AMENDMENTS TO THE SWPPP

The following list summarizes all changes, revisions, and amendments to the Stormwater Pollution Preventation Plan since the Notice of Intent was submitted to the NYSDEC.

Amendment No.	Date	Description
1	4/19/2018	Addition of temporary soil stockpiles in back-of-house area and clarification of worker parking area access.
2	7/19/2018	Revise stormwater model and stormwater practice design due to revisions of the day guest parking lot layout.

I. INTRODUCTION

This amendment to the approved SWPPP has been prepared to confirm the proposed site stormwater design due to changes in the configuration of the day guest parking lots and minor changes to the layouts of the park and back of house areas. The stormwater practices were revised in the area of the hotel, entrance plaza, and day guest parking lots. This required a revised post-development stormwater model and stormwater practice calculations be prepared. Revised post-development watershed and stormwater practice maps have also been provided reflecting the revised stormwater design. The provided Sections below have been revised since the approved SWPPP.

II. APPENDICES TO THIS AMENDMENT

The following is a list of the Appendices included with this report.

A. Post-Development Watershed Model
B. Post-Development Watershed Maps
   Stormwater Practice Map
C. Calculations:
   Water Quality/Runoff Reduction Volume
   Channel Protection Volume
   Stormwater Practice Design
   Flow Diffuser
D. Pipe Sizing

VII. POST-DEVELOPMENT CONDITIONS

The proposed development includes a theme park, hotel, parking area, back of house facilities and associated utilities. Twenty three stormwater areas are proposed at the project site for water quality treatment and stormwater quantity control. Stormwater water quality treatment will be provided through a filtration using six underground stormwater sand filters, nine bio-retention areas, and dry swales. The bio-retention areas and dry swale also provide runoff reduction volume credit (RRV). A stormwater pond will provide quantity control for the project. In order to minimize site disturbance and mimic existing drainage patterns, existing topography was held to the greatest extent possible when determining the proposed site grading. The study points utilized for the pre-development conditions were maintained and evaluated for post-development conditions. Below is a description of each watershed subarea that correlates with the post-development drainage area map provided in Appendix B.

Watershed A1 consists of approximately 1,162.95 acres of land encompassing the watershed of the Otterkill to the south of NYS Route 17, surrounding the area that is captured by proposed stormwater practices. The majority of this area is outside the project limits and will not change from pre-development conditions.

Proposed improvements in this area include the perimeter grading around the project, emergency access to Arcadia Road, and hotel access road. Approximately 3.32 acres of impervious cover is proposed in this area including the gravel emergency access and hotel access road. Portions of the area surrounding the project are located near on-site wetlands and buffers and will use the sheet flow to riparian buffers green infrastructure technique for water quality treatment. No stormwater practices are proposed for this area. Stormwater runoff in this area follows pre-development patterns. The existing wetlands surrounding the Otter Kill provides detention for the entire watershed using the culvert crossing beneath NYS Route 17 for control of flows. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix B.

Watershed A2 consists of approximately 4.30 acres of area that is captured by proposed bio-retention area A2. This area includes a portion of the back of house facility. Approximately 2.62 acres of impervious cover is proposed in this area, including a portion of the proposed parking area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area A2. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the wetland area surrounding the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A2b consists of approximately 4.81 acres of area that is captured by proposed bio-retention area A2. This area includes a portion of the proposed Harriman Drive/NYS Route 17 improvements. Approximately 1.16 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area A2. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the wetland area surrounding the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A3 consists of approximately 5.32 acres of area that is captured by proposed underground sand filter A3. This area includes one of the proposed theme park visitor parking areas. Approximately 4.02 acres of impervious cover is proposed in this area, including the proposed parking area and walkways. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter A3. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality treatment. The stormwater treatment system is connected to a pipe network that will discharge to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A4 consists of approximately 8.21 acres of area that is captured by proposed underground sand filter A4. This area includes one of the proposed theme park visitor parking areas. Approximately 5.74 acres of impervious cover is proposed in this area, including the proposed parking area and walkways. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter A4. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality

treatment. The stormwater treatment system is connected to a pipe network that will discharge to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A5 consists of approximately 10.14 acres of area that is captured by proposed underground sand filter A5. This area includes one of the proposed theme park visitor parking areas. Approximately 8.87 acres of impervious cover is proposed in this area, including the proposed parking area and walkways. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter A5. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality treatment. The stormwater treatment system is connected to a pipe network that will discharge to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A6 consists of approximately 9.47 acres of area that is captured by proposed underground sand filter A6. This area includes one of the proposed theme park visitor parking areas. Approximately 8.43 acres of impervious cover is proposed in this area, including the proposed parking area and walkways. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter A6. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality treatment. The stormwater treatment system is connected to a pipe network that will discharge to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A7 consists of approximately 3.55 acres of area that is captured by proposed underground sand filter A7. This area includes one of the proposed theme park visitor parking areas. Approximately 2.41 acres of impervious cover is proposed in this area, including the proposed parking area and walkways. One rain garden will collect and treat runoff from a portion of the hotel roof. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter A7. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality treatment. The stormwater treatment system is connected to a pipe network that will discharge to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A8 consists of approximately 2.50 acres of area that is captured by proposed bio-retention area A8. This area includes the proposed hotel and hotel entrance road. Approximately 1.42 acres of impervious cover is proposed in this area, including the proposed parking area and hotel. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area A8. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system is connected to a pipe network that will discharge to the adjacent wetland area that flows to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed A9 consists of approximately 12.41 acres of area that is captured by proposed bio-retention/sand filter area A9. This area includes the entrance plaza and portion of the park area. Approximately 8.54 acres of impervious cover is proposed in this area, including a portion of the theme park area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area A9. The treatment area is located off-line by use of an upstream diversion structure that will divert a portion of the flow to bio-retention area B7 and stormwater pond B7. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the adjacent wetland area that flows to the Otter Kill. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B1 consists of approximately 96.24 acres of land encompassing the watershed to the existing on-site pond adjacent to Harriman Drive and outlet culvert beneath NYS Route 17, surrounding the area that is captured by proposed stormwater practices. The majority of this area is outside the project limits and will not change from pre-development conditions. Proposed improvements in this area include the perimeter grading around the project and Harriman Drive. Approximately 4.93 acres of impervious cover is proposed in this area. Portions of the area surrounding the project are located near on-site wetlands and buffers and will use the sheet flow to riparian buffers green infrastructure technique for water quality treatment. No stormwater practices are proposed for this area. Stormwater runoff in this area follows pre-development patterns. The existing pond along Harriman Drive provides detention for the entire watershed using the culvert crossing beneath NYS Route 17 for control of flows. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B2 consists of approximately 2.06 acres of area that is captured by proposed bio-retention area B2. This area includes a portion of the theme park entrance road. Approximately 0.61 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B2. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B3 consists of approximately 2.33 acres of area that is captured by proposed bio-retention area B3. This area includes a portion of the theme park entrance road. Approximately 0.60 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B3. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B4 consists of approximately 2.54 acres of area that is captured by proposed bio-retention area B4. This area includes a portion of the theme park entrance road. Approximately 0.44 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B4. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to a small on-site stream that flows

to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B5 consists of approximately 4.93 acres of the theme park entrance road. Approximately 0.70 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater and treated by roadside dry swales. The dry swales will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to a small on-site stream that flows to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B6 consists of approximately 7.19 acres of area that is captured by proposed bio-retention area B6. This area includes a portion of the theme park entrance including the parking control structure. Approximately 3.15 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B6. The bio-retention area is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the bio-retention area. The bio-retention area will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to a small on-site stream that flows to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B7 consists of approximately 22.16 acres of area that encompasses a portion of the theme park area. This area includes a portion of the theme park and theme park service road. Approximately 8.66 acres of impervious cover is proposed in this area, including a portion of the perimeter service road, walkways, and areas surrounding rides. 1.84 acres of porous pavers are proposed in the pedestrian areas of the theme park. Porous pavers have been assumed to be impervious in the stormwater model, but pervious for the water quality calculations. One rain garden will collect and treat runoff from a portion of the hotel patio area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B7 and stormwater pond B7. The bio-retention area, dry swales, and porous pavers will provide water quality treatment and runoff reduction volume. The bio-retention area includes a diversion forebay which allows larger storms to bypass the filter bed and flow to stormwater pond B7. Stormwater pond B7 is a wet pond and will provide water quality treatment through a permanent pool, channel protection volume, and quantity control. The stormwater treatment system will discharge to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B8 consists of approximately 6.55 acres of area that encompasses the center portion of the theme park area. This area includes a portion of the theme park and theme park service road. Approximately 4.51 acres of impervious cover is proposed in this area, including a portion of the perimeter service road, walkways, and areas surrounding rides. 0.57 acres of porous pavers are proposed in the pedestrian areas of the theme park. Porous pavers have been assumed to be impervious in the stormwater model, but pervious for the water quality calculations. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to dry swales along the service road. The dry swales and porous pavers will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B9 consists of approximately 8.94 acres of area that encompasses a portion of the theme park area that is captured by proposed bio-retention area B9. This area includes a portion of the theme park and theme park service road. Approximately 4.11 acres of impervious cover is proposed in this area, including a portion of the perimeter service road, walkways, and areas surrounding rides. 0.39 acres of porous pavers are proposed in the pedestrian areas of the theme park. Porous pavers have been assumed to be impervious in the stormwater model, but pervious for the water quality calculations. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to bio-retention area B9. The bio-retention area is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the bio-retention area. The bio-retention area, dry swales, and porous pavers will provide water quality treatment and runoff reduction volume. The stormwater treatment system will discharge to a small on-site stream that flows to the wetland area surrounding the existing on-site pond. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed B10 consists of approximately 4.90 acres of area that is captured by proposed underground sand filter B10. This area includes a portion of the back of house facility parking area and access road. Approximately 3.82 acres of impervious cover is proposed in this area. Stormwater runoff from this area will be collected by a stormwater collection system and conveyed to underground sand filter B10. The underground sand filter is located off-line by use of an upstream diversion structure that will divert storms larger than the 1-year storm around the system. The underground sand filter consists of a chamber system with a sand filter bed beneath a portion of the system to provide water quality treatment. The stormwater treatment system will discharge to the adjacent wetland area. The post-development peak discharge for this area is summarized in Table 3, located below, as well as in the post-development model located in Appendix A.

Watershed Area	Area (Ac.)	CN	Tc (hrs.)	Impervious Cover (Ac.)	1 Year Peak Runoff (cfs)	10 Year Peak Runoff (cfs)	100 Year Peak Runoff (cfs)
Watershed A1	1,162.95	78	1.175	66.24	404.82	1,199.39	2,754.30
Watershed A2	4.30	91	0.202	2.62	6.76	13.97	26.39
Watershed A2b	4.81	85	0.117	1.16	6.23	14.84	30.22
Watershed A3	5.32	94	0.202	4.02	9.39	18.19	33.29
Watershed A4	8.21	93	0.132	5.74	15.01	29.67	54.82
Watershed A5	10.14	96	0.171	8.87	19.62	36.53	65.71
Watershed A6	9.47	96	0.103	8.43	19.71	36.67	65.96
Watershed A7	3.55	93	0.141	2.41	6.41	12.68	23.44
Watershed A8	2.50	90	0.100	1.42	4.21	8.83	16.80
Watershed A9	12.41	92	0.199	8.54	20.42	41.23	76.99
Watershed B1	96.24	78	0.793	4.93	42.25	124.17	285.22
Watershed B2	2.06	84	0.141	0.61	2.47	6.04	12.54
Watershed B3	2.33	83	0.232	0.60	2.22	5.63	11.91
Watershed B4	2.54	82	0.186	0.44	2.63	6.81	14.51
Watershed B5	4.93	80	0.218	0.70	4.17	11.62	25.74
Watershed B6	7.19	88	0.189	3.15	9.96	22.04	43.14
Watershed B7	22.16	87	0.276	8.66	26.21	59.73	118.80
Watershed B8	6.55	93	0.143	4.15	11.79	23.34	43.17
Watershed B9	8.94	88	0.159	4.11	12.80	28.11	55.02
Watershed B10	4.90	94	0.145	3.82	9.14	17.73	32.46
Into Existing Wetlands	1,223.66	--	--	--	405.16	1,235.60	2,879.67
Into Existing Pond	157.84	--	--	--	50.03	190.51	449.50
Study Point A	**1,223.66**	--	--	--	**202.15**	**397.82**	**729.59**
Study Point B	**157.84**	--	--	--	**14.74**	**54.07**	**125.57**

Table 3: Post-Development Conditions

VIII. WATER QUALITY AND RUNOFF REDUCTION

The water quality volume denoted as WQ_v is designed to improve water quality by capturing and treating 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount impervious cover created at a site. The NYSDEC requires that the water quality volume be treated through use of specific green infrastructure practices. The design of these practices is based on promoting infiltration of the water quality volume. The treatment provided by the green infrastructure practices is called the runoff reduction volume (RR_v). The NYSDEC requires the RR_v to equal the WQ_v unless site specific conditions do not allow the full treatment using green infrastructure practices. Table 4, shown below, describes the feasibility of the NYSDEC's Green Infrastructure Techniques.

Table 4: Green Infrastructure Technique Feasibility

Conservation of Natural Areas	
Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.	No natural areas exist within the project disturbance area delineated for the water quality calculation.
Sheet flow to Riparian Buffers or Filter Strips	
Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.	Portions of Harriman Drive, the emergency access to Arcadia Road, and perimeter grading of the project sheet flow to the on-site wetlands and wetland buffers. See the description of this technique below.
Vegetated Open Swale	
The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.	Grades at the site and the theme park use do not allow the use of swales. However, a dry swales are proposed along portions of the guest entrance road and portions of loop service road.
Tree Planting / Tree Box	
Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.	Trees are proposed throughout the project area. See the description of this technique below.
Disconnection of Rooftop Runoff	
Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.	The theme park use does not allow for rooftops to be disconnected.
Stream Daylighting for Redevelopment Projects	
Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.	The project is not a redevelopment, therefore this technique is not applicable.
Rain Garden	
Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.	Two rain gardens are proposed for treating a portion of the hotel roof runoff. Several bio-retention areas are also proposed throughout the project area. See the description of this technique below.

Table 4: Green Infrastructure Technique Feasibility (continued)

Green Roof	
Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.	The structural design of the proposed buildings does not allow this technique.
Stormwater Planter	
Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.	Runoff from the building roofs is being treated by the bio-retention areas.
Rain Tank / Cistern	
Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.	Landscape irrigation or rainwater reuse is not proposed, building roofs will be treated by the proposed bio-retention areas. No cisterns are proposed.
Porous Pavement	
Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.	Porous pavers are proposed in the theme park area. See the description of this technique below.

Below are calculations developed specifically for the site. Details for the water quality volume and runoff reduction volume calculations are provided in Appendix D of this report. Below is summary of the required and provided water quality and runoff reduction volumes.

Required Water Quality Volume (WQ_V) = 382,626 cubic feet
Required Minimum Runoff Reduction Volume (RR_V) = 74,531 cubic feet
Provided Runoff Reduction Volume (RR_V) = 90,006 cubic feet
Required WQ_V minus the provided RR_V = 292,620 cubic feet
Provided Water Quality Volume (WQ_V) = 324,565 cubic feet
Total Treatment Volume Provided $WQ_V + RR_V$ = 414,571 cubic feet

Several different practices are being proposed throughout the site for treatment of the water quality and runoff reduction volumes. See the map in Appendix B for locations of the stormwater practices. Descriptions for practices are shown below.

Sheet flow to Riparian Buffers

Areas that drain to the wetlands and wetland buffers can be deducted from the water quality volume up to maximum of 150 feet for pervious cover. In order to claim this practice, all flow must enter the buffer in

sheet flow form. The areas of the project that drain to wetlands and wetland buffers will be graded to promote sheet flow into the undisturbed areas. Any pipe discharges in these areas will utilize riprap outlet protection or level spreaders to prevent erosion and promote sheet flow. The wetlands and wetland buffers are protected and will remain undisturbed. The sheet flow areas of the project will be left in a natural state and not regularly mowed to further promote sheet flow and decrease runoff. Areas along the Harriman Drive, portions of the emergency access to Arcadia Road, and the perimeter of the project grading have been removed from the water quality volume using this practice. 965,606 square feet has been removed from the drainage area and 144,118 square feet has been removed from the impervious cover area.

Tree Planting

Trees planted adjacent to impervious cover allow the drainage area to be reduced when calculating the water quality volume. The method of reduction chosen for this site is 100 square feet of drainage area for each tree. A total of 880 trees are proposed, allowing an 88,000 square foot reduction of the drainage area.

