photocopy), legible *signature* 13

If the principal executive officer authorizes another person to sign the DMR(s) an authorization form must be signed by the principal executive officer and submitted to the Department (See Appendix A of the DMR Manual). The Signature Authorization Form is available on the Department website at the following link: http://www.dec.ny.gov/docs/water_pdf/SigAuth.pdf . Authorization forms may be submitted and approved with the DMR submission.

TELEPHONE

Enter the *telephone* number 14 of the person signing the DMR.

DATE

Enter the *date* 15 of signature.

Corrective Action Form/Non Compliance Event Form

If results of analysis of a benchmark and/or compliance monitoring sample exceed a cut-off concentration for one or more parameters, the permittee must perform follow-up actions, which may include, submitting the Corrective Action Form to the Department. For more information on the required follow-up actions, please consult the MSGP Part V, beginning on page 41. The Corrective Action Form is available on the Department website at the following link: https://www.dec.ny.gov/docs/water_pdf/msgpcaf.pdf .

Mail the DMR and all attachments so they are received by the due date.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: EXAMPLE INDUSTRIES LLC
ADDRESS: NEIGHBORHOOD CREEK RD
OUR TOWN, NY 11111
FACILITY: PRODUCTS TRANSPORTATION
LOCATION: 111 INDUSTRIAL DR
FACTORY TOWN, NY 11110

1

2 NYR00Z100 — **PERMIT NUMBER**

001-A — **DISCHARGE NUMBER** 3

MONITORING PERIOD

	MM/DD/YYYY		MM/DD/YYYY
FROM	01/01/2012	4	12/31/2012

DMR Mailing ZIP CODE: 11111
MINOR
(SUBR 00)
STORMWATER RUNOFF - BENCHMARK MONI
External Outfall

10 **No Discharge** ☐

5 PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
pH	SAMPLE MEASUREMENT	******	******	******	6	******	6	7		8	9
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******	******	6 MINIMUM	******	9 MAXIMUM	SU		Annual	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	******	******	******	******	******					
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******				******	100 DAILY MX	mg/L		Annual	GRAB
Iron, total recoverable	SAMPLE MEASUREMENT	******	******	******	******	******					
00980 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******	******	******	******	1 DAILY MX	mg/L		Annual	GRAB

SAMPLE DMR

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE
12	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	13	14		15
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	MM/DD/YYYY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
Concrete and Gypsum Product Manufacturers (SIC 3271-3275)

11

Frequently Asked Questions

Q1. **The outfall number on the NOI is the same as the *DISCHARGE NUMBER*, but there is a letter after the number on the DMR that I don't recognize. What is this?**

A1. The DISCHARGE NUMBER is based on the outfall number(s) provided in the NOI. The outfall number is followed by a letter. The letter represents the "limit set." These limit sets contain the parameters or pollutants of concern to be sampled and are determined by the Standard Industrial Classification (SIC) or industrial activity code for the facility. Outfalls with more than one SIC or industrial activity code may have more than one "limit set", and they will have more than one DMR for that outfall.

Example: An auto salvage yard that also sells automobiles for scrap is required to report results of analysis for limit sets required for SIC code 5015 and SIC code 5093 activities. If such a facility has one outfall, they will receive two DMRs. The *DISCHARGE NUMBER* on one will be 001A and the other will be 001B.

Q2. One or more of the parameters is listed on both DMRs I received for the same outfall. Am I supposed to have 2 samples analyzed?

A2. One or more parameters may appear on both DMRs. For instance, Total Suspended Solids (TSS) is included in both SIC code 5015 and SIC code 5093 requirements, so it will appear on both DMRs sent to the facility in the previous example. It is *not* necessary to have two samples analyzed for the same parameter at the same outfall. The results of analysis of the sample may be entered on both DMRs.

Q3. One or more of the parameters is listed on the DMRs I received for different outfalls. Am I supposed to have more than one sample analyzed?

A3. Yes, unless a representative outfall waiver has been claimed for one or more outfalls, it is necessary to collect a sample at each outfall, have each sample analyzed at an approved lab and report those results on the appropriate DMR.

Q4. My lab results show the Lead reported as 0.085 mg/L (milligrams/Liter), but the DMR is asking for it in ug/L (micrograms/Liter). What do I enter on the DMR?