Bio-Retention Areas

Nine bio-retention areas are proposed throughout the project. They have been designed to treat runoff from the lawn areas, proposed paved areas, and the building roofs. Soil types in the locations of the bio-retention areas are hydrologic soil group D, therefore the systems will be installed with underdrains. 40% of the treatment volume of the bio-retention areas can be claimed as runoff reduction volume and remaining volume will be claimed as water quality volume. The bio-retention areas will be located off-line from larger storms through using upstream diversion structures, either flow splitting catch basin structures or overflow catch basin structures used in the pre-treatment areas. The diversion structures divert storms larger than the 1-year storm past the filter bed area, calculations are provided in Appendix D. Provided treatment volume for the bio-retention areas are listed in Table 5 below. A total 44,830 cubic feet of treatment will deducted from the water quality volume, the remaining 67,245 cubic feet will treat standard water quality. Sedimentation forebays will be utilized for water quality pre-treatment.

Bio-Retention Area	Filter Bed Area (SF)	Total Treatment Volume (CF)
A2	15,800	23,200
A8	4,200	7,962
A9	5,530	9,512
B2	2,300	3,286
B3	2,850	4,367
B4	1,810	2,624
B6	7,610	10,776
B7	29,500	42,443
B9	5,300	7,906
Total		**112,076**

Table 5: Bio-Retention Area Treatment Volumes

Porous Pavers

Porous pavers will be used in the pedestrian areas and walkways in the theme park area. Porous pavers consist of a interlocking paver blocks with spaces between blocks to allow infiltration and a stone layer of stone beneath the pavement designed to temporarily hold the water quality volume while it infiltrates. Swales and catch basins will be installed at the low points to allow stormwater from storm events larger than the water quality storm to exit the area. An underdrain will also be used to ensure proper drainage of larger storms. The area of porous pavers is 122,080 square feet, this area will be deducted from the impervious area in the water quality volume calculation.

Dry Swales

Dry swales are proposed for treating runoff from a portion of the guest entrance road and areas within the theme park. The total length of swales with a slope of 4% or less is 1,864 feet. The dry swale will have a minimum 3 or 4 foot bottom width, 1 foot depth, with 3 horizontal to 1 vertical side slopes. Soil types in this area are hydrologic soil group D, meaning the up to 20% of the treatment volume of the dry swale can be claimed as runoff reduction volume and remaining volume will be claimed as water quality volume. 3,414 cubic feet of treatment will deducted from the water quality volume, the remaining 13,654 cubic feet will treat standard water quality. Gravel diaphragms will be utilized for water quality pre-treatment.

Underground Sand Filter Areas

Six underground sand filters are proposed for treating runoff from the theme park visitor parking areas, hotel parking area, and a portion of the back of house parking area. Soil types at the site are hydrologic soil group D, no infiltration is expected in these areas, and therefore no runoff reduction will be claimed for this practice. The entrance rows of each system will consist of a separator row that wrapped with a geotextile and will provide pre-treatment for the sand filter area. Water quality will be provided by sand filtration beds installed under the separator rows. Additional rows in the system will provide channel protection volume. Provided treatment volume for the bio-retention areas are listed in Table 6 below.

Underground Sand Filter	Filter Bed Area (SF)	Total Treatment Volume (CF)
A3	2,145	27,805
A4	2,145	27,805
A5	3,998	51,819
A6	3,354	43,478
A7	1,183	15,517
B10	1,859	24,098
Total		**190,523**

Table 6: Underground Sand Filter Area Treatment Volumes

Rain Gardens

Rain gardens are small, vegetated stormwater treatment areas designed for capturing and infiltrating runoff from roofs, driveways, yards, and other small areas. Rain gardens are very similar to bio-retention areas, but are much smaller. Two rain gardens are proposed for treating a portion of the hotel roof runoff. The treatment volume of rain gardens is quantified as a volume, similar to a standard stormwater practice, such as a bio-retention area. The 2 rain gardens will treat approximately 468 cubic feet of water quality volume.

Stormwater Pond

A stormwater pond is proposed for handling water quality treatment, channel protection volume, and quantity control from the theme park area. The pond will be a wet pond, design P-2. Water quality treatment will be provided through permanent pool. Stormwater ponds do not allow for runoff reduction credit. The stormwater pond will provide 53,143 cubic feet of water quality treatment through permanent pool.

IX. EROSION AND SEDIMENT CONTROL MEASURES

The SPDES General Permit (GP-0-15-002) for construction activities requires that an Erosion and Sediment Control Plan be developed. This plan has provided as part of the Site Plans, and will be available at Town Hall and the project site at the time of construction. The plan will also be in compliance with current regulations, including construction sequence, both short- and long-term maintenance of facilities, storage of materials and temporary and permanent structures.

The following temporary and permanent erosion control practices are proposed for use during construction and for long-term protection:

A. Stabilized Construction Entrance:
A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets. Stabilized construction entrances will be placed as shown on the Sediment and Erosion Control Plans.

B. Siltation Fence:
A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment loads. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year). Silt fence will be placed as shown on the Sediment and Erosion Control Plans.

C. Sediment Traps:
A temporary sediment control device formed by excavation and/or embankment to intercept sediment laden runoff and retain the sediment. The purpose of the structure is to intercept sediment-

laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation. Stone outlet sediment traps will be used at the locations shown on the Sediment and Erosion Control Plans. Sediment traps are proposed in the areas of the proposed bio-retention areas, calculations for the sizing of the temporary sediment basins are provided on the Sediment and Erosion Control Plans.

D. Sediment Basins:
A temporary barrier or dam constructed across a drainage way or at other suitable locations to intercept sediment laden runoff to trap and retain the sediment to reduce the amount of sediment leaving the disturbed area in order to protect drainage ways, properties, and rights-of-way below the sediment basin. Sediment basins are proposed in the areas of the proposed bio-retention areas, calculations for the sizing of the temporary sediment basins are provided in Appendix D.

E. Diversion Swales:
A temporary excavated drainage way. The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device. Diversion swales will be used for diverting clean runoff around the project area and for intercept sediment laden runoff and directing it to sediment traps/basins. Diversion swales will be placed as shown on the Sediment and Erosion Control Plans.

F. Water Bars
A ridge or ridge and channel constructed diagonally across a sloping road or utility right-of-way that is subject to erosion. The purpose is to limit the accumulation of erosive velocity of water by diverting surface runoff at pre-designed intervals. Water bars will be placed as necessary during construction.

G. Storm Drain Inlet Protection:
A temporary, somewhat permeable barrier, installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and thereby reducing the sediment content of sediment laden water by settling. The purpose is to prevent heavily sediment laden water from entering a storm drain system through inlets. Curb drop, filter fabric drop, and excavated drop inlet protection will be used throughout the site. Inlet protection will only be used in road areas before pavement is placed. Locations of inlet protection are shown on Sediment and Erosion Control Plans.

H. Level Spreaders:
A temporary non-erosive outlet for concentrated runoff, constructed to disperse flow uniformly across a slope. The purpose is to convert concentrated flow to sheet flow and release it uniformly over a stabilized area. Level spreaders will be used at the ends of diversion swales used for diverting clean runoff around the project area. Level spreader locations are shown on the Sediment and Erosion Control Plans.

I. Slope Stabilization Matting:
Matting made synthetic or natural fibers that is placed on steep slopes to allow newly planted vegetation to take root and protect the slope from erosion before vegetation is fully established. Locations of slope stabilization matting are shown on Sediment and Erosion Control Plans.

J. Rock Outlet Protection:
A section of rock protection placed at the outlet of the culverts, conduits, or channels. 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. Rock outlet protection is proposed at all pipe discharge points. See the Sediment and Erosion Control Plans for locations of rock outlet protection.

K. Pipe Slope Drain:
A temporary structure placed from the top of a slope to the bottom of a slope to convey surface runoff down slopes without causing erosion. Pipe slope drains are proposed along the benched slopes along the western side of the project. See the Sediment and Erosion Control Plans for locations of pipe slope drains.

L. Compost Filter Sock:
A temporary sediment control practice composed of degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite. See the Sediment and Erosion Control Plans for locations of compost filter socks.

X. IMPLEMENTATION SCHEDULE & MAINTENANCE

A. Schedule

As part of the development of the Erosion and Sediment Control Plans for the project, preparation of construction sequencing was completed to ensure water quality discharges are maintained during construction. The following construction schedule for implementing stormwater management during construction is proposed. Please refer to the Site Plans for specific sequencing and scheduling.

General Notes:

1. The owner or operator shall have a qualified inspector conduct at least two (2) site inspections in accordance with Part IV.C. every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

2. In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased.

3. Temporary Stabilization means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment

Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

4. 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.

Enhanced Practices for Grading Purposes:

1. Site contractor to have designated personnel for erosion control only. Personnel will conduct daily written inspections and immediately notify Lanc & Tully of any issues.

2. Lanc & Tully to monitor weather and notify site contractor of any forecasted rain event to exceed 2" of rain.

3. Any areas not intended for disturbance for 7 days to be stabilized within 2 days.

4. Temporary diversion swales to be installed upslope of disturbance areas as indicated on the plans.

5. Water bars to be installed across main site entrance road as needed.

6. Pipe slope drains, permanent culverts, and temporary culverts to be installed along west side of main entrance road and in slope area uphill of temporary sediment trap E.

7. Compost filter socks to be installed along wetland boundaries and as indicated on the plans.

8. Pumps and filter bags are required as directed by engineer during dewatering of sediment traps and basins.

9. Topsoil stockpiles to be temporary stabilized if no activity is scheduled for 2 days.

10. Refer to the Site Plans for Erosion Control Plans for detailed erosion control measures.

Construction Sequence:

1. Pre-construction meeting: Before construction activities an evaluation of the site will be performed with the site contractor, Town personnel and site design engineer to discuss general construction procedures and sequencing. During this meeting sensitive areas of the property shall be delineated and marked-out with orange construction fence (i.e.: trees, wetlands, wells, etc.).

2. Delineate total site disturbance limits: Placement of orange construction fencing along the limit of disturbance throughout the site.

3. Protect existing buffers: Place erosion control devices (silt fencing, diversion berms, etc.) upstream of any existing watercourse within or outside of construction areas, prior to the start of any construction.

4. Construction entrances/siltation controls: A temporary construction entrance will be installed at the site entrances as shown on the Site Plans. In addition, any other siltation control devices, as shown on the erosion control plan are to be installed adjacent to the temporary entrance and staging area.

5. Construction of temporary sediment traps/basins: Construction of the temporary sediment traps prior to the start of any major earthwork movement or site construction.

6. Staging area: The staging area will be graded for storage of equipment and placement of construction trailers.

7. Strip topsoil: Topsoil will be stripped from this phase and will be stockpiled for later reuse.

8. Land grading: Bulk soil grading in this phase will commence. At this time, temporary stockpile areas should be utilized.

9. Retaining walls: Begin construction of on-site retaining walls. Walls to be installed concurrently with land grading.

10. Back of house construction: Upon completion of grading in back of house area, construction of buildings and roads will begin.

11. Utility installation: Install sanitary sewer, water, and stormwater. Inlet protection will be installed at all stormwater catch basins.

12. Stormwater installation: Install underground stormwater areas when all contributing areas have been stabilized. Protect areas during and after construction until pavement is installed.

13. Pavement construction: Construct paved parking and access roads.

14. Theme park construction: Upon completion of grading and retaining walls, construction of rides, buildings, and walkways will commence.

15. Landscaping and final stabilization: All open areas to be stabilized with topsoil and seeded as per the seeding schedule specified on the erosion and sediment control plans. Removal of all temporary measures, flushing/cleaning of all catch basins and pipe, and removal and disposal of all trapped sediment on site shall be completed.

16. Final site inspection and certification: At the end of construction a site evaluation of the site will be performed with site contractor, Town personnel, and site engineer to ensure that all

stormwater facilities were constructed as per the SWPPP design and that the site has been stabilized. A Notice of Termination will be submitted to the NYSDEC.

Please refer to the Erosion and Sediment Control Plans within the Site Plans for construction notes and seeding schedule for disturbance and final stabilization.

B. Pollution Prevention Measures:

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner conforms to all applicable Federal and State regulations that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

1. All vehicles, equipment, and petroleum product storage/dispensing areas will be observed regularly during site observations to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.

2. On-site fueling tanks and petroleum product storage containers shall include secondary containment.

3. Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.

4. In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.

5. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Contaminated soil shall be removed from site and disposed of in accordance with all current Federal and State Regulations.

Chemical storage:

1. Any chemicals stored in the construction areas will conform to the appropriate manufacturer's recommendations and or the appropriate State/Federal Regulations. All chemicals shall have cover, containment, and protection provided on site, per all Federal and NYSDEC regulations.

2. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Demolition:

1. Dust released from demolished sidewalks, buildings, structures or on site grading operations will be controlled using Dust Control measures as specified in the N.Y.S. Erosion and Sediment Control Specification Manual.

2. Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection.

3. Process water and slurry resulting from saw cutting and surfacing operations will be prevented from entering the waters of the State by implementing Saw cutting and Surfacing Pollution Prevention measures.

Concrete and grout:

1. Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures.

Sanitary wastewater:

1. Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.

2. Wheel wash or tire bath wastewater shall be discharged to a temporary erosion and sediment control facility which has been constructed on site.

Solid Waste:

1. Solid waste will be stored in secure, clearly marked containers.

Litter/Trash:

1. Litter and Trash shall be cleaned and disposed of in secure clearly marked dumpsters or trash receptacles.

2. Site is to be cleaned daily of debris and disposed of on a daily basis.

Other:

1. Other BMPs will be administered as necessary to address any other additional pollutant sources on site.

C. Maintenance (Construction/Long-Term)

1. The property owner/operator will be responsible for the maintenance and operation of all site related stormwater management facilities during construction and the property owner will be responsible for long-term maintenance.

2. A standalone Operation and Maintenance Plan will be prepared prior to filing of the NOTs and will include the following: schedules, procedures, forms for inspections, maps showing stormwater practice areas, and the maintenance agreement. Please refer to Appendix F for standard Inspection and Maintenance Forms.

3. Construction and long-term maintenance shall be carried out in accordance with the following notes:

   a. Bio-retention Areas: Inspection shall be made weekly by a licensed professional and after every ½" rainfall event by the owner or contractor during construction. During the first growing season inspections shall be conducted monthly and annually thereafter. The following tasks shall be performed as needed:

      (1) Removal of accumulated sediment and cleaning and/or restoration of the filter bed areas whenever accumulated sediment reaches a volume of 50% of the available capacity.

      (2) Restoration of any disturbed plant material and any eroded embankments.

      (3) Removal of accumulated debris within the filter bed areas and at all inlet and outfall structures.

      (4) Annual mowing of the berm and surrounding area of the basins. Removal of any fallen trees or limbs. No mowing or trimming is to occur within the constructed area of the wetland. Replacement of proposed plants shall occur if more than 50% of the coverage of the facility is not achieved.

   b. Porous Pavers: Pavers shall be protected from silt and sediment during construction of surrounding areas, if possible, the pavers should be installed after stabilization of surrounding areas. During winter conditions, sand and salt should be avoided being utilized to the porous pavers sections. The following tasks shall be performed as needed:

      (1) Clean debris and sediment from pavers monthly.

      (2) Ensure paver area fully drains after storms monthly and after storms greater than 0.5 inches.

      (3) Mow and seed bare areas upland and adjacent to the pavers as needed.

(4) Vacuum pavers surface 2 to 3 times a year depending on site conditions.

(5) Inspection of the surface for dislodged or damagers pavers, replacing as necessary.

c. Underground Sand Filtration Systems: Inspection shall be made weekly by a qualified professional and after every ½" rainfall event by the contractor during construction. For the first year following construction, the system shall be inspected quarterly by the owner and at the end of the year by a qualified professional. Thereafter, the system shall be inspected annually. The following tasks shall be performed as needed:

(1) Visual inspections to be performed at the inlet manhole and inspection ports.

(2) Removal of accumulated sediment every 5 years and/or when depth reaches 3" within the stormwater separator row by jetting and washing sediment to inlet manhole and vacuuming from the sump.

(3) Removal of accumulated debris within the system and at all inlet and outfall structures.

(4) Check for settlement of the ground above and around the underground system. Fill low spots as necessary.

(5) Restoration and repair of any damaged portion of the system. Sand filter replacement once every 10 years if warranted by visual inspection.

d. Swales: Inspection shall be made weekly and after every ½" rainfall event during construction. During the first growing season inspections shall be conducted monthly, and on an annual basis thereafter. The following tasks shall be performed as needed:

(1) Removal of accumulated sediment and cleaning and/or restoration whenever accumulated sediment reaches a volume of 50% of the available capacity.

(2) Restoration of any eroded embankments. Infrequent reshaping of the swale line should be completed as needed.

(3) Removal of accumulated debris/trash within the swale and at all inlet and outfall structures.

(4) Seasonal mowing of the swale bottom and surrounding side slopes. Removal of any fallen trees or limbs. Replacement and/or restoration of proposed grasses shall occur if more than 50% of the coverage of the facility is not achieved. Grasses should be kept at a maximum height of 6" – 8".

e. Stormwater Pond: Inspection shall be made weekly by a licensed professional and after every ½" rainfall event by the owner or contractor during construction. During the first

growing season inspections shall be conducted monthly and bi-annually thereafter. The following tasks shall be performed as needed:

(1) Removal of accumulated sediment and cleaning and/or restoration of the sediment forebays every 5 or 6 years or whenever accumulated sediment reaches a volume of 50% of the available capacity.