A4: Results must be reported to the Department in the same units listed on the DMR. So the Lead needs to be reported on the DMR in ug/L. To perform this conversion, you move the decimal place to the right three places. So 0.085 mg/L = 85 ug/L. 85 ug/L is what should be reported on the DMR for Lead in this example.

Q5. My lab results include letters instead of numbers (ND) for some parameters. What does this mean and what should I enter on the DMR?

A5. Results must be reported using only numeric values!

Results on a lab report sometimes appear as text rather than as a number. Text such as "ND", "Non-detect" or "<MDL" mean that the concentration of the parameter being measured was less than the detection limit used by the lab when analyzing the sample. You may not report results

using “ND”, “Non-detect”, “<MDL” or any other text. The numeric value for the detection limit is usually provided in the lab report, if not, you may need to contact your lab for this value. Once you have the numeric value, report it on the DMR with the less than symbol (<) in front of the number. This shows that the sample was less than the detection limit used by the lab. If you have any questions about your lab report, call the lab for assistance.

Example: The result is ND. The detection limit used by the lab is 0.05 mg/L. Enter the result as <0.05 in the *SAMPLE MEASUREMENT value* box and the mg/L as the units in the *UNITS* box.

Q6. What do I do if I took one sample and the DMR has *PERMIT REQUIREMENT value* boxes for both *DAILY MX* and *DAILY MN* or *DAILY MX* and *30DA_AVG*?

A6. Along with the numeric limit, you will see a term such as *DAILY MX* (Daily Maximum), *DAILY MIN* (Daily Minimum) or *30DA_AVG* (30-day Average) preprinted on the DMR. If you are only required to collect one sample during the monitoring period, the *DAILY MX* and *DAILY MIN* or *DAILY MX* and *30DA_AVG* values will be the same, so write the same number in both boxes.

Q7. What do I do if I took more than one sample and have *PERMIT REQUIREMENT value* boxes for both *DAILY MX* and *DAILY MIN*?

A7. If more than one sample was collected for the reporting period and there are *DAILY MX* and *DAILY MIN* requirements, report the greater of the values for the *DAILY MX* and the lesser of the values for the *DAILY MIN* in the *SAMPLE MEASUREMENT value* box.

Q8. How do I report on my semi-annual DMRs for a parameter that I sampled quarterly during the calendar year?

Q8. If quarterly sampling was required during the calendar year, you will have two sample results from each of the semi-annual monitoring periods. To report on the semi-annual DMR, you would compare the two values for that monitoring period and report the greatest of these values on the semi-annual DMR, because we are looking for the *DAILY MX*, which is the daily maximum value.

Example: You have the following two quarterly Total Suspended Solids values from your sampling during the first semi-annual monitoring period: 19 mg/L, 52 mg/L. You would report the greatest of these values on the semi-annual DMR. In this case, you would report 52 mg/L on the semi-annual DMR.

Q9. What do I do if more than one sample was collected for a 30DA_AVG?

A9. If more than one sample was collected within the same month, the average of the sample results must be entered for the *30DA_AVG* in the appropriate *SAMPLE MEASUREMENT* box.

If more than one sample was collected within the same monitoring period, but not in the same month, the greater of the sample results must be entered for the *30DA_AVG* in the appropriate *SAMPLE MEASUREMENT* box.

A reason for the additional analyses must be summarized in an attachment to the DMR.

Storm Event Data Form
GP-0-23-001

Do not submit this form to the Department; keep this form with the facilities SWPPP.

SPDES ID
NYR00_____

Facility Name _____

Contact First Name _____

Contact Last Name _____

Contact Phone _____

Contact eMail _____

Storm Event Date: [ ]

Storm Duration (in hours): _____ (to the nearest quarter of an hour)

Rainfall measurement from Storm Event:_____ (to the nearest tenth of an inch)

Date of last measurable Storm Event: [ ]

Duration in hours between Storm Event sampled and end of previous measurable Storm _____

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possiblity of fine and imprisonment for knowing violations.

_____
O/O Signature First Name (please print or type)

_____
O/O Signature Last Name (please print or type)

[ ]
Date

[ ]
Signature

Multi-Sector General Permit for Stormwater Discharges
Associated with Industrial Activities (GP-0-23-001)
Adverse Climatic Conditions Waiver Claim

Background

The MSGP (Part IV.G.1) states that when adverse weather conditions prevent the collection of samples, a sample may be taken during a qualifying storm event in the next monitoring period. Adverse weather conditions are only conditions that are dangerous or create inaccessibility for personnel.

Eligibility

The Adverse Climatic Conditions Waiver may be claimed if the **only qualifying event** in a monitoring period created dangerous conditions for personnel, created conditions which made the sample location inaccessible or made collection of a sample impossible. Examples of these conditions include but are not limited to local flooding, high winds and electrical storms.

This waiver may **not** be claimed to indicate that samples were not collected due to inconvenient timing of storms or other failures to collect stormwater samples.

Instructions

Complete the entire Adverse Climatic Waiver Form. The waiver form must be signed and certified in accordance with Appendix G.10 of the MSGP and submitted with all Annual Certification Reports (ACR) and Discharge Monitoring Reports (DMRs).

Complete all your Discharge Monitoring Reports leaving the results sections blank in the outfalls that were not sampled due to dangerous conditions or inaccessibility caused severe weather conditions. For the DMRs that were left blank, enter in the *Comments and Explanations of Any Violation* section at the bottom of the page(s), "Adverse Climatic Waiver claimed, see attached." Sign and date all ACRs and DMRs in accordance with Appendix G.10 of the MSGP.

A copy of the waiver form must be maintained with the Stormwater Pollution Prevention Plan (SWPPP) stating that there were adverse weather conditions and that performing Benchmark and/or Compliance Monitoring was not feasible.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Adverse Climatic Conditions Waiver
Multi-Sector GP-0-23-001

- All sections of this form must be completed unless otherwise noted. Incomplete forms will result in ineligibility for this waiver claim and all applicable monitoring and sampling requirments must be performed.

SPDES Number
NYR00

Facility Name

Contact First Name

Contact Last Name

Contact Phone
- -

Contact eMail

1) Provide monitoring period start and end dates:

Start Date: / / End Date: / /

2) A qualifying storm event occured on the following date: / /

3) Was this the only qualifying storm event during the monitoring period? ○ Yes ○ No

If NO, you are not eligible for this waiver.

4) Did the qualifying storm event listed in Question 2 create dangerous conditions for personnel, create conditions which made the sample location inaccessible, or made collection of a sample impossible? ○ Yes ○ No

If NO, you are not eligible for this waiver.

5) Provide a description of the conditions that made sampling during the storm events listed in Question 2 dangerous or created inaccessibility for personnel.

Certification

I certify under penalty of law that I have read and understand the eligibility requirements for claiming a condition of "Adverse Climatic Weather." Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

O/O Signature First Name (please print or type)

MI

O/O Signature Last Name (please print or type)

Date

Signature

Please submit this form and all supporting documentation to:

Stormwater Compliance Coordinator
NYSDEC, Bureau of Water Compliance
625 Broadway
Albany, New York, 12233-3506

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Corrective Action Form for Semi-Annual Benchmark Monitoring Exceedances GP-0-23-001

This Corrective Action Form is to be used when there is an exceedance of a required benchmark cut-off concentration in the facilities stormwater discharge.

If you need to report an exceedance of a numeric effluent limitation or an impaired waters quarterly limit please use the Corrective Action/Non-Compliance Event Form found on the Department's website.

Please do not submit this form to the Department, keep this form with the facilities SWPPP.

Permit Number
NYR00

Facility Name

Contact First Name

Contact Last Name

Contact Phone
- -

Contact eMail

Instructions for using this form:
- Complete a separate attachment for each Benchmark exceeded and for every outfall where the exceedance occurred.
- Answer all questions (1 through 10) on each attachment.
- Number each attachment (1 of XX, 2 of XX, 3 of XX, etc.)
- Initial and date each attachment
- Fill in number of attachments included in the box below
- The Owner/Operator must sign and date the certification statement below
- **This form is not to be submitted to the Department. Keep this form with the Facilities SWPPP.**

Number of attachments included:

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possiblity of fine and imprisonment for knowing violations.