(2) Restoration of any disturbed plant material and any eroded embankments. Replacement of proposed plants shall occur if more than 50% of the coverage of the facility is not achieved.

(3) Removal of accumulated debris within the basin and at all inlet and outfall structures.

(4) Annual mowing of the berm and surrounding area of the basins. Removal of any fallen trees or limbs.

(5) Inspection of the outlet structure to ensure structural stability and removal of any accumulated trash within the structure.

f. Rain Gardens: Inspection shall be made weekly during construction and during the first growing season, and on an annual basis thereafter. The following tasks shall be performed as needed:

(1) Removal of accumulated sediment and cleaning and/or restoration of the filter bed areas whenever accumulated sediment reaches a volume of 50% of the available capacity.

(2) Restoration of any disturbed plant material and any eroded embankments.

(3) Removal of accumulated debris within the filter bed areas and at all inlet and outfall structures.

(4) Regular weeding and watering as needed.

g. Roadway Pavements: Roadway pavements shall be swept on a regular basis to remove accumulated sediment. Collected sediment shall be removed, which will not allow the re-entrance of silt into the storm water drainage system.

h. Catch Basins: Catch basins shall be flushed and cleaned of any collected sediment within the bottom of the basin approximately every 4-5 years. Collected sediment shall be removed, which will not allow the reentrance of silt into the storm water drainage system.

i. Vegetative Stabilization:

(1) All vegetative planting on areas that have been disturbed and are finish graded shall be inspected monthly during the first growing season and annually thereafter. Planting (or seeding) shall be maintained in viable conditions to stabilize the soil and to prevent soil erosion. Restore all site planting and/or seeding which has been damaged to a viable condition.

(2) If vegetative stabilization has been damaged from storm water erosion, correct upstream conditions that caused the erosion. Check dams may be required in drainage ways and stone outfall aprons may be required to be repaired on storm water outfall sites.

j. Temporary erosion and sediment control maintenance:

(1) All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed and installed for their appropriate phase of the project.

(2) Sediment will be removed from the sediment trap and inlet protection device when storage capacity has been approximately 50% filled.

(3) Sediment will be removed from behind the sediment fence when it becomes about 0.5 ft deep at the fence. The sediment fence will be repaired as necessary to maintain a barrier.

XI. ANALYSIS AND CONCLUSION

As can be seen from the calculations provided above the proposed rain gardens, bio-retention areas, and dry swale provide water quality treatment and runoff reduction in accordance with the stormwater quality management guidelines set forth by the NYSDEC. Also, the proposed underground sand filter system and surface sand filter will provide water quality treatment and the proposed stormwater pond will provide water quality and quantity control. The project will also implement tree plantings, porous pavement, and sheet flow to riparian buffers to meet runoff reduction requirements. The proposed stormwater practices and the post-development layout of the site show that peak stormwater runoff flowrates at the study point decrease for all analyzed storms. Based upon the results of this analysis, the site has demonstrated the ability to meet all requirements for stormwater quantity and quality and any impacts to the existing watershed and downstream waters should be negligible.

Table 7 below summarizes the pre- and post-development discharges for the development. Please refer to Appendix B for detailed analysis and calculations of the individual watershed subareas. Peak flowrates were compared between pre- and post-development conditions at the entrance to the existing wetlands and existing pond, as well as the study points downstream of the wetlands and pond outlet culverts. Post-development peak

runoff was less than pre-development conditions both going into and coming out of the existing wetlands and existing pond.

	Condition	1 Year Peak Runoff (cfs)	10 Year Peak Runoff (cfs)	100 Year Peak Runoff (cfs)
Into Existing Wetlands	Pre-Development	423.37	1,254.33	2,880.46
	Post-Development	405.16	1,235.60	2,879.67
	Difference	**-18.21 (-4.3%)**	**-18.71 (-1.5%)**	**-0.79 (-0.0%)**
Into Existing Pond	Pre-Development	62.42	198.75	473.09
	Post-Development	50.03	190.51	449.50
	Difference	**-12.39 (-19.8%)**	**-8.24 (-4.1%)**	**-23.59 (-5.0%)**
Study Point A	Pre-Development	207.90	400.59	730.04
	Post-Development	202.15	397.82	729.59
	Difference	**-5.75 (-2.8%)**	**-2.77 (-0.7%)**	**-0.45 (-0.1%)**
Study Point B	Pre-Development	49.47	92.22	125.63
	Post-Development	14.74	54.07	125.57
	Difference	**-34.73 (-70.2%)**	**-38.15 (-41.4%)**	**-0.06 (-0.0%)**

Table 7: Comparison of Pre- and Post-Development Conditions at Study Points

By implementing both the Stormwater Pollution Prevention Plan and Erosion and Sediment Control Plans during the construction of the proposed project, current NYSDEC and Town regulations can be met. However, the owner and contractor are responsible for implementation of the project's erosion and sedimentation controls and any required maintenance. In addition, this also includes filing the NOI for each project and meeting all requirements of the General Permit, including necessary site assessment and inspections.

Respectfully submitted,
LANC & TULLY, P.C.

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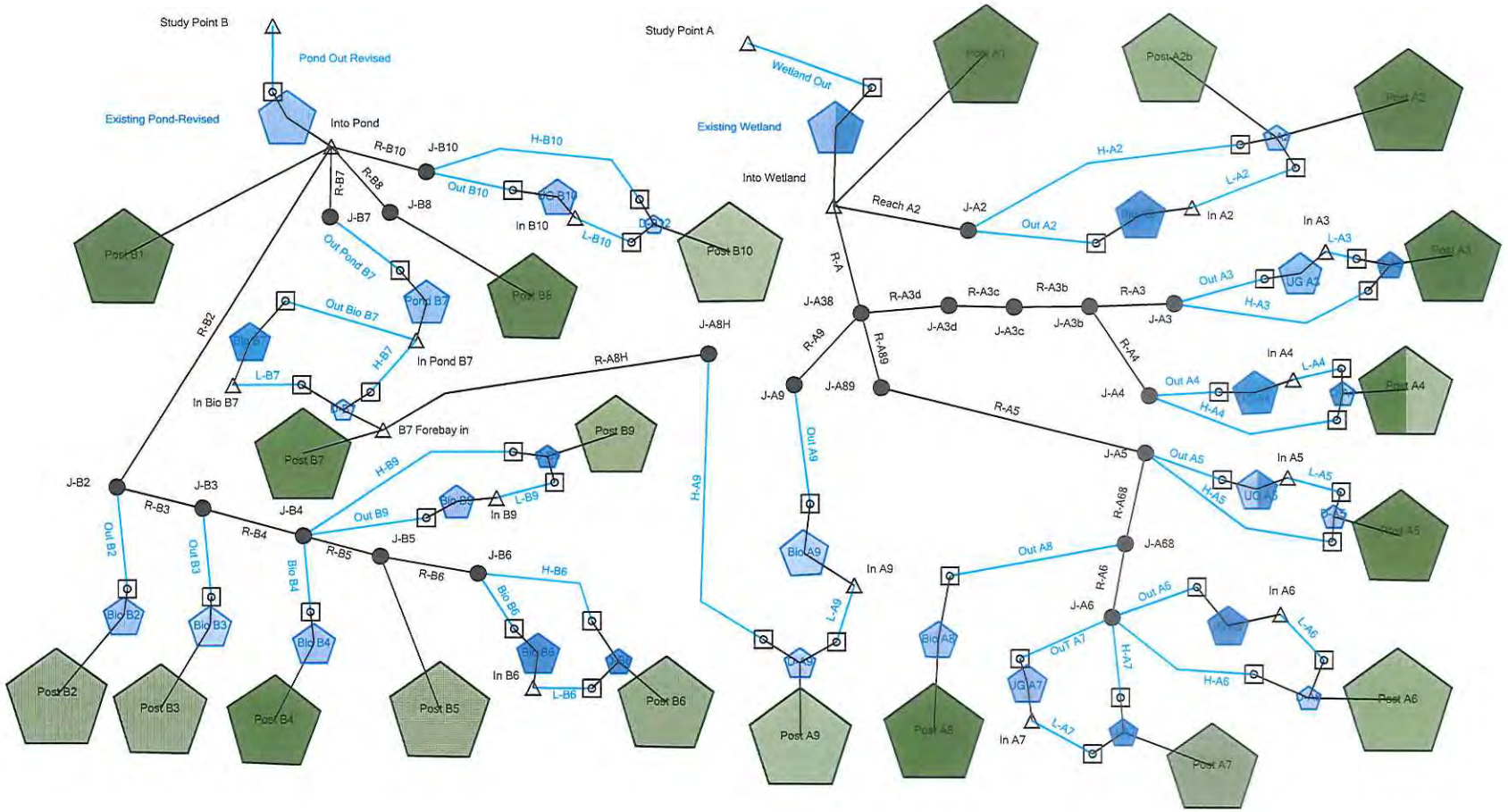
APPENDIX A

POST-DEVELOPMENT WATERSHED MODEL

Scenario: Post 1-Year



Project Summary	
Title	LEGOLAND NY
Engineer	Eric Rogge PE
Company	Lanc & Tully
Date	7/17/2018

Notes	Pre- vs. Post-Development Conditions Modeled with existing pond & wetland for pipe sizing & revised post-dev watersheds

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Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Post B1	Post 1-Year	1	7.111	12.600	42.25
Post B1	Post 10-Year	10	19.987	12.550	124.17
Post B1	Post 100-Year	100	46.204	12.550	285.22
Post A1	Post 1-Year	1	85.942	12.850	404.82
Post A1	Post 10-Year	10	241.547	12.850	1,199.39
Post A1	Post 100-Year	100	558.393	12.800	2,754.30
Post B2	Post 1-Year	1	0.214	12.150	2.47
Post B2	Post 10-Year	10	0.527	12.100	6.04
Post B2	Post 100-Year	100	1.125	12.100	12.54
Post B7	Post 1-Year	1	2.654	12.200	26.21
Post B7	Post 10-Year	10	6.136	12.200	59.73
Post B7	Post 100-Year	100	12.629	12.200	118.80
Post B10	Post 1-Year	1	0.823	12.100	9.14
Post B10	Post 10-Year	10	1.656	12.100	17.73
Post B10	Post 100-Year	100	3.139	12.100	32.46
Post A2	Post 1-Year	1	0.627	12.150	6.76
Post A2	Post 10-Year	10	1.338	12.150	13.97
Post A2	Post 100-Year	100	2.625	12.150	26.39
Post A3	Post 1-Year	1	0.893	12.150	9.39
Post A3	Post 10-Year	10	1.797	12.150	18.19
Post A3	Post 100-Year	100	3.407	12.150	33.29
Post A4	Post 1-Year	1	1.314	12.100	15.01
Post A4	Post 10-Year	10	2.697	12.100	29.67
Post A4	Post 100-Year	100	5.172	12.100	54.82
Post A5	Post 1-Year	1	1.866	12.150	19.62
Post A5	Post 10-Year	10	3.612	12.150	36.53
Post A5	Post 100-Year	100	6.692	12.150	65.71
Post A6	Post 1-Year	1	1.742	12.100	19.71
Post A6	Post 10-Year	10	3.373	12.100	36.67
Post A6	Post 100-Year	100	6.250	12.100	65.96
Post B3	Post 1-Year	1	0.217	12.200	2.22
Post B3	Post 10-Year	10	0.545	12.150	5.63
Post B3	Post 100-Year	100	1.179	12.150	11.91
Post B4	Post 1-Year	1	0.241	12.150	2.63
Post B4	Post 10-Year	10	0.618	12.150	6.81
Post B4	Post 100-Year	100	1.353	12.150	14.51
Post B5	Post 1-Year	1	0.409	12.200	4.17
Post B5	Post 10-Year	10	1.096	12.150	11.62
Post B5	Post 100-Year	100	2.466	12.150	25.74
Post B6	Post 1-Year	1	0.905	12.150	9.96
Post B6	Post 10-Year	10	2.051	12.150	22.04
Post B6	Post 100-Year	100	4.170	12.150	43.14
Post B8	Post 1-Year	1	1.048	12.100	11.79
Post B8	Post 10-Year	10	2.152	12.100	23.34
Post B8	Post 100-Year	100	4.126	12.100	43.17
Post B9	Post 1-Year	1	1.125	12.150	12.80
Post B9	Post 10-Year	10	2.550	12.150	28.11
Post B9	Post 100-Year	100	5.185	12.100	55.02
Post A2b	Post 1-Year	1	0.521	12.100	6.23
Post A2b	Post 10-Year	10	1.255	12.100	14.84
Post A2b	Post 100-Year	100	2.648	12.100	30.22

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Post A8	Post 1-Year	1	0.347	12.100	4.21
Post A8	Post 10-Year	10	0.756	12.100	8.83
Post A8	Post 100-Year	100	1.500	12.100	16.80
Post A9	Post 1-Year	1	1.895	12.150	20.42
Post A9	Post 10-Year	10	3.967	12.150	41.23
Post A9	Post 100-Year	100	7.694	12.150	76.99
Post A7	Post 1-Year	1	0.568	12.100	6.41
Post A7	Post 10-Year	10	1.166	12.100	12.68
Post A7	Post 100-Year	100	2.235	12.100	23.44

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
J-A3c	Post 1-Year	1	1.117	16.100	0.97
J-A3c	Post 10-Year	10	3.393	12.200	10.76
J-A3c	Post 100-Year	100	7.468	12.200	60.50
J-B2	Post 1-Year	1	2.542	12.350	4.04
J-B2	Post 10-Year	10	6.797	12.300	52.98
J-B2	Post 100-Year	100	14.884	12.250	143.20
J-B7	Post 1-Year	1	2.534	16.100	1.57
J-B7	Post 10-Year	10	7.292	13.450	9.66
J-B7	Post 100-Year	100	16.563	12.650	65.76
J-B10	Post 1-Year	1	0.592	12.150	0.68
J-B10	Post 10-Year	10	1.422	12.250	11.54
J-B10	Post 100-Year	100	2.901	12.150	31.48
J-A2	Post 1-Year	1	0.736	16.050	0.56
J-A2	Post 10-Year	10	2.177	12.200	15.09
J-A2	Post 100-Year	100	4.856	12.150	49.26
J-A3	Post 1-Year	1	0.369	16.300	0.34
J-A3	Post 10-Year	10	1.270	12.200	3.91
J-A3	Post 100-Year	100	2.877	12.200	19.38
J-A4	Post 1-Year	1	0.749	15.700	0.63
J-A4	Post 10-Year	10	2.123	12.550	7.88
J-A4	Post 100-Year	100	4.592	12.150	43.44
J-A5	Post 1-Year	1	2.871	15.500	2.17
J-A5	Post 10-Year	10	7.222	12.450	36.18
J-A5	Post 100-Year	100	14.972	12.200	144.05
J-A6	Post 1-Year	1	1.455	15.500	1.11
J-A6	Post 10-Year	10	3.673	12.350	19.13
J-A6	Post 100-Year	100	7.610	12.150	76.84
J-B3	Post 1-Year	1	2.397	12.350	4.03
J-B3	Post 10-Year	10	6.341	12.300	49.18
J-B3	Post 100-Year	100	13.829	12.200	133.57
J-B4	Post 1-Year	1	2.262	12.250	4.28
J-B4	Post 10-Year	10	5.879	12.250	45.59
J-B4	Post 100-Year	100	12.733	12.200	125.79
J-B5	Post 1-Year	1	1.103	12.200	4.18
J-B5	Post 10-Year	10	2.932	12.300	20.58
J-B5	Post 100-Year	100	6.419	12.200	63.21
J-B6	Post 1-Year	1	0.696	16.000	0.46

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
J-B6	Post 10-Year	10	1.837	12.250	13.93
J-B6	Post 100-Year	100	3.955	12.150	40.94
J-B8	Post 1-Year	1	1.048	12.100	11.79
J-B8	Post 10-Year	10	2.152	12.100	23.34
J-B8	Post 100-Year	100	4.126	12.100	43.17
Study Point A	Post 1-Year	1	91.497	13.750	202.15
Study Point A	Post 10-Year	10	255.852	14.150	397.82
Study Point A	Post 100-Year	100	588.077	14.350	729.59
Study Point B	Post 1-Year	1	13.722	14.000	14.74
Study Point B	Post 10-Year	10	37.464	13.650	54.07
Study Point B	Post 100-Year	100	84.446	13.550	125.57
J-A89	Post 1-Year	1	2.871	15.550	2.17
J-A89	Post 10-Year	10	7.221	12.450	35.84
J-A89	Post 100-Year	100	14.971	12.200	142.85
J-A38	Post 1-Year	1	4.873	15.500	4.06
J-A38	Post 10-Year	10	12.199	12.650	42.71
J-A38	Post 100-Year	100	24.907	12.300	183.40
J-A3d	Post 1-Year	1	1.115	16.250	0.97
J-A3d	Post 10-Year	10	3.390	12.700	9.95
J-A3d	Post 100-Year	100	7.465	12.250	58.84
J-A8H	Post 1-Year	1	0.832	12.150	16.26
J-A8H	Post 10-Year	10	2.197	12.150	35.82
J-A8H	Post 100-Year	100	5.038	12.150	69.06
J-A9	Post 1-Year	1	0.914	12.800	1.94
J-A9	Post 10-Year	10	1.620	12.250	4.29
J-A9	Post 100-Year	100	2.506	12.250	5.88
J-A68	Post 1-Year	1	1.683	15.600	1.26
J-A68	Post 10-Year	10	4.298	12.400	22.23
J-A68	Post 100-Year	100	8.976	12.150	89.08
J-A3b	Post 1-Year	1	1.117	16.050	0.97
J-A3b	Post 10-Year	10	3.393	12.200	10.86
J-A3b	Post 100-Year	100	7.468	12.200	61.66