O/O Signature First Name (please print or type)

MI

O/O Signature Last Name (please print or type)

Date / /

Signature

Outfall Discharge Data

1. Parameter/Pollutant of Concern Exceeded: [ ]
2. Outfall No.: [ ][ ][ ]
3. Have you claimed this outfall as a Representative Outfall? ○ Yes ○ No
   If Yes, Corrective Actions must be must be completed for all outfalls claming the Representative Outfall Waiver. Additionally the representative outfall waiver claim is no longer valid until two consecutive monitoring samples show no exceedance for all outfalls.
4. Date of Exceedance: [ ][ ] / [ ][ ] / [ ][ ][ ][ ]
5. Permitted Value: [ ][ ][ ][ ][ ][ ] Units: ○ mg/L ○ ng/L ○ ug/L ○ s.u. ○ NTUs
6. Reported Value: [ ][ ][ ][ ][ ][ ] Units: ○ mg/L ○ ng/L ○ ug/L ○ s.u. ○ NTUs

Corrective Actions and Sample Results

For questions 7 - 10 provide Corrective Action information and sample results.
The next semi-annual monitoring sample may be used as your Corrective Action sample.

7. Corrective Action Sample Date: [ ][ ] / [ ][ ] / [ ][ ][ ][ ]
8. Corrective Action Sample Value: [ ][ ][ ][ ][ ][ ] Units: ○ mg/L ○ ng/L ○ ug/L ○ s.u. ○ NTUs
9. Describe the exceedance and its cause(s):

10. Describe the short- and long-term corrective actions taken to address the exceedance(s). Include all changes to existing BMPs and any new BMPs implemented. Specify the SWPPP modifications..

Outfall Discharge Data

1. Parameter/Pollutant of Concern Exceeded: [ ]
2. Outfall No.: [ ][ ][ ]
3. Have you claimed this outfall as a Representative Outfall? ○ Yes ○ No
   If Yes, Corrective Actions must be must be completed for all outfalls claming the Representative Outfall Waiver. Additionally the representative outfall waiver claim is no longer valid until two consecutive monitoring samples show no exceedance for all outfalls.
4. Date of Exceedance: [ ][ ] / [ ][ ] / [ ][ ][ ][ ]
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Corrective Actions and Sample Results

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The next semi-annual monitoring sample may be used as your Corrective Action sample.

7. Corrective Action Sample Date: [ ][ ] / [ ][ ] / [ ][ ][ ][ ]
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9. Describe the exceedance and its cause(s):

10. Describe the short- and long-term corrective actions taken to address the exceedance(s). Include all changes to existing BMPs and any new BMPs implemented. Specify the SWPPP modifications..

Outfall Discharge Data

1. Parameter/Pollutant of Concern Exceeded: [ ]
2. Outfall No.: [ ][ ][ ]
3. Have you claimed this outfall as a Representative Outfall? ○ Yes ○ No
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Corrective Actions and Sample Results

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9. Describe the exceedance and its cause(s):

10. Describe the short- and long-term corrective actions taken to address the exceedance(s). Include all changes to existing BMPs and any new BMPs implemented. Specify the SWPPP modifications..

APPENDIX K

Quarterly Inspections and Monitoring

- **Quarterly BMP Inspection**
- **Quarterly Visual Monitoring Form**

Barton Mines

QUARTERLY INDUSTRIAL SWPPP INSPECTION REPORT

Inspector Name:	Date:
Signature:	Inspection #:
Weather:	

REPORT CHECKLIST

Complete the following report checklist and key issue items to attached site plan.

Inspection of Control Devices

	YES	NO	N/A	
1.	☐	☐	☐	Temporary Sediment Detention Basins:
2.	☐	☐	☐	Silt accumulation? Amount (%):
3.	☐	☐	☐	Check Dams:
4.	☐	☐	☐	Silt accumulation? Amount (%):

Additional Comments:

Stabilization

	YES	NO	N/A	
1.	☐	☐	☐	Are all existing disturbed areas contained by control devices? Type of devices:
2.	☐	☐	☐	Are there areas that require stabilization within the next 14 days? Specify Area:
3.	☐	☐	☐	Have stabilization measures been initiated in inactive areas?
4.	☐	☐	☐	Is there current snow cover or frozen ground conditions?
5.	☐	☐	☐	Rills or gullies?
6.	☐	☐	☐	Slumping/deposition?
7.	☐	☐	☐	Loss of vegetation?
8.	☐	☐	☐	Lack of germination?
9.	☐	☐	☐	Loss of mulching?