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Bio A2 (IN)	Post 1-Year	1	1.148	12.150	12.56	(N/A)	(N/A)
Bio A2 (OUT)	Post 1-Year	1	0.736	16.050	0.56	433.45	0.793
Bio A2 (IN)	Post 10-Year	10	2.416	12.150	18.55	(N/A)	(N/A)
Bio A2 (OUT)	Post 10-Year	10	2.001	12.400	12.68	433.90	1.003
Bio A2 (IN)	Post 100-Year	100	4.374	12.150	22.75	(N/A)	(N/A)
Bio A2 (OUT)	Post 100-Year	100	3.957	12.400	18.34	434.23	1.164
UG A6 (IN)	Post 1-Year	1	1.742	12.100	19.24	(N/A)	(N/A)
UG A6 (OUT)	Post 1-Year	1	1.070	15.350	0.85	583.08	1.255
UG A6 (IN)	Post 10-Year	10	3.240	12.100	27.02	(N/A)	(N/A)

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
UG A6 (OUT)	Post 10-Year	10	2.560	12.400	12.76	584.27	1.705
UG A6 (IN)	Post 100-Year	100	5.598	12.100	37.24	(N/A)	(N/A)
UG A6 (OUT)	Post 100-Year	100	4.911	12.200	30.29	585.38	1.977
UG A5 (IN)	Post 1-Year	1	1.865	12.150	19.37	(N/A)	(N/A)
UG A5 (OUT)	Post 1-Year	1	1.188	15.400	0.92	555.84	1.339
UG A5 (IN)	Post 10-Year	10	3.459	12.150	27.04	(N/A)	(N/A)
UG A5 (OUT)	Post 10-Year	10	2.772	12.450	14.15	557.16	1.807
UG A5 (IN)	Post 100-Year	100	5.950	12.150	37.44	(N/A)	(N/A)
UG A5 (OUT)	Post 100-Year	100	5.254	12.250	31.30	558.23	2.046
UG A4 (IN)	Post 1-Year	1	1.314	12.150	14.73	(N/A)	(N/A)
UG A4 (OUT)	Post 1-Year	1	0.749	15.700	0.63	506.34	0.940
UG A4 (IN)	Post 10-Year	10	2.596	12.150	22.50	(N/A)	(N/A)
UG A4 (OUT)	Post 10-Year	10	2.021	12.550	7.88	507.73	1.413
UG A4 (IN)	Post 100-Year	100	4.615	12.150	30.99	(N/A)	(N/A)
UG A4 (OUT)	Post 100-Year	100	4.034	12.300	23.90	509.15	1.720
UG A3 (IN)	Post 1-Year	1	0.891	12.150	8.94	(N/A)	(N/A)
UG A3 (OUT)	Post 1-Year	1	0.367	16.300	0.34	503.87	0.690
UG A3 (IN)	Post 10-Year	10	1.733	12.150	14.28	(N/A)	(N/A)
UG A3 (OUT)	Post 10-Year	10	1.205	12.850	2.68	504.88	1.047
UG A3 (IN)	Post 100-Year	100	3.041	12.150	18.65	(N/A)	(N/A)
UG A3 (OUT)	Post 100-Year	100	2.512	12.600	9.22	506.42	1.479
Bio B2 (IN)	Post 1-Year	1	0.214	12.150	2.47	(N/A)	(N/A)
Bio B2 (OUT)	Post 1-Year	1	0.145	16.150	0.11	448.26	0.142
Bio B2 (IN)	Post 10-Year	10	0.527	12.100	6.04	(N/A)	(N/A)
Bio B2 (OUT)	Post 10-Year	10	0.457	12.200	4.88	448.54	0.178
Bio B2 (IN)	Post 100-Year	100	1.125	12.100	12.54	(N/A)	(N/A)
Bio B2 (OUT)	Post 100-Year	100	1.056	12.150	11.39	448.80	0.216
Bio B3 (IN)	Post 1-Year	1	0.217	12.200	2.22	(N/A)	(N/A)
Bio B3 (OUT)	Post 1-Year	1	0.138	16.650	0.10	458.22	0.146
Bio B3 (IN)	Post 10-Year	10	0.545	12.150	5.63	(N/A)	(N/A)
Bio B3 (OUT)	Post 10-Year	10	0.465	12.300	4.73	458.47	0.175
Bio B3 (IN)	Post 100-Year	100	1.179	12.150	11.91	(N/A)	(N/A)
Bio B3 (OUT)	Post 100-Year	100	1.099	12.250	10.87	458.79	0.215
Bio B4 (IN)	Post 1-Year	1	0.241	12.150	2.63	(N/A)	(N/A)
Bio B4 (OUT)	Post 1-Year	1	0.189	16.700	0.12	489.58	0.158
Bio B4 (IN)	Post 10-Year	10	0.618	12.150	6.81	(N/A)	(N/A)
Bio B4 (OUT)	Post 10-Year	10	0.565	12.150	6.82	489.73	0.172
Bio B4 (IN)	Post 100-Year	100	1.353	12.150	14.51	(N/A)	(N/A)
Bio B4 (OUT)	Post 100-Year	100	1.301	12.150	14.30	489.89	0.186
Bio B6 (IN)	Post 1-Year	1	0.905	12.150	9.63	(N/A)	(N/A)
Bio B6 (OUT)	Post 1-Year	1	0.696	16.000	0.46	543.25	0.609
Bio B6 (IN)	Post 10-Year	10	1.893	12.150	13.78	(N/A)	(N/A)
Bio B6 (OUT)	Post 10-Year	10	1.679	12.400	11.07	543.70	0.735
Bio B6 (IN)	Post 100-Year	100	3.408	12.150	16.81	(N/A)	(N/A)
Bio B6 (OUT)	Post 100-Year	100	3.193	12.250	16.03	543.85	0.778
Bio B7 (IN)	Post 1-Year	1	3.164	12.200	34.48	(N/A)	(N/A)
Bio B7 (OUT)	Post 1-Year	1	2.384	12.450	22.19	469.92	1.085
Bio B7 (IN)	Post 10-Year	10	7.252	12.200	66.47	(N/A)	(N/A)
Bio B7 (OUT)	Post 10-Year	10	6.473	12.300	61.32	470.36	1.420
Bio B7 (IN)	Post 100-Year	100	14.563	12.200	117.44	(N/A)	(N/A)

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Bio B7 (OUT)	Post 100-Year	100	13.784	12.300	109.94	470.79	1.753
Bio B9 (IN)	Post 1-Year	1	1.125	12.150	12.55	(N/A)	(N/A)
Bio B9 (OUT)	Post 1-Year	1	0.970	16.300	0.51	497.05	0.768
Bio B9 (IN)	Post 10-Year	10	2.374	12.150	18.47	(N/A)	(N/A)
Bio B9 (OUT)	Post 10-Year	10	2.208	12.250	16.44	497.40	0.850
Bio B9 (IN)	Post 100-Year	100	4.302	12.150	22.68	(N/A)	(N/A)
Bio B9 (OUT)	Post 100-Year	100	4.132	12.200	22.40	497.51	0.875
UG B10 (IN)	Post 1-Year	1	0.818	12.150	8.56	(N/A)	(N/A)
UG B10 (OUT)	Post 1-Year	1	0.587	15.550	0.41	465.83	0.574
UG B10 (IN)	Post 10-Year	10	1.552	12.150	11.85	(N/A)	(N/A)
UG B10 (OUT)	Post 10-Year	10	1.317	12.300	9.59	467.09	0.690
UG B10 (IN)	Post 100-Year	100	2.687	12.150	15.00	(N/A)	(N/A)
UG B10 (OUT)	Post 100-Year	100	2.449	12.200	14.58	467.40	0.715
Pond B7 (IN)	Post 1-Year	1	2.629	12.400	26.33	(N/A)	(N/A)
Pond B7 (OUT)	Post 1-Year	1	2.534	16.100	1.57	464.04	2.892
Pond B7 (IN)	Post 10-Year	10	7.475	12.250	86.32	(N/A)	(N/A)
Pond B7 (OUT)	Post 10-Year	10	7.292	13.450	9.66	466.63	5.512
Pond B7 (IN)	Post 100-Year	100	16.809	12.250	174.13	(N/A)	(N/A)
Pond B7 (OUT)	Post 100-Year	100	16.563	12.650	65.76	469.91	9.629
D-A3 (IN)	Post 1-Year	1	0.893	12.150	9.39	(N/A)	(N/A)
D-A3 (OUT)	Post 1-Year	1	0.893	12.150	9.15	504.00	0.001
D-A3 (IN)	Post 10-Year	10	1.797	12.150	18.19	(N/A)	(N/A)
D-A3 (OUT)	Post 10-Year	10	1.797	12.150	17.78	504.80	0.001
D-A3 (IN)	Post 100-Year	100	3.407	12.150	33.29	(N/A)	(N/A)
D-A3 (OUT)	Post 100-Year	100	3.407	12.150	32.60	505.87	0.002
D-A4 (IN)	Post 1-Year	1	1.314	12.100	15.01	(N/A)	(N/A)
D-A4 (OUT)	Post 1-Year	1	1.314	12.150	14.73	506.31	0.001
D-A4 (IN)	Post 10-Year	10	2.697	12.100	29.67	(N/A)	(N/A)
D-A4 (OUT)	Post 10-Year	10	2.697	12.150	28.99	507.56	0.001
D-A4 (IN)	Post 100-Year	100	5.172	12.100	54.82	(N/A)	(N/A)
D-A4 (OUT)	Post 100-Year	100	5.172	12.150	53.46	509.54	0.002
D-A5 (IN)	Post 1-Year	1	1.866	12.150	19.62	(N/A)	(N/A)
D-A5 (OUT)	Post 1-Year	1	1.866	12.150	19.51	555.92	0.001
D-A5 (IN)	Post 10-Year	10	3.612	12.150	36.53	(N/A)	(N/A)
D-A5 (OUT)	Post 10-Year	10	3.612	12.150	36.39	557.47	0.002
D-A5 (IN)	Post 100-Year	100	6.692	12.150	65.71	(N/A)	(N/A)
D-A5 (OUT)	Post 100-Year	100	6.692	12.150	65.53	560.40	0.003
D-A6 (IN)	Post 1-Year	1	1.742	12.100	19.71	(N/A)	(N/A)
D-A6 (OUT)	Post 1-Year	1	1.742	12.100	19.35	583.33	0.001
D-A6 (IN)	Post 10-Year	10	3.373	12.100	36.67	(N/A)	(N/A)
D-A6 (OUT)	Post 10-Year	10	3.373	12.100	36.09	584.90	0.002
D-A6 (IN)	Post 100-Year	100	6.250	12.100	65.96	(N/A)	(N/A)
D-A6 (OUT)	Post 100-Year	100	6.250	12.100	64.99	587.77	0.003
D-B12 (IN)	Post 1-Year	1	0.823	12.100	9.14	(N/A)	(N/A)

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
D-B12 (OUT)	Post 1-Year	1	0.823	12.150	9.06	464.38	0.001
D-B12 (IN)	Post 10-Year	10	1.656	12.100	17.73	(N/A)	(N/A)
D-B12 (OUT)	Post 10-Year	10	1.656	12.150	17.50	465.30	0.001
D-B12 (IN)	Post 100-Year	100	3.139	12.100	32.46	(N/A)	(N/A)
D-B12 (OUT)	Post 100-Year	100	3.139	12.150	31.99	466.46	0.002
Existing Wetland (IN)	Post 1-Year	1	91.497	12.850	405.16	(N/A)	(N/A)
Existing Wetland (OUT)	Post 1-Year	1	91.497	13.750	202.15	402.03	19.239
Existing Wetland (IN)	Post 10-Year	10	255.852	12.850	1,235.60	(N/A)	(N/A)
Existing Wetland (OUT)	Post 10-Year	10	255.852	14.150	397.82	403.98	90.420
Existing Wetland (IN)	Post 100-Year	100	588.078	12.800	2,879.67	(N/A)	(N/A)
Existing Wetland (OUT)	Post 100-Year	100	588.077	14.350	729.59	406.66	258.055
Bio A9 (IN)	Post 1-Year	1	1.063	12.150	3.56	(N/A)	(N/A)
Bio A9 (OUT)	Post 1-Year	1	0.914	12.800	1.94	487.05	0.414
Bio A9 (IN)	Post 10-Year	10	1.769	12.150	4.42	(N/A)	(N/A)
Bio A9 (OUT)	Post 10-Year	10	1.620	12.250	4.29	487.13	0.430
Bio A9 (IN)	Post 100-Year	100	2.655	12.150	6.27	(N/A)	(N/A)
Bio A9 (OUT)	Post 100-Year	100	2.506	12.250	5.88	487.18	0.441
Bio A8 (IN)	Post 1-Year	1	0.347	12.100	4.21	(N/A)	(N/A)
Bio A8 (OUT)	Post 1-Year	1	0.228	16.150	0.15	560.46	0.246
Bio A8 (IN)	Post 10-Year	10	0.756	12.100	8.83	(N/A)	(N/A)
Bio A8 (OUT)	Post 10-Year	10	0.626	12.400	3.10	561.33	0.401
Bio A8 (IN)	Post 100-Year	100	1.500	12.100	16.80	(N/A)	(N/A)
Bio A8 (OUT)	Post 100-Year	100	1.366	12.150	13.48	561.82	0.507
D-A9 (IN)	Post 1-Year	1	1.895	12.150	20.42	(N/A)	(N/A)
D-A9 (OUT)	Post 1-Year	1	1.895	12.150	19.82	487.26	0.001
D-A9 (IN)	Post 10-Year	10	3.967	12.150	41.23	(N/A)	(N/A)
D-A9 (OUT)	Post 10-Year	10	3.967	12.150	40.24	488.25	0.001
D-A9 (IN)	Post 100-Year	100	7.694	12.150	76.99	(N/A)	(N/A)
D-A9 (OUT)	Post 100-Year	100	7.694	12.150	75.33	491.12	0.003
D-B9 (IN)	Post 1-Year	1	1.125	12.150	12.80	(N/A)	(N/A)
D-B9 (OUT)	Post 1-Year	1	1.125	12.150	12.66	496.26	0.001
D-B9 (IN)	Post 10-Year	10	2.550	12.150	28.11	(N/A)	(N/A)
D-B9 (OUT)	Post 10-Year	10	2.550	12.150	28.04	497.62	0.002
D-B9 (IN)	Post 100-Year	100	5.185	12.100	55.02	(N/A)	(N/A)
D-B9 (OUT)	Post 100-Year	100	5.185	12.150	54.91	498.92	0.002
D-B6 (IN)	Post 1-Year	1	0.905	12.150	9.96	(N/A)	(N/A)
D-B6 (OUT)	Post 1-Year	1	0.905	12.150	9.68	544.03	0.001