Additional Comments:

Receiving Structures/Water Bodies (Indicate locations where runoff leaves the project site on the site plan)

	YES	NO	N/A	
1.	☐	☐	☐	Is there stormwater leaving the Mine untreated?
2.	☐	☐	☐	Surface water swale or stream?
3.	☐	☐	☐	Municipal or community system?

Inspect locations where runoff from project site enters the receiving waters and indicate if there is evidence of:

4.	☐	☐	☐	Rills or gullies?
5.	☐	☐	☐	Slumping/deposition?
6.	☐	☐	☐	Loss of vegetation?
7.	☐	☐	☐	Undermining of structures?
8.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?
9.	☐	☐	☐	Is there evidence of turbidity, sedimentation, or oil in the receiving waters?

Additional Comments:

General Site Condition

	YES	NO	N/A	
1.	☐	☐	☐	Have action items from previous reports been addressed?
2.	☐	☐	☐	Does routine maintenance of protection components occur on a regular basis?
3.	☐	☐	☐	Does cleaning and/or sweeping affected roadways occur, at minimum, daily?
4.	☐	☐	☐	Is debris and litter removed on a monthly basis, or as necessary?
5.	☐	☐	☐	Is the site maintained in an orderly manner?

Additional Comments:

Visual Observations

	YES	NO	N/A	
1.	☐	☐	☐	All erosion and sediment control measures have been installed/constructed?
2.	☐	☐	☐	All erosion and sediment control measures are being maintained properly?

Additional Comments:

Scope of Compliance Evaluation

1.	☐	☐	☐	Industrial materials, residue or trash on the ground that could contaminate or be washed away in stormwater;
2.	☐	☐	☐	Leaks or spills from industrial equipment, drums, barrels, tanks of similar containers;
3.	☐	☐	☐	Unauthorized non-stormwater discharges or allowable non-stormwater discharges that are not certified in accordance with Part III.E.1;
4.	☐	☐	☐	Off-Site tracking of industrial material or sediment where vehicles enter or exit the site;
5.	☐	☐	☐	Tracking or blowing of raw, final, or waste materials from areas of no exposure to exposed areas; and
6.	☐	☐	☐	Evidence of, or the potential for, pollutants entering the drainage system. Results of both visual and any analytical monitoring done during the year must be taken into consideration during the evaluation. Stormwater BMPs identified in the SWPPP must be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they must be inspected to see whether BMPs are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations must be inspected if possible.

Additional Comments:

SUMMARY OF ACTION ITEMS

Action Reported To: _____

Company: _____

Received By: (Signature) _____

NEW YORK STATE | Department of Environmental Conservation

Quarterly Visual Monitoring Form Multi-Sector GP-0-23-001

All facilities covered under the MSGP must perform Quarterly Visual Monitoring. This form is part of the facilities records and should be retained onsite with the facility's Stormwater Pollution Prevention Plan. Please see the permit Part IV.E for additional requirements. ***Keep this form with the Facility's SWPPP. Please do not submit this form to the Department.***

- ○ This QVM form is being used as a follow up to Corrective Actions being implemented due to the previous QVM indicating the presence of stormwater pollution.
- ◉ This QVM form is for a regular quarterly event

SPDES ID Number _____

Facility Name

Reporting Year Choose Year

Examiner's Name

Examiner's Title

- ◉ January 1 - March 31
- ◉ April 1 - June 30
- ◉ July 1 - September 30
- ◉ October 1 - December 31

Is this for a Qualifying Storm of greater than 0.1 inches? Yes

Outfall Number	Date/Time Collected and Examined			Rainfall Amount	Runoff Source?
0 0 1		0 8 : 1 5	AM	0.1	○ Rainfall ○ Snowmelt