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
D-B6 (IN)	Post 10-Year	10	2.051	12.150	22.04	(N/A)	(N/A)
D-B6 (OUT)	Post 10-Year	10	2.051	12.150	21.59	545.38	0.002
D-B6 (IN)	Post 100-Year	100	4.170	12.150	43.14	(N/A)	(N/A)
D-B6 (OUT)	Post 100-Year	100	4.170	12.150	42.45	546.66	0.002
D-B7 (IN)	Post 1-Year	1	3.487	12.200	42.44	(N/A)	(N/A)
D-B7 (OUT)	Post 1-Year	1	3.408	12.200	42.27	469.67	0.135
D-B7 (IN)	Post 10-Year	10	8.333	12.200	95.31	(N/A)	(N/A)
D-B7 (OUT)	Post 10-Year	10	8.254	12.200	93.58	470.06	0.166
D-B7 (IN)	Post 100-Year	100	17.667	12.200	187.27	(N/A)	(N/A)
D-B7 (OUT)	Post 100-Year	100	17.589	12.200	184.62	470.57	0.212
D-A2 (IN)	Post 1-Year	1	1.148	12.150	12.73	(N/A)	(N/A)
D-A2 (OUT)	Post 1-Year	1	1.148	12.150	12.65	434.16	0.001
D-A2 (IN)	Post 10-Year	10	2.593	12.100	28.10	(N/A)	(N/A)
D-A2 (OUT)	Post 10-Year	10	2.593	12.150	27.99	435.55	0.002
D-A2 (IN)	Post 100-Year	100	5.273	12.100	55.41	(N/A)	(N/A)
D-A2 (OUT)	Post 100-Year	100	5.273	12.150	54.91	436.84	0.002
Existing Pond-Revised (IN)	Post 1-Year	1	13.819	12.550	50.03	(N/A)	(N/A)
Existing Pond-Revised (OUT)	Post 1-Year	1	13.722	14.000	14.74	428.42	3.626
Existing Pond-Revised (IN)	Post 10-Year	10	37.635	12.500	190.51	(N/A)	(N/A)
Existing Pond-Revised (OUT)	Post 10-Year	10	37.464	13.650	54.07	429.99	12.636
Existing Pond-Revised (IN)	Post 100-Year	100	84.660	12.500	449.50	(N/A)	(N/A)
Existing Pond-Revised (OUT)	Post 100-Year	100	84.446	13.550	125.57	432.12	33.464
D-A7 (IN)	Post 1-Year	1	0.568	12.100	6.41	(N/A)	(N/A)
D-A7 (OUT)	Post 1-Year	1	0.568	12.150	6.34	571.66	0.001
D-A7 (IN)	Post 10-Year	10	1.166	12.100	12.68	(N/A)	(N/A)
D-A7 (OUT)	Post 10-Year	10	1.166	12.150	12.49	572.44	0.001
D-A7 (IN)	Post 100-Year	100	2.235	12.100	23.44	(N/A)	(N/A)
D-A7 (OUT)	Post 100-Year	100	2.235	12.150	23.05	573.62	0.002
UG A7 (IN)	Post 1-Year	1	0.566	12.150	6.25	(N/A)	(N/A)
UG A7 (OUT)	Post 1-Year	1	0.382	15.850	0.26	573.11	0.404
UG A7 (IN)	Post 10-Year	10	1.124	12.150	9.96	(N/A)	(N/A)
UG A7 (OUT)	Post 10-Year	10	0.938	12.350	6.61	574.31	0.517
UG A7 (IN)	Post 100-Year	100	2.006	12.150	13.61	(N/A)	(N/A)
UG A7 (OUT)	Post 100-Year	100	1.818	12.200	12.64	575.05	0.563

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.400
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.06 ft/s
Segment Time of Concentration	0.473 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	2,840.00 ft
Is Paved?	False
Slope	0.036 ft/ft
Average Velocity	3.06 ft/s
Segment Time of Concentration	0.258 hours

Segment #3: TR-55 Channel Flow	
Flow Area	18.0 ft²
Hydraulic Length	5,670.00 ft
Manning's n	0.040
Slope	0.006 ft/ft
Wetted Perimeter	13.20 ft
Average Velocity	3.55 ft/s
Segment Time of Concentration	0.444 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	1.175 hours

Subsection: Time of Concentration Calculations
Label: Post A1

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	27.00 ft
Manning's n	0.240
Slope	0.005 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.05 ft/s
Segment Time of Concentration	0.146 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	377.00 ft
Is Paved?	True
Slope	0.022 ft/ft
Average Velocity	3.02 ft/s
Segment Time of Concentration	0.035 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	335.00 ft
Manning's n	0.012
Slope	0.125 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	22.86 ft/s
Segment Time of Concentration	0.004 hours

Segment #4: TR-55 Sheet Flow	
Hydraulic Length	73.00 ft
Manning's n	0.013
Slope	0.022 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.17 ft/s
Segment Time of Concentration	0.017 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.202 hours

Subsection: Time of Concentration Calculations
Label: Post A2

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	79.00 ft
Manning's n	0.013
Slope	0.020 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.15 ft/s
Segment Time of Concentration	0.019 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	356.00 ft
Is Paved?	True
Slope	0.025 ft/ft
Average Velocity	3.21 ft/s
Segment Time of Concentration	0.031 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	214.00 ft
Manning's n	0.012
Slope	0.046 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	13.87 ft/s
Segment Time of Concentration	0.004 hours

Segment #4: TR-55 Sheet Flow	
Hydraulic Length	21.00 ft
Manning's n	0.240
Slope	0.025 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.09 ft/s
Segment Time of Concentration	0.062 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.117 hours

==== SCS Channel Flow

Tc =

$R = Qa / Wp$
$V = (1.49 * (R^{**}(2/3)) * (Sf^{**}-0.5)) / n$

$(Lf / V) / 3600$

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
$V = 16.1345 * (Sf^{**}0.5)$

Paved Surface:
$V = 20.3282 * (Sf^{**}0.5)$

$(Lf / V) / 3600$

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =

$(0.007 * ((n * Lf)^{**}0.8)) / ((P^{**}0.5) * (Sf^{**}0.4))$

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.037 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.186 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	140.00 ft
Is Paved?	True
Slope	0.039 ft/ft
Average Velocity	4.01 ft/s
Segment Time of Concentration	0.010 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	258.00 ft
Manning's n	0.012
Slope	0.038 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	12.60 ft/s
Segment Time of Concentration	0.006 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	6.00 ft
Is Paved?	False
Slope	0.037 ft/ft
Average Velocity	3.10 ft/s
Segment Time of Concentration	0.001 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.202 hours

Subsection: Time of Concentration Calculations
Label: Post A3

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.139 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.25 ft/s
Segment Time of Concentration	0.110 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	559.00 ft
Manning's n	0.012
Slope	0.018 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	8.68 ft/s
Segment Time of Concentration	0.018 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	118.00 ft
Is Paved?	False
Slope	0.211 ft/ft
Average Velocity	7.41 ft/s
Segment Time of Concentration	0.004 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.132 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Tc =
Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	60.00 ft
Manning's n	0.240
Slope	0.045 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.114 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	40.00 ft
Manning's n	0.013
Slope	0.015 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.89 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	408.00 ft
Is Paved?	True
Slope	0.018 ft/ft
Average Velocity	2.73 ft/s
Segment Time of Concentration	0.042 hours

Segment #4: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	50.00 ft
Manning's n	0.012
Slope	0.010 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	6.47 ft/s
Segment Time of Concentration	0.002 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.171 hours

Subsection: Time of Concentration Calculations
Label: Post A5

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	32.00 ft
Manning's n	0.240
Slope	0.106 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.18 ft/s
Segment Time of Concentration	0.049 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	68.00 ft
Manning's n	0.013
Slope	0.045 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.54 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	222.00 ft
Is Paved?	True
Slope	0.035 ft/ft
Average Velocity	3.80 ft/s
Segment Time of Concentration	0.016 hours

Segment #4: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	794.00 ft
Manning's n	0.012
Slope	0.018 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	8.68 ft/s
Segment Time of Concentration	0.025 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.103 hours

Subsection: Time of Concentration Calculations
Label: Post A6

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	44.00 ft
Manning's n	0.240
Slope	0.032 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.102 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	53.00 ft
Manning's n	0.012
Slope	0.010 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	6.47 ft/s
Segment Time of Concentration	0.002 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	162.00 ft
Is Paved?	True
Slope	0.011 ft/ft
Average Velocity	2.13 ft/s
Segment Time of Concentration	0.021 hours

Segment #4: TR-55 Sheet Flow	
Hydraulic Length	56.00 ft
Manning's n	0.013
Slope	0.018 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.03 ft/s
Segment Time of Concentration	0.015 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.141 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.188 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.097 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	78.00 ft
Manning's n	0.012
Slope	0.106 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	21.05 ft/s
Segment Time of Concentration	0.001 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	7.00 ft
Is Paved?	False
Slope	0.234 ft/ft
Average Velocity	7.80 ft/s
Segment Time of Concentration	0.000 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	22.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.002 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.100 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Tc =
Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	70.00 ft
Manning's n	0.240
Slope	0.029 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.154 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	253.00 ft
Is Paved?	True
Slope	0.032 ft/ft
Average Velocity	3.64 ft/s
Segment Time of Concentration	0.019 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	1,124.00 ft
Manning's n	0.012
Slope	0.068 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	16.86 ft/s
Segment Time of Concentration	0.019 hours

Segment #4: TR-55 Sheet Flow	
Hydraulic Length	30.00 ft
Manning's n	0.013
Slope	0.033 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.16 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.199 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.400
Slope	0.019 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.08 ft/s
Segment Time of Concentration	0.366 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	930.00 ft
Is Paved?	False
Slope	0.021 ft/ft
Average Velocity	2.34 ft/s
Segment Time of Concentration	0.110 hours

Segment #3: TR-55 Channel Flow	
Flow Area	5.0 ft²
Hydraulic Length	1,849.00 ft
Manning's n	0.050
Slope	0.044 ft/ft
Wetted Perimeter	6.83 ft
Average Velocity	5.08 ft/s
Segment Time of Concentration	0.101 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	1,634.00 ft
Is Paved?	False
Slope	0.017 ft/ft
Average Velocity	2.10 ft/s
Segment Time of Concentration	0.216 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.793 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	26.00 ft
Manning's n	0.240
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.07 ft/s
Segment Time of Concentration	0.107 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	188.00 ft
Is Paved?	True
Slope	0.032 ft/ft
Average Velocity	3.64 ft/s
Segment Time of Concentration	0.014 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	415.00 ft
Manning's n	0.012
Slope	0.029 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	11.01 ft/s
Segment Time of Concentration	0.010 hours

Segment #4: TR-55 Sheet Flow	
Hydraulic Length	74.00 ft
Manning's n	0.013
Slope	0.043 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.54 ft/s
Segment Time of Concentration	0.013 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.145 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Tc= Time of concentration, hours

Where:
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.090 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.21 ft/s
Segment Time of Concentration	0.131 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	142.00 ft
Is Paved?	False
Slope	0.266 ft/ft
Average Velocity	8.32 ft/s
Segment Time of Concentration	0.005 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	164.00 ft
Manning's n	0.012
Slope	0.017 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	8.43 ft/s
Segment Time of Concentration	0.005 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.141 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.034 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.14 ft/s
Segment Time of Concentration	0.193 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	490.00 ft
Is Paved?	False
Slope	0.123 ft/ft
Average Velocity	5.67 ft/s
Segment Time of Concentration	0.024 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	106.00 ft
Manning's n	0.012
Slope	0.018 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	8.68 ft/s
Segment Time of Concentration	0.003 hours

Segment #4: TR-55 Channel Flow	
Flow Area	11.3 ft²
Hydraulic Length	466.00 ft
Manning's n	0.030
Slope	0.057 ft/ft
Wetted Perimeter	12.49 ft
Average Velocity	11.06 ft/s
Segment Time of Concentration	0.012 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.232 hours

Subsection: Time of Concentration Calculations
Label: Post B3

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.055 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.17 ft/s
Segment Time of Concentration	0.159 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	353.00 ft
Is Paved?	False
Slope	0.123 ft/ft
Average Velocity	5.66 ft/s
Segment Time of Concentration	0.017 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	175.00 ft
Manning's n	0.012
Slope	0.168 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	26.50 ft/s
Segment Time of Concentration	0.002 hours

Segment #4: TR-55 Channel Flow	
Flow Area	11.3 ft²
Hydraulic Length	332.00 ft
Manning's n	0.030
Slope	0.062 ft/ft
Wetted Perimeter	12.49 ft
Average Velocity	11.53 ft/s
Segment Time of Concentration	0.008 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.186 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.032 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.14 ft/s
Segment Time of Concentration	0.197 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	255.00 ft
Is Paved?	False
Slope	0.145 ft/ft
Average Velocity	6.14 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	134.00 ft
Manning's n	0.012
Slope	0.085 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	18.85 ft/s
Segment Time of Concentration	0.002 hours

Segment #4: TR-55 Channel Flow	
Flow Area	11.3 ft²
Hydraulic Length	165.00 ft
Manning's n	0.030
Slope	0.019 ft/ft
Wetted Perimeter	12.49 ft
Average Velocity	6.39 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.218 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	47.00 ft
Manning's n	0.240
Slope	0.025 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.119 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	1,196.00 ft
Manning's n	0.012
Slope	0.048 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	14.17 ft/s
Segment Time of Concentration	0.023 hours

Segment #3: TR-55 Sheet Flow	
Hydraulic Length	53.00 ft
Manning's n	0.013
Slope	0.025 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	1.16 ft/s
Segment Time of Concentration	0.013 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	315.00 ft
Is Paved?	True
Slope	0.016 ft/ft
Average Velocity	2.57 ft/s
Segment Time of Concentration	0.034 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.189 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.021 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.234 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	68.00 ft
Is Paved?	False
Slope	0.019 ft/ft
Average Velocity	2.22 ft/s
Segment Time of Concentration	0.008 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	460.00 ft
Manning's n	0.012
Slope	0.010 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	6.47 ft/s
Segment Time of Concentration	0.020 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	25.00 ft
Is Paved?	True
Slope	0.030 ft/ft
Average Velocity	3.52 ft/s
Segment Time of Concentration	0.002 hours

Segment #5: TR-55 Shallow Concentrated Flow	
Hydraulic Length	48.00 ft
Is Paved?	False
Slope	0.027 ft/ft
Average Velocity	2.65 ft/s
Segment Time of Concentration	0.005 hours

Segment #6: TR-55 Shallow Concentrated Flow	
Hydraulic Length	54.00 ft
Is Paved?	True
Slope	0.041 ft/ft
Average Velocity	4.12 ft/s

Segment #6: TR-55 Shallow Concentrated Flow	
Segment Time of Concentration	0.004 hours

Segment #7: TR-55 Channel Flow	
Flow Area	12.8 ft²
Hydraulic Length	118.00 ft
Manning's n	0.030
Slope	0.034 ft/ft
Wetted Perimeter	13.49 ft
Average Velocity	8.82 ft/s
Segment Time of Concentration	0.004 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.276 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Tc =
Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.158 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.27 ft/s
Segment Time of Concentration	0.104 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	559.00 ft
Manning's n	0.012
Slope	0.033 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	11.75 ft/s
Segment Time of Concentration	0.013 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	131.00 ft
Is Paved?	True
Slope	0.005 ft/ft
Average Velocity	1.44 ft/s
Segment Time of Concentration	0.025 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.143 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.089 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.21 ft/s
Segment Time of Concentration	0.131 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	367.00 ft
Manning's n	0.012
Slope	0.010 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	6.47 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Channel Flow	
Flow Area	12.8 ft²
Hydraulic Length	235.00 ft
Manning's n	0.030
Slope	0.040 ft/ft
Wetted Perimeter	13.49 ft
Average Velocity	9.57 ft/s
Segment Time of Concentration	0.007 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	22.00 ft
Is Paved?	False
Slope	0.080 ft/ft
Average Velocity	4.56 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow	
Hydraulic Length	81.00 ft
Is Paved?	True
Slope	0.062 ft/ft
Average Velocity	5.06 ft/s
Segment Time of Concentration	0.004 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.159 hours

Subsection: Time of Concentration Calculations
Label: Post B9

Return Event: 1 years
Storm Event: 1-Year

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Tc =
Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Subsection: Runoff CN-Area
Label: Post A1

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	895,027	0.0	0.0	98.000
Impervious Areas - Gravel (w/ right-of-way) - Soil D	91.000	19,907	0.0	0.0	91.000
Water	100.000	527,860	0.0	0.0	100.000
Woods - good - Soil D	77.000	24,115,818	0.0	0.0	77.000
Woods - good - Soil C	70.000	982,017	0.0	0.0	70.000
Pasture, grassland, or range - good - Soil D	80.000	5,687,499	0.0	0.0	80.000
Residential Districts - 1/3 acre - Soil D	86.000	3,676,420	0.0	0.0	86.000
Residential Districts - 1/3 acre - Soil C	81.000	673,917	0.0	0.0	81.000
Residential Districts - 1/3 acre - Soil B	72.000	220,065	0.0	0.0	72.000
Residential Districts - 1 acre - Soil D	84.000	964,331	0.0	0.0	84.000
Residential Districts - 1 acre - Soil A	51.000	272,076	0.0	0.0	51.000
Brush - brush, weed, grass mix - good - Soil D	73.000	9,737,097	0.0	0.0	73.000
Pasture, grassland, or range - good - Soil C	74.000	424,492	0.0	0.0	74.000
Residential Districts - 1/2 acre - Soil D	85.000	1,413,522	0.0	0.0	85.000
Brush - brush, weed, grass mix - good - Soil C	65.000	156,990	0.0	0.0	65.000
New Impervious Areas	98.000	56,534	0.0	0.0	98.000
New Gravel Area	91.000	81,717	0.0	0.0	91.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	39,145	0.0	0.0	80.000
Meadow - cont. grass (non grazed) - ---- - Soil C	71.000	127,740	0.0	0.0	71.000
Meadow - cont. grass (non grazed) - ---- - Soil D	78.000	586,017	0.0	0.0	78.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	50,658,191	(N/A)	(N/A)	77.932

Subsection: Runoff CN-Area
Label: Post A2

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	114,273	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	73,148	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	187,421	(N/A)	(N/A)	90.975

Subsection: Runoff CN-Area
Label: Post A2b

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	50,743	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	152,240	0.0	0.0	80.000
Existing Impervious	98.000	6,750	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	209,733	(N/A)	(N/A)	84.934

Subsection: Runoff CN-Area
Label: Post A3

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	175,310	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	56,553	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN —>	(N/A)	231,863	(N/A)	(N/A)	93.610

Subsection: Runoff CN-Area
Label: Post A4

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	250,218	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	107,446	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN —>	(N/A)	357,664	(N/A)	(N/A)	92.593

Subsection: Runoff CN-Area
Label: Post A5

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	386,327	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	55,296	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	441,623	(N/A)	(N/A)	95.746

Subsection: Runoff CN-Area
Label: Post A6

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	367,337	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	45,164	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	412,501	(N/A)	(N/A)	96.029

Subsection: Runoff CN-Area
Label: Post A7

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	104,850	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	45,998	0.0	0.0	80.000
Water	100.000	3,697	0.0	0.0	100.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	154,545	(N/A)	(N/A)	92.690

Subsection: Runoff CN-Area
Label: Post A8

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	61,931	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	47,001	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	108,932	(N/A)	(N/A)	90.234

Subsection: Runoff CN-Area
Label: Post A9

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	371,832	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	168,612	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	540,444	(N/A)	(N/A)	92.384

Subsection: Runoff CN-Area
Label: Post B1

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	31,363	0.0	0.0	98.000
Water	100.000	109,815	0.0	0.0	100.000
Brush - brush, weed, grass mix - good - Soil D	73.000	1,402,400	0.0	0.0	73.000
Woods - good - Soil D	77.000	1,998,091	0.0	0.0	77.000
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	214,936	0.0	0.0	98.000
Impervious Areas - Gravel (w/ right-of-way) - Soil D	91.000	4,298	0.0	0.0	91.000
Meadow - cont. grass (non grazed) - ---- - Soil D	78.000	352,899	0.0	0.0	78.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	78,340	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	4,192,142	(N/A)	(N/A)	77.653

Subsection: Runoff CN-Area
Label: Post B10

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	166,547	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	47,076	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	213,623	(N/A)	(N/A)	94.033

Subsection: Runoff CN-Area
Label: Post B2

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	26,261	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	35,647	0.0	0.0	80.000
Woods - good - Soil D	77.000	12,121	0.0	0.0	77.000
Brush - brush, weed, grass mix - good - Soil D	73.000	16,742	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	90,771	(N/A)	(N/A)	83.516

Subsection: Runoff CN-Area
Label: Post B3

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	25,513	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	40,896	0.0	0.0	80.000
Woods - good - Soil D	77.000	14,596	0.0	0.0	77.000
Brush - brush, weed, grass mix - good - Soil D	73.000	15,925	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	96,930	(N/A)	(N/A)	83.136

Subsection: Runoff CN-Area
Label: Post B4

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	19,381	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	46,868	0.0	0.0	80.000
Woods - good - Soil D	77.000	41,665	0.0	0.0	77.000
Brush - brush, weed, grass mix - good - Soil D	73.000	5,442	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	113,356	(N/A)	(N/A)	81.639

Subsection: Runoff CN-Area
Label: Post B5

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	30,504	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	48,071	0.0	0.0	80.000
Woods - good - Soil D	77.000	126,405	0.0	0.0	77.000
Brush - brush, weed, grass mix - good - Soil D	73.000	9,842	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN -->	(N/A)	214,822	(N/A)	(N/A)	80.470

Subsection: Runoff CN-Area
Label: Post B6

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft^2)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	137,151	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	149,061	0.0	0.0	80.000
Woods - good - Soil D	77.000	27,016	0.0	0.0	77.000
COMPOSITE AREA & WEIGHTED CN -->	(N/A)	313,228	(N/A)	(N/A)	87.623

Subsection: Runoff CN-Area
Label: Post B7

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	377,255	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	497,153	0.0	0.0	80.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil C	74.000	60,631	0.0	0.0	74.000
Water	100.000	30,096	0.0	0.0	100.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	965,135	(N/A)	(N/A)	87.283

Subsection: Runoff CN-Area
Label: Post B8

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	180,794	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	82,572	0.0	0.0	80.000
Water	100.000	21,941	0.0	0.0	100.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	285,307	(N/A)	(N/A)	92.944

Subsection: Runoff CN-Area
Label: Post B9

Return Event: 1 years
Storm Event: 1-Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft²)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D	98.000	177,201	0.0	0.0	98.000
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil D	80.000	205,862	0.0	0.0	80.000
Water	100.000	4,425	0.0	0.0	100.000
Impervious Areas - Gravel (w/ right-of-way) - Soil D	91.000	1,969	0.0	0.0	91.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	389,457	(N/A)	(N/A)	88.473

Subsection: Unit Hydrograph Summary
Label: Post A1

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	1.175 hours
Area (User Defined)	50,658,191 ft²
Computational Time Increment	0.157 hours
Time to Peak (Computed)	12.842 hours
Flow (Peak, Computed)	405.49 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.850 hours
Flow (Peak Interpolated Output)	404.82 ft³/s
Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	50,658,191 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.9 in
Runoff Volume (Pervious)	85.941 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	85.942 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	1.175 hours
Computational Time Increment	0.157 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1,121.83 ft³/s
Unit peak time, Tp	0.783 hours
Unit receding limb, Tr	3.132 hours
Total unit time, Tb	3.915 hours

Subsection: Unit Hydrograph Summary
Label: Post A1

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	1.175 hours
Area (User Defined)	50,658,191 ft²
Computational Time Increment	0.157 hours
Time to Peak (Computed)	12.842 hours
Flow (Peak, Computed)	1,203.00 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.850 hours
Flow (Peak Interpolated Output)	1,199.39 ft³/s
Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	50,658,191 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.5 in
Runoff Volume (Pervious)	241.549 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	241.547 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	1.175 hours
Computational Time Increment	0.157 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1,121.83 ft³/s
Unit peak time, Tp	0.783 hours
Unit receding limb, Tr	3.132 hours
Total unit time, Tb	3.915 hours

Subsection: Unit Hydrograph Summary
Label: Post A1

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	1.175 hours
Area (User Defined)	50,658,191 ft²
Computational Time Increment	0.157 hours
Time to Peak (Computed)	12.842 hours
Flow (Peak, Computed)	2,760.16 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.800 hours
Flow (Peak Interpolated Output)	2,754.30 ft³/s
Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	50,658,191 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.8 in
Runoff Volume (Pervious)	558.402 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	558.393 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	1.175 hours
Computational Time Increment	0.157 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1,121.83 ft³/s
Unit peak time, Tp	0.783 hours
Unit receding limb, Tr	3.132 hours
Total unit time, Tb	3.915 hours

Subsection: Unit Hydrograph Summary
Label: Post A2

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	187,421 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.149 hours
Flow (Peak, Computed)	6.77 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	6.76 ft³/s
Drainage Area	
SCS CN (Composite)	91.000
Area (User Defined)	187,421 ft²
Maximum Retention (Pervious)	1.0 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.627 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.627 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	24.18 ft³/s
Unit peak time, Tp	0.134 hours
Unit receding limb, Tr	0.538 hours
Total unit time, Tb	0.672 hours

Subsection: Unit Hydrograph Summary
Label: Post A2

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	187,421 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.149 hours
Flow (Peak, Computed)	13.99 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	13.97 ft³/s
Drainage Area	
SCS CN (Composite)	91.000
Area (User Defined)	187,421 ft²
Maximum Retention (Pervious)	1.0 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.7 in
Runoff Volume (Pervious)	1.337 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.338 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	24.18 ft³/s
Unit peak time, Tp	0.134 hours
Unit receding limb, Tr	0.538 hours
Total unit time, Tb	0.672 hours

Subsection: Unit Hydrograph Summary
Label: Post A2

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	187,421 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.149 hours
Flow (Peak, Computed)	26.42 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	26.39 ft³/s

Drainage Area	
SCS CN (Composite)	91.000
Area (User Defined)	187,421 ft²
Maximum Retention (Pervious)	1.0 in
Maximum Retention (Pervious, 20 percent)	0.2 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.3 in
Runoff Volume (Pervious)	2.624 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.625 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	24.18 ft³/s
Unit peak time, Tp	0.134 hours
Unit receding limb, Tr	0.538 hours
Total unit time, Tb	0.672 hours

Subsection: Unit Hydrograph Summary
Label: Post A2b

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.117 hours
Area (User Defined)	209,733 ft²
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	6.31 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.23 ft³/s

Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	209,733 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.3 in
Runoff Volume (Pervious)	0.521 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.521 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.117 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	46.78 ft³/s
Unit peak time, Tp	0.078 hours
Unit receding limb, Tr	0.311 hours
Total unit time, Tb	0.389 hours

Subsection: Unit Hydrograph Summary
Label: Post A2b

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.117 hours
Area (User Defined)	209,733 ft²
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	14.94 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	14.84 ft³/s

Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	209,733 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.1 in
Runoff Volume (Pervious)	1.255 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.255 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.117 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	46.78 ft³/s
Unit peak time, Tp	0.078 hours
Unit receding limb, Tr	0.311 hours
Total unit time, Tb	0.389 hours

Subsection: Unit Hydrograph Summary
Label: Post A2b

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.117 hours
Area (User Defined)	209,733 ft²
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	30.33 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	30.22 ft³/s

Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	209,733 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.6 in
Runoff Volume (Pervious)	2.648 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.648 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.117 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	46.78 ft³/s
Unit peak time, Tp	0.078 hours
Unit receding limb, Tr	0.311 hours
Total unit time, Tb	0.389 hours

Subsection: Unit Hydrograph Summary
Label: Post A3

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	231,863 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.156 hours
Flow (Peak, Computed)	9.41 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	9.39 ft³/s
Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	231,863 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.0 in
Runoff Volume (Pervious)	0.893 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.893 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.83 ft³/s
Unit peak time, Tp	0.135 hours
Unit receding limb, Tr	0.539 hours
Total unit time, Tb	0.674 hours

Subsection: Unit Hydrograph Summary
Label: Post A3

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	231,863 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.156 hours
Flow (Peak, Computed)	18.21 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	18.19 ft³/s
Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	231,863 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.1 in
Runoff Volume (Pervious)	1.797 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.797 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.83 ft³/s
Unit peak time, Tp	0.135 hours
Unit receding limb, Tr	0.539 hours
Total unit time, Tb	0.674 hours

Subsection: Unit Hydrograph Summary
Label: Post A3

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.202 hours
Area (User Defined)	231,863 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.156 hours
Flow (Peak, Computed)	33.31 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	33.29 ft³/s

Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	231,863 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.7 in
Runoff Volume (Pervious)	3.407 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.407 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.202 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.83 ft³/s
Unit peak time, Tp	0.135 hours
Unit receding limb, Tr	0.539 hours
Total unit time, Tb	0.674 hours

Subsection: Unit Hydrograph Summary
Label: Post A4

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.132 hours
Area (User Defined)	357,664 ft²
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.110 hours
Flow (Peak, Computed)	15.13 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	15.01 ft³/s

Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	357,664 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.9 in
Runoff Volume (Pervious)	1.314 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.314 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.132 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.47 ft³/s
Unit peak time, Tp	0.088 hours
Unit receding limb, Tr	0.352 hours
Total unit time, Tb	0.440 hours

Subsection: Unit Hydrograph Summary
Label: Post A4

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.132 hours
Area (User Defined)	357,664 ft²
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.110 hours
Flow (Peak, Computed)	29.84 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	29.67 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	357,664 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.9 in
Runoff Volume (Pervious)	2.698 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.697 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.132 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.47 ft³/s
Unit peak time, Tp	0.088 hours
Unit receding limb, Tr	0.352 hours
Total unit time, Tb	0.440 hours

Subsection: Unit Hydrograph Summary
Label: Post A4

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.132 hours
Area (User Defined)	357,664 ft²
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.110 hours
Flow (Peak, Computed)	55.09 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	54.82 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	357,664 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.6 in
Runoff Volume (Pervious)	5.173 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	5.172 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.132 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.47 ft³/s
Unit peak time, Tp	0.088 hours
Unit receding limb, Tr	0.352 hours
Total unit time, Tb	0.440 hours

Subsection: Unit Hydrograph Summary
Label: Post A5

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.171 hours
Area (User Defined)	441,623 ft²
Computational Time Increment	0.023 hours
Time to Peak (Computed)	12.123 hours
Flow (Peak, Computed)	19.82 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	19.62 ft³/s
Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	441,623 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.2 in
Runoff Volume (Pervious)	1.866 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.866 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.171 hours
Computational Time Increment	0.023 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	67.34 ft³/s
Unit peak time, Tp	0.114 hours
Unit receding limb, Tr	0.455 hours
Total unit time, Tb	0.569 hours

Subsection: Unit Hydrograph Summary
Label: Post A5

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.171 hours
Area (User Defined)	441,623 ft²
Computational Time Increment	0.023 hours
Time to Peak (Computed)	12.123 hours
Flow (Peak, Computed)	36.98 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	36.53 ft³/s
Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	441,623 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.3 in
Runoff Volume (Pervious)	3.611 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.612 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.171 hours
Computational Time Increment	0.023 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	67.34 ft³/s
Unit peak time, Tp	0.114 hours
Unit receding limb, Tr	0.455 hours
Total unit time, Tb	0.569 hours

Subsection: Unit Hydrograph Summary
Label: Post A5

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.171 hours
Area (User Defined)	441,623 ft²
Computational Time Increment	0.023 hours
Time to Peak (Computed)	12.123 hours
Flow (Peak, Computed)	66.58 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	65.71 ft³/s

Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	441,623 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.9 in
Runoff Volume (Pervious)	6.691 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6.692 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.171 hours
Computational Time Increment	0.023 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	67.34 ft³/s
Unit peak time, Tp	0.114 hours
Unit receding limb, Tr	0.455 hours
Total unit time, Tb	0.569 hours

Subsection: Unit Hydrograph Summary
Label: Post A6

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.103 hours
Area (User Defined)	412,501 ft²
Computational Time Increment	0.014 hours
Time to Peak (Computed)	12.102 hours
Flow (Peak, Computed)	19.73 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	19.71 ft³/s

Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	412,501 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.2 in
Runoff Volume (Pervious)	1.743 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.742 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.103 hours
Computational Time Increment	0.014 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	104.14 ft³/s
Unit peak time, Tp	0.069 hours
Unit receding limb, Tr	0.275 hours
Total unit time, Tb	0.343 hours

Subsection: Unit Hydrograph Summary
Label: Post A6

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.103 hours
Area (User Defined)	412,501 ft²
Computational Time Increment	0.014 hours
Time to Peak (Computed)	12.102 hours
Flow (Peak, Computed)	36.70 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	36.67 ft³/s
Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	412,501 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.3 in
Runoff Volume (Pervious)	3.373 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.373 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.103 hours
Computational Time Increment	0.014 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	104.14 ft³/s
Unit peak time, Tp	0.069 hours
Unit receding limb, Tr	0.275 hours
Total unit time, Tb	0.343 hours

Subsection: Unit Hydrograph Summary
Label: Post A6

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.103 hours
Area (User Defined)	412,501 ft²
Computational Time Increment	0.014 hours
Time to Peak (Computed)	12.102 hours
Flow (Peak, Computed)	66.00 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	65.96 ft³/s
Drainage Area	
SCS CN (Composite)	96.000
Area (User Defined)	412,501 ft²
Maximum Retention (Pervious)	0.4 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.9 in
Runoff Volume (Pervious)	6.250 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	6.250 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.103 hours
Computational Time Increment	0.014 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	104.14 ft³/s
Unit peak time, Tp	0.069 hours
Unit receding limb, Tr	0.275 hours
Total unit time, Tb	0.343 hours

Subsection: Unit Hydrograph Summary
Label: Post A7

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	154,545 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.115 hours
Flow (Peak, Computed)	6.48 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.41 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	154,545 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.9 in
Runoff Volume (Pervious)	0.568 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.568 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.54 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.376 hours
Total unit time, Tb	0.470 hours

Subsection: Unit Hydrograph Summary
Label: Post A7

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	154,545 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.115 hours
Flow (Peak, Computed)	12.79 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	12.68 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	154,545 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.9 in
Runoff Volume (Pervious)	1.166 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.166 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.54 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.376 hours
Total unit time, Tb	0.470 hours

Subsection: Unit Hydrograph Summary
Label: Post A7

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	154,545 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.115 hours
Flow (Peak, Computed)	23.62 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	23.44 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	154,545 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.6 in
Runoff Volume (Pervious)	2.235 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.235 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.54 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.376 hours
Total unit time, Tb	0.470 hours