1. Does the stormwater appear to be colored? ..... ◉ Yes ◉ No

If yes, describe

2. Is the stormwater clear or transparent? ..... ◉ Yes ◉ No

   If yes, which of the following best describes the clarity of the stormwater: ..... ◉ Clear ◉ Milky ◉ Opaque

3. Can you see a rainbow sheen effect on the water surface?..... ◉ Yes ◉ No

   If yes, which best describes the sheen?..... ◉ No Sheen ◉ Rainbow Sheen ◉ Floating Oil Globules

4. Does the sample have an odor? ..... ◉ Yes ◉ No

   If yes, describe

5. Is there something floating on the surface of the sample? ..... ◯ Yes ◯ No

If yes, describe

6. Is there something suspended in the water column of the sample? ..... ◯ Yes ◯ No

If yes, describe

7. Is there something settled on the bottom of the sample?..... ..... ◯ Yes ◯ No

If yes, describe

8. Is there foam or material forming on the top of the sample surface?..... ◯ Yes ◯ No

If yes, describe

Detail any concerns, corrective actions taken and any other indicators of pollution present in the sample:

Stormwater Examiner's Signature

CLEAR FORM

APPENDIX L

Weekly Inspection Form

Storm Water Pollution Prevention Plan Inspection Form
GP-0-23-001 (Exp.03-27-2028)
While Soil Disturbance Activities Are On-Going,
Barton International - Ruby Moutain Quarry - Town of Johnsburg, NY

Inspector:				Date:	
Inspector's Qualifaction:	NYS DEC 4-Hour Erosion and Sediment Control Training				
Weather:					
Control Name	Installed		Contract Compliance		Notes
Temporary Controls	Yes	No	Yes	No	
Silt Filter Sock - Overland Conveyor					
Silt Filter Sock - Roadside Ditch Turnouts					
Dust control on roadways (water)					
Seed Earthen Berms					
Stabilized construction entrance					
Dust control on roadways (water)					
Permanent Controls	(To be complete by end of project)				
Earthen Berm - Northeast of Quarry					
Lined Waterways - RM Pile					
DA-1 Sediment Basin - (NE RM Pile)					
DA-2 Sediment Basin - (SE RM Pile)					
DA-3 Sediment Basin - (SW RM Pile)					
DA-4 Sediment Basin - (NW RM Pile)					
Frog Pond Riser Pipe					
Upper Crusher Pond Expansion and Riser					
Earth Dike - South side of Access Road					
Other (starts at entrance)					
Sediment being tracked of site?					
Observations of outfall 004A, sediment?					
Washouts along road?					
Observations of outfall 003A, sediment?					
Observations of outfall 005A, sediment?					
Observations of outfall 001A, sediment?					
Observations of outfall 002A, sediment?					
Observations of outfall 006A, sediment?					
Observations of outfall 007A, sediment?					
Observations of outfall 008A, sediment?					
Observations of outfall 009A, sediment?					
SWPPP Log maintained on site?			(Store weekly inspections forms with SWPPP after completion)		
Remarks/Recommended Actions:					

APPENDIX M

Example Notice of Termination

MSGP Notice of Termination

version 1.3

(Submission #: HQ2-1VBA-07KZW, version 1)

Details

Originally Started By	MICHAEL VANFLUE
Submission ID	HQ2-1VBA-07KZW
Submission Reason	New
Status	Draft

Form Input

Facility Information

SECTION I

1. Permit ID #:
NONE PROVIDED

Facility Name
NONE PROVIDED

Facility location address

> [NO STREET ADDRESS SPECIFIED]
> [NO CITY SPECIFIED], NY [NO ZIP CODE SPECIFIED]

Owner Name
NONE PROVIDED

Legal Owner address

> [NO STREET ADDRESS SPECIFIED]
> [NO CITY SPECIFIED], NY [NO ZIP CODE SPECIFIED]

Stormwater contact

Stormwater Contact title	First Name	Last Name	Email	Phone
NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

Termination Reason

. This Notice of Termination is being submitted for the following reason:
NONE PROVIDED

CERTIFICATION

Download the certification form from the link below.

Please print the certification form and enter all the information on the form.
Certification Form

Attach completed certification form
NONE PROVIDED
Comment
NONE PROVIDED

APPENDIX N

SWPPP Records