Subsection: Unit Hydrograph Summary
Label: Post A8

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.100 hours
Area (User Defined)	108,932 ft²
Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.114 hours
Flow (Peak, Computed)	4.22 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	4.21 ft³/s
Drainage Area	
SCS CN (Composite)	90.000
Area (User Defined)	108,932 ft²
Maximum Retention (Pervious)	1.1 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.347 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.347 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.100 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.25 ft³/s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time, Tb	0.334 hours

Subsection: Unit Hydrograph Summary
Label: Post A8

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.100 hours
Area (User Defined)	108,932 ft²
Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	8.83 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	8.83 ft³/s
Drainage Area	
SCS CN (Composite)	90.000
Area (User Defined)	108,932 ft²
Maximum Retention (Pervious)	1.1 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.6 in
Runoff Volume (Pervious)	0.756 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.756 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.100 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.25 ft³/s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time, Tb	0.334 hours

Subsection: Unit Hydrograph Summary
Label: Post A8

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.100 hours
Area (User Defined)	108,932 ft²
Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	16.81 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	16.80 ft³/s
Drainage Area	
SCS CN (Composite)	90.000
Area (User Defined)	108,932 ft²
Maximum Retention (Pervious)	1.1 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.2 in
Runoff Volume (Pervious)	1.500 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.500 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.100 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	28.25 ft³/s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time, Tb	0.334 hours

Subsection: Unit Hydrograph Summary
Label: Post A9

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.199 hours
Area (User Defined)	540,444 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	20.42 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	20.42 ft³/s
Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	540,444 ft²
Maximum Retention (Pervious)	0.9 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	1.895 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.895 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.199 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.50 ft³/s
Unit peak time, Tp	0.133 hours
Unit receding limb, Tr	0.532 hours
Total unit time, Tb	0.665 hours

Subsection: Unit Hydrograph Summary
Label: Post A9

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.199 hours
Area (User Defined)	540,444 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	41.23 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	41.23 ft³/s
Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	540,444 ft²
Maximum Retention (Pervious)	0.9 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.8 in
Runoff Volume (Pervious)	3.966 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.967 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.199 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.50 ft³/s
Unit peak time, Tp	0.133 hours
Unit receding limb, Tr	0.532 hours
Total unit time, Tb	0.665 hours

Subsection: Unit Hydrograph Summary
Label: Post A9

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.199 hours
Area (User Defined)	540,444 ft²
Computational Time Increment	0.027 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	76.99 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	76.99 ft³/s

Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	540,444 ft²
Maximum Retention (Pervious)	0.9 in
Maximum Retention (Pervious, 20 percent)	0.2 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.4 in
Runoff Volume (Pervious)	7.692 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	7.694 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.199 hours
Computational Time Increment	0.027 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	70.50 ft³/s
Unit peak time, Tp	0.133 hours
Unit receding limb, Tr	0.532 hours
Total unit time, Tb	0.665 hours

Subsection: Unit Hydrograph Summary
Label: Post B1

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.793 hours
Area (User Defined)	4,192,142 ft²
Computational Time Increment	0.106 hours
Time to Peak (Computed)	12.587 hours
Flow (Peak, Computed)	42.40 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.600 hours
Flow (Peak Interpolated Output)	42.25 ft³/s

Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	4,192,142 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.9 in
Runoff Volume (Pervious)	7.112 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	7.111 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.793 hours
Computational Time Increment	0.106 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	137.46 ft³/s
Unit peak time, Tp	0.529 hours
Unit receding limb, Tr	2.115 hours
Total unit time, Tb	2.644 hours

Subsection: Unit Hydrograph Summary
Label: Post B1

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.793 hours
Area (User Defined)	4,192,142 ft²
Computational Time Increment	0.106 hours
Time to Peak (Computed)	12.587 hours
Flow (Peak, Computed)	124.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.550 hours
Flow (Peak Interpolated Output)	124.17 ft³/s
Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	4,192,142 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.5 in
Runoff Volume (Pervious)	19.989 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	19.987 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.793 hours
Computational Time Increment	0.106 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	137.46 ft³/s
Unit peak time, Tp	0.529 hours
Unit receding limb, Tr	2.115 hours
Total unit time, Tb	2.644 hours

Subsection: Unit Hydrograph Summary
Label: Post B1

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.793 hours
Area (User Defined)	4,192,142 ft²
Computational Time Increment	0.106 hours
Time to Peak (Computed)	12.587 hours
Flow (Peak, Computed)	285.40 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.550 hours
Flow (Peak Interpolated Output)	285.22 ft³/s
Drainage Area	
SCS CN (Composite)	78.000
Area (User Defined)	4,192,142 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.8 in
Runoff Volume (Pervious)	46.210 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	46.204 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.793 hours
Computational Time Increment	0.106 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	137.46 ft³/s
Unit peak time, Tp	0.529 hours
Unit receding limb, Tr	2.115 hours
Total unit time, Tb	2.644 hours

Subsection: Unit Hydrograph Summary
Label: Post B10

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.145 hours
Area (User Defined)	213,623 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.117 hours
Flow (Peak, Computed)	9.26 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	9.14 ft³/s
Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	213,623 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.0 in
Runoff Volume (Pervious)	0.823 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.823 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.145 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	38.27 ft³/s
Unit peak time, Tp	0.097 hours
Unit receding limb, Tr	0.387 hours
Total unit time, Tb	0.484 hours

Subsection: Unit Hydrograph Summary
Label: Post B10

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.145 hours
Area (User Defined)	213,623 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.117 hours
Flow (Peak, Computed)	17.90 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	17.73 ft³/s
Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	213,623 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.1 in
Runoff Volume (Pervious)	1.656 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.656 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.145 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	38.27 ft³/s
Unit peak time, Tp	0.097 hours
Unit receding limb, Tr	0.387 hours
Total unit time, Tb	0.484 hours

Subsection: Unit Hydrograph Summary
Label: Post B10

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.145 hours
Area (User Defined)	213,623 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.117 hours
Flow (Peak, Computed)	32.75 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	32.46 ft³/s
Drainage Area	
SCS CN (Composite)	94.000
Area (User Defined)	213,623 ft²
Maximum Retention (Pervious)	0.6 in
Maximum Retention (Pervious, 20 percent)	0.1 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.7 in
Runoff Volume (Pervious)	3.139 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.139 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.145 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	38.27 ft³/s
Unit peak time, Tp	0.097 hours
Unit receding limb, Tr	0.387 hours
Total unit time, Tb	0.484 hours

Subsection: Unit Hydrograph Summary
Label: Post B2

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	90,771 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.135 hours
Flow (Peak, Computed)	2.52 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	2.47 ft³/s
Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	90,771 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.2 in
Runoff Volume (Pervious)	0.214 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.214 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.79 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.375 hours
Total unit time, Tb	0.469 hours

Subsection: Unit Hydrograph Summary
Label: Post B2

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	90,771 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.116 hours
Flow (Peak, Computed)	6.13 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.04 ft³/s
Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	90,771 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.0 in
Runoff Volume (Pervious)	0.527 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.527 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.79 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.375 hours
Total unit time, Tb	0.469 hours

Subsection: Unit Hydrograph Summary
Label: Post B2

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.141 hours
Area (User Defined)	90,771 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.116 hours
Flow (Peak, Computed)	12.67 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	12.54 ft³/s
Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	90,771 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.5 in
Runoff Volume (Pervious)	1.125 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.125 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.141 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.79 ft³/s
Unit peak time, Tp	0.094 hours
Unit receding limb, Tr	0.375 hours
Total unit time, Tb	0.469 hours

Subsection: Unit Hydrograph Summary
Label: Post B3

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.232 hours
Area (User Defined)	96,930 ft²
Computational Time Increment	0.031 hours
Time to Peak (Computed)	12.176 hours
Flow (Peak, Computed)	2.25 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	2.22 ft³/s
Drainage Area	
SCS CN (Composite)	83.000
Area (User Defined)	96,930 ft²
Maximum Retention (Pervious)	2.0 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.2 in
Runoff Volume (Pervious)	0.217 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.217 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.232 hours
Computational Time Increment	0.031 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.88 ft³/s
Unit peak time, Tp	0.155 hours
Unit receding limb, Tr	0.618 hours
Total unit time, Tb	0.773 hours

Subsection: Unit Hydrograph Summary
Label: Post B3

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.232 hours
Area (User Defined)	96,930 ft²
Computational Time Increment	0.031 hours
Time to Peak (Computed)	12.176 hours
Flow (Peak, Computed)	5.69 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	5.63 ft³/s
Drainage Area	
SCS CN (Composite)	83.000
Area (User Defined)	96,930 ft²
Maximum Retention (Pervious)	2.0 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.9 in
Runoff Volume (Pervious)	0.545 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.545 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.232 hours
Computational Time Increment	0.031 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.88 ft³/s
Unit peak time, Tp	0.155 hours
Unit receding limb, Tr	0.618 hours
Total unit time, Tb	0.773 hours

Subsection: Unit Hydrograph Summary
Label: Post B3

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.232 hours
Area (User Defined)	96,930 ft²
Computational Time Increment	0.031 hours
Time to Peak (Computed)	12.176 hours
Flow (Peak, Computed)	11.97 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	11.91 ft³/s
Drainage Area	
SCS CN (Composite)	83.000
Area (User Defined)	96,930 ft²
Maximum Retention (Pervious)	2.0 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.4 in
Runoff Volume (Pervious)	1.179 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.179 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.232 hours
Computational Time Increment	0.031 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.88 ft³/s
Unit peak time, Tp	0.155 hours
Unit receding limb, Tr	0.618 hours
Total unit time, Tb	0.773 hours

Subsection: Unit Hydrograph Summary
Label: Post B4

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.186 hours
Area (User Defined)	113,356 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.158 hours
Flow (Peak, Computed)	2.64 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	2.63 ft³/s
Drainage Area	
SCS CN (Composite)	82.000
Area (User Defined)	113,356 ft²
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.1 in
Runoff Volume (Pervious)	0.241 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.241 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.186 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	15.84 ft³/s
Unit peak time, Tp	0.124 hours
Unit receding limb, Tr	0.496 hours
Total unit time, Tb	0.620 hours

Subsection: Unit Hydrograph Summary
Label: Post B4

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.186 hours
Area (User Defined)	113,356 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.158 hours
Flow (Peak, Computed)	6.81 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	6.81 ft³/s
Drainage Area	
SCS CN (Composite)	82.000
Area (User Defined)	113,356 ft²
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.8 in
Runoff Volume (Pervious)	0.618 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.618 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.186 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	15.84 ft³/s
Unit peak time, Tp	0.124 hours
Unit receding limb, Tr	0.496 hours
Total unit time, Tb	0.620 hours

Subsection: Unit Hydrograph Summary
Label: Post B4

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.186 hours
Area (User Defined)	113,356 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.133 hours
Flow (Peak, Computed)	14.58 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	14.51 ft³/s
Drainage Area	
SCS CN (Composite)	82.000
Area (User Defined)	113,356 ft²
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.2 in
Runoff Volume (Pervious)	1.353 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.353 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.186 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	15.84 ft³/s
Unit peak time, Tp	0.124 hours
Unit receding limb, Tr	0.496 hours
Total unit time, Tb	0.620 hours

Subsection: Unit Hydrograph Summary
Label: Post B5

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.218 hours
Area (User Defined)	214,822 ft²
Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.183 hours
Flow (Peak, Computed)	4.24 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	4.17 ft³/s
Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	214,822 ft²
Maximum Retention (Pervious)	2.5 in
Maximum Retention (Pervious, 20 percent)	0.5 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.0 in
Runoff Volume (Pervious)	0.409 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.409 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.218 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.62 ft³/s
Unit peak time, Tp	0.145 hours
Unit receding limb, Tr	0.582 hours
Total unit time, Tb	0.727 hours

Subsection: Unit Hydrograph Summary
Label: Post B5

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.218 hours
Area (User Defined)	214,822 ft²
Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.154 hours
Flow (Peak, Computed)	11.67 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	11.62 ft³/s
Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	214,822 ft²
Maximum Retention (Pervious)	2.5 in
Maximum Retention (Pervious, 20 percent)	0.5 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.7 in
Runoff Volume (Pervious)	1.096 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.096 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.218 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.62 ft³/s
Unit peak time, Tp	0.145 hours
Unit receding limb, Tr	0.582 hours
Total unit time, Tb	0.727 hours

Subsection: Unit Hydrograph Summary
Label: Post B5

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.218 hours
Area (User Defined)	214,822 ft²
Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.154 hours
Flow (Peak, Computed)	25.82 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	25.74 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	214,822 ft²
Maximum Retention (Pervious)	2.5 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.0 in
Runoff Volume (Pervious)	2.466 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.466 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.218 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.62 ft³/s
Unit peak time, Tp	0.145 hours
Unit receding limb, Tr	0.582 hours
Total unit time, Tb	0.727 hours

Subsection: Unit Hydrograph Summary
Label: Post B6

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.189 hours
Area (User Defined)	313,228 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.139 hours
Flow (Peak, Computed)	9.98 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	9.96 ft³/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	313,228 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.5 in
Runoff Volume (Pervious)	0.905 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.905 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.189 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	43.05 ft³/s
Unit peak time, Tp	0.126 hours
Unit receding limb, Tr	0.505 hours
Total unit time, Tb	0.631 hours

Subsection: Unit Hydrograph Summary
Label: Post B6

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.189 hours
Area (User Defined)	313,228 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.139 hours
Flow (Peak, Computed)	22.15 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	22.04 ft³/s
Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	313,228 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.4 in
Runoff Volume (Pervious)	2.051 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.051 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.189 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	43.05 ft³/s
Unit peak time, Tp	0.126 hours
Unit receding limb, Tr	0.505 hours
Total unit time, Tb	0.631 hours

Subsection: Unit Hydrograph Summary
Label: Post B6

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.189 hours
Area (User Defined)	313,228 ft²
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.139 hours
Flow (Peak, Computed)	43.44 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	43.14 ft³/s
Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	313,228 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.0 in
Runoff Volume (Pervious)	4.170 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	4.170 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.189 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	43.05 ft³/s
Unit peak time, Tp	0.126 hours
Unit receding limb, Tr	0.505 hours
Total unit time, Tb	0.631 hours

Subsection: Unit Hydrograph Summary
Label: Post B7

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.276 hours
Area (User Defined)	965,135 ft²
Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.191 hours
Flow (Peak, Computed)	26.27 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	26.21 ft³/s

Drainage Area	
SCS CN (Composite)	87.000
Area (User Defined)	965,135 ft²
Maximum Retention (Pervious)	1.5 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.4 in
Runoff Volume (Pervious)	2.654 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.654 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.276 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	90.88 ft³/s
Unit peak time, Tp	0.184 hours
Unit receding limb, Tr	0.737 hours
Total unit time, Tb	0.921 hours

Subsection: Unit Hydrograph Summary
Label: Post B7

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.276 hours
Area (User Defined)	965,135 ft²
Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.191 hours
Flow (Peak, Computed)	60.03 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	59.73 ft³/s

Drainage Area	
SCS CN (Composite)	87.000
Area (User Defined)	965,135 ft²
Maximum Retention (Pervious)	1.5 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.3 in
Runoff Volume (Pervious)	6.136 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6.136 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.276 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	90.88 ft³/s
Unit peak time, Tp	0.184 hours
Unit receding limb, Tr	0.737 hours
Total unit time, Tb	0.921 hours

Subsection: Unit Hydrograph Summary
Label: Post B7

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.276 hours
Area (User Defined)	965,135 ft²
Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.191 hours
Flow (Peak, Computed)	119.57 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	118.80 ft³/s
Drainage Area	
SCS CN (Composite)	87.000
Area (User Defined)	965,135 ft²
Maximum Retention (Pervious)	1.5 in
Maximum Retention (Pervious, 20 percent)	0.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.8 in
Runoff Volume (Pervious)	12.628 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	12.629 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.276 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	90.88 ft³/s
Unit peak time, Tp	0.184 hours
Unit receding limb, Tr	0.737 hours
Total unit time, Tb	0.921 hours

Subsection: Unit Hydrograph Summary
Label: Post B8

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.143 hours
Area (User Defined)	285,307 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.124 hours
Flow (Peak, Computed)	11.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	11.79 ft³/s
Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	285,307 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.9 in
Runoff Volume (Pervious)	1.048 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.048 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.143 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	51.99 ft³/s
Unit peak time, Tp	0.095 hours
Unit receding limb, Tr	0.381 hours
Total unit time, Tb	0.476 hours

Subsection: Unit Hydrograph Summary
Label: Post B8

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.143 hours
Area (User Defined)	285,307 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.124 hours
Flow (Peak, Computed)	23.56 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	23.34 ft³/s

Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	285,307 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.9 in
Runoff Volume (Pervious)	2.152 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.152 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.143 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	51.99 ft³/s
Unit peak time, Tp	0.095 hours
Unit receding limb, Tr	0.381 hours
Total unit time, Tb	0.476 hours

Subsection: Unit Hydrograph Summary
Label: Post B8

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.143 hours
Area (User Defined)	285,307 ft²
Computational Time Increment	0.019 hours
Time to Peak (Computed)	12.124 hours
Flow (Peak, Computed)	43.46 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	43.17 ft³/s

Drainage Area	
SCS CN (Composite)	93.000
Area (User Defined)	285,307 ft²
Maximum Retention (Pervious)	0.8 in
Maximum Retention (Pervious, 20 percent)	0.2 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.6 in
Runoff Volume (Pervious)	4.126 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4.126 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.143 hours
Computational Time Increment	0.019 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	51.99 ft³/s
Unit peak time, Tp	0.095 hours
Unit receding limb, Tr	0.381 hours
Total unit time, Tb	0.476 hours

Subsection: Unit Hydrograph Summary
Label: Post B9

Return Event: 1 years
Storm Event: 1-Year

Storm Event	1-Year
Return Event	1 years
Duration	48.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.159 hours
Area (User Defined)	389,457 ft²
Computational Time Increment	0.021 hours
Time to Peak (Computed)	12.142 hours
Flow (Peak, Computed)	12.94 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	12.80 ft³/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	389,457 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.5 in
Runoff Volume (Pervious)	1.126 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.125 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.159 hours
Computational Time Increment	0.021 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	63.52 ft³/s
Unit peak time, Tp	0.106 hours
Unit receding limb, Tr	0.425 hours
Total unit time, Tb	0.532 hours

Subsection: Unit Hydrograph Summary
Label: Post B9

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	48.000 hours
Depth	4.7 in
Time of Concentration (Composite)	0.159 hours
Area (User Defined)	389,457 ft²
Computational Time Increment	0.021 hours
Time to Peak (Computed)	12.120 hours
Flow (Peak, Computed)	28.54 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	28.11 ft³/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	389,457 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.4 in
Runoff Volume (Pervious)	2.550 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.550 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.159 hours
Computational Time Increment	0.021 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	63.52 ft³/s
Unit peak time, Tp	0.106 hours
Unit receding limb, Tr	0.425 hours
Total unit time, Tb	0.532 hours

Subsection: Unit Hydrograph Summary
Label: Post B9

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	48.000 hours
Depth	8.4 in
Time of Concentration (Composite)	0.159 hours
Area (User Defined)	389,457 ft²
Computational Time Increment	0.021 hours
Time to Peak (Computed)	12.120 hours
Flow (Peak, Computed)	55.92 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	55.02 ft³/s
Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	389,457 ft²
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.0 in
Runoff Volume (Pervious)	5.185 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	5.185 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.159 hours
Computational Time Increment	0.021 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	63.52 ft³/s
Unit peak time, Tp	0.106 hours
Unit receding limb, Tr	0.425 hours
Total unit time, Tb	0.532 hours

Subsection: Elevation-Area Volume Curve
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
429.00	0.0	3,040	0	0.000	0.000
431.90	0.0	3,040	9,120	0.202	0.202
432.00	0.0	15,200	25,038	0.019	0.222
435.00	0.0	24,300	58,719	1.348	1.570

Subsection: Elevation-Area Volume Curve
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
556.00	0.0	845	0	0.000	0.000
558.90	0.0	845	2,535	0.056	0.056
559.00	0.0	4,226	6,961	0.005	0.062
562.00	0.0	10,414	21,274	0.488	0.550

Subsection: Elevation-Area Volume Curve
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
482.00	0.0	1,106	0	0.000	0.000
484.90	0.0	1,106	3,318	0.074	0.074
485.00	0.0	5,534	9,114	0.007	0.081
487.00	0.0	8,684	21,150	0.324	0.404
488.00	0.0	10,159	28,236	0.216	0.620

Subsection: Elevation-Area Volume Curve
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
444.00	0.0	476	0	0.000	0.000
446.90	0.0	476	1,428	0.032	0.032
447.00	0.0	2,380	3,920	0.003	0.035
449.00	0.0	7,400	13,977	0.214	0.249

Subsection: Elevation-Area Volume Curve
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
454.00	0.0	570	0	0.000	0.000
456.90	0.0	570	1,710	0.038	0.038
457.00	0.0	2,850	4,695	0.004	0.042
459.00	0.0	6,180	13,227	0.202	0.244

Subsection: Elevation-Area Volume Curve
Label: Bio B4

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
484.50	0.0	362	0	0.000	0.000
487.40	0.0	362	1,086	0.024	0.024
487.50	0.0	1,810	2,981	0.002	0.026
490.00	0.0	4,332	8,942	0.171	0.197

Subsection: Elevation-Area Volume Curve
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
538.00	0.0	1,522	0	0.000	0.000
540.90	0.0	1,522	4,566	0.101	0.101
541.00	0.0	7,610	12,535	0.010	0.111
544.00	0.0	13,400	31,108	0.714	0.825

Subsection: Elevation-Area Volume Curve
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
466.00	0.0	5,920	0	0.000	0.000
468.90	0.0	5,920	17,760	0.394	0.394
469.00	0.0	29,600	48,758	0.037	0.431
471.00	0.0	35,516	97,539	1.493	1.924

Subsection: Elevation-Area Volume Curve
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
490.00	0.0	1,060	0	0.000	0.000
492.90	0.0	1,060	3,180	0.071	0.071
493.00	0.0	5,300	8,730	0.007	0.077
498.00	0.0	11,080	24,043	0.920	0.997

Subsection: Elevation-Area Volume Curve
Label: Existing Pond-Revised

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
427.30	0.0	100	0	0.000	0.000
427.42	0.0	99,640	102,897	0.094	0.094
428.00	0.0	169,183	398,659	1.769	1.864
430.00	0.0	311,961	710,880	10.880	12.744
432.00	0.0	535,199	1,255,769	19.219	31.963
434.00	0.0	713,938	1,867,278	28.578	60.540

Subsection: Elevation-Area Volume Curve
Label: Existing Wetland

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
398.60	0.0	15	0	0.000	0.000
400.00	0.0	49,029	49,902	0.535	0.535
402.00	0.0	924,426	1,186,349	18.157	18.691
404.00	0.0	2,356,075	4,756,312	72.793	91.484
406.00	0.0	2,902,287	7,873,320	120.498	211.982
408.00	0.0	3,636,662	9,787,739	149.797	361.779

Subsection: Elevation-Area Volume Curve
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
458.00	0.0	8,710	0	0.000	0.000
461.00	0.0	14,482	34,423	0.790	0.790
462.00	0.0	23,319	56,178	0.430	1.220
462.25	0.0	33,934	85,383	0.163	1.383
471.00	0.0	65,752	146,922	9.838	11.221

Subsection: Storage Chamber System
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31

Subsection: Storage Chamber System
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14
3.83	0.10
3.92	0.06
4.00	0.03

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	501.65 ft
Chamber System Rows	16
Chambers per Row	45
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in
Chamber System Includes Header?	False

Subsection: Storage Chamber System
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Subsection: Storage Chamber System
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14

Subsection: Storage Chamber System
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
3.83	0.10
3.92	0.06
4.00	0.03

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	503.59 ft
Chamber System Rows	17
Chambers per Row	45
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in
Chamber System Includes Header?	False

Subsection: Storage Chamber System
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)

Subsection: Storage Chamber System
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14
3.83	0.10
3.92	0.06
4.00	0.03

Subsection: Storage Chamber System
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	552.52 ft
Chamber System Rows	16
Chambers per Row	56
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in
Chamber System Includes Header?	False

Subsection: Storage Chamber System
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47

Subsection: Storage Chamber System
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14
3.83	0.10
3.92	0.06
4.00	0.03

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	579.95 ft
Chamber System Rows	19

Subsection: Storage Chamber System
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber (Pond)	
Chambers per Row	47
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in
Chamber System Includes Header?	False

Subsection: Storage Chamber System
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46

Subsection: Storage Chamber System
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14
3.83	0.10
3.92	0.06
4.00	0.03

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	569.56 ft
Chamber System Rows	10
Chambers per Row	25
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in

Subsection: Storage Chamber System
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber (Pond)	
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in
Chamber System Includes Header?	False

Subsection: Storage Chamber System
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber			
ID	355	Notes	Created on 19 Dec 2011. Check with manufacturer for updates.
Label	Recharger (R) 902HD		

Storage Chamber			
Effective Length	3.62 ft	Manufacturer	CULTEC
Section Length Varies?	False	Default Spacing	0.75 ft

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
0.00	0.00
0.08	0.50
0.17	0.49
0.25	0.49
0.33	0.48
0.42	0.48
0.50	0.48
0.58	0.48
0.67	0.47
0.75	0.47
0.83	0.47
0.92	0.47
1.00	0.46
1.08	0.46
1.17	0.46
1.25	0.46
1.33	0.45
1.42	0.45
1.50	0.44
1.58	0.44
1.67	0.43
1.75	0.43

Subsection: Storage Chamber System
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

Depth-Incremental Volume Per Unit Length Curve

Depth (ft)	Incremental Volume Per Unit Length (ft³/ft)
1.83	0.42
1.92	0.42
2.00	0.41
2.08	0.41
2.17	0.40
2.25	0.39
2.33	0.39
2.42	0.38
2.50	0.37
2.58	0.36
2.67	0.35
2.75	0.34
2.83	0.33
2.92	0.32
3.00	0.31
3.08	0.30
3.17	0.28
3.25	0.27
3.33	0.25
3.42	0.24
3.50	0.22
3.58	0.20
3.67	0.17
3.75	0.14
3.83	0.10
3.92	0.06
4.00	0.03

Storage Chamber			
Storage Chamber Type	Incremental Volume Per Unit Length	Maximum Width	6.50 ft

Storage Chamber (Pond)	
Chamber System Invert	461.75 ft
Chamber System Rows	8
Chambers per Row	39
Chamber System Fill Void Space	40.0 %
Chamber System Row Spacing	9.0 in
Chamber System Side Fill	12.0 in
Chamber System Fill Cover Depth	12.0 in
Chamber System Fill Base Depth	9.0 in
Chamber System Fill Side Slope	0.000 H:V
Chamber System End Fill	12.0 in

Subsection: Storage Chamber System
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

Storage Chamber (Pond)	
Chamber System Includes Header?	False

Subsection: Outlet Input Data
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	429.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	435.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	433.50	435.00
Orifice-Circular	Orifice 1	Forward	Culvert	432.50	435.00
Culvert-Circular	Culvert	Forward	TW	428.00	435.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	433.50 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	432.50 ft
Orifice Diameter	5.00 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	30.00 ft
Length (Computed Barrel)	30.46 ft
Slope (Computed)	0.177 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.047
T2 ratio (HW/D)	1.208
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	429.57 ft	T1 Flow	7.58 ft³/s
T2 Elevation	429.81 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
429.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
429.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
430.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
430.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
431.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
431.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
432.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
432.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
433.00	0.00	0.00	0.00	428.33	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
433.50	0.00	0.00	0.00	428.43	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
434.00	14.85	434.00	Free Outfall	431.85	0.00	0.00	(N/A)	0.00	Weir: H =0.5ft
434.50	42.00	434.50	434.50	434.50	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER: ADJUSTED TO WEIR: H =1ft
435.00	72.21	435.00	435.00	435.00	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER, DOWNSTREAM CONTROL: Kev=0. Hev=0.000

Subsection: Individual Outlet Curves
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
429.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
429.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
430.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
430.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
431.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
431.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
432.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
432.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
433.00	0.35	433.00	Free Outfall	428.33	0.00	0.00	(N/A)	0.00	H =.29
433.50	0.58	433.50	Free Outfall	428.43	0.00	0.00	(N/A)	0.00	H =.79
434.00	0.75	434.00	Free Outfall	431.85	0.00	0.00	(N/A)	0.00	H =1.29
434.50	0.00	434.50	434.50	434.50	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE
435.00	0.00	435.00	435.00	435.00	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE

Subsection: Individual Outlet Curves
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 47.49 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
429.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
429.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
430.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
430.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
431.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
431.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
432.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
432.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
433.00	0.35	428.33	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
433.50	0.58	428.43	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
434.00	15.59	431.85	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
434.50	21.48	434.50	Free Outfall	Free Outfall	0.00	20.52	(N/A)	0.00
435.00	22.41	435.00	Free Outfall	Free Outfall	0.00	49.80	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .076ft Dcr= .220ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .099ft Dcr= .283ft CRIT.DEPTH Hev= .00ft
INLET CONTROL... Submerged: HW =3.85
INLET CONTROL... Submerged: HW =6.50
INLET CONTROL... Submerged: HW =7.00

Subsection: Composite Rating Curve
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
429.00	0.00	(N/A)	0.00
429.50	0.00	(N/A)	0.00
430.00	0.00	(N/A)	0.00
430.50	0.00	(N/A)	0.00
431.00	0.00	(N/A)	0.00
431.50	0.00	(N/A)	0.00
432.00	0.00	(N/A)	0.00
432.50	0.00	(N/A)	0.00
433.00	0.35	(N/A)	0.00
433.50	0.58	(N/A)	0.00
434.00	15.59	(N/A)	0.00
434.50	21.48	(N/A)	0.00
435.00	22.41	(N/A)	0.00

Contributing Structures
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)
Riser,Culvert (no Q: Orifice 1)

Subsection: Outlet Input Data
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	556.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	562.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	561.20	562.00
Orifice-Circular	Orifice 1	Forward	Culvert	559.50	562.00
Culvert-Circular	Culvert	Forward	TW	555.38	562.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	561.20 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	559.50 ft
Orifice Diameter	2.50 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	175.00 ft
Length (Computed Barrel)	175.01 ft
Slope (Computed)	0.010 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.131
T2 ratio (HW/D)	1.291
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	557.08 ft	T1 Flow	7.58 ft³/s
T2 Elevation	557.32 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
556.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
556.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
557.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
557.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
558.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
558.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
559.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
559.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
560.00	0.00	0.00	0.00	555.56	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
560.50	0.00	0.00	0.00	555.60	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
561.00	0.00	0.00	0.00	555.62	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
561.20	0.00	0.00	0.00	555.63	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
561.50	6.90	561.50	Free Outfall	557.12	0.00	0.00	(N/A)	0.00	Weir: H =0.3ft FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.8ft
562.00	30.05	562.00	562.00	562.00	0.00	0.00	(N/A)	0.00	

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
556.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
556.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
557.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
557.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
558.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
558.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
559.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
559.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
560.00	0.10	560.00	Free Outfall	555.56	0.00	0.00	(N/A)	0.00	H =.40
560.50	0.16	560.50	Free Outfall	555.60	0.00	0.00	(N/A)	0.00	H =.90
561.00	0.19	561.00	Free Outfall	555.62	0.00	0.00	(N/A)	0.00	H =1.40
561.20	0.21	561.20	Free Outfall	555.63	0.00	0.00	(N/A)	0.00	H =1.60
561.50	0.23	561.50	Free Outfall	557.12	0.00	0.00	(N/A)	0.00	H =1.90
562.00	0.00	562.00	562.00	562.00	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE

Subsection: Individual Outlet Curves
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 11.30 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
556.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
556.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
557.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
557.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
558.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
558.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
559.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
559.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
560.00	0.10	555.56	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
560.50	0.16	555.60	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
561.00	0.19	555.62	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
561.20	0.21	555.63	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
561.50	7.13	557.12	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
562.00	17.18	562.00	Free Outfall	Free Outfall	0.00	12.87	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .040ft Dcr= .118ft CRIT.DEPTH Hev= .00ft
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .055ft Dcr= .162ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .057ft Dcr= .168ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .468ft Dcr= 1.034ft CRIT.DEPTH Hev= .00ft
FULL FLOW...Lfull=173.87ft Vh=1.470ft HL=6.858ft Hev= .00ft

Subsection: Composite Rating Curve
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
556.00	0.00	(N/A)	0.00
556.50	0.00	(N/A)	0.00
557.00	0.00	(N/A)	0.00
557.50	0.00	(N/A)	0.00
558.00	0.00	(N/A)	0.00
558.50	0.00	(N/A)	0.00
559.00	0.00	(N/A)	0.00
559.50	0.00	(N/A)	0.00
560.00	0.10	(N/A)	0.00
560.50	0.16	(N/A)	0.00
561.00	0.19	(N/A)	0.00
561.20	0.21	(N/A)	0.00
561.50	7.13	(N/A)	0.00
562.00	17.18	(N/A)	0.00

Contributing Structures
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	482.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	488.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	487.00	488.00
Orifice-Circular	Orifice 1	Forward	Culvert	485.50	488.00
Culvert-Circular	Culvert	Forward	TW	482.00	488.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	487.00 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	485.50 ft
Orifice Diameter	4.00 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	97.00 ft
Length (Computed Barrel)	97.87 ft
Slope (Computed)	0.134 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.069
T2 ratio (HW/D)	1.229
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	483.60 ft	T1 Flow	7.58 ft³/s
T2 Elevation	483.84 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
482.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
482.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
483.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
483.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
484.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
484.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.00	0.00	0.00	482.27	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.50	0.00	0.00	0.00	482.35	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.00	0.00	0.00	0.00	482.39	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.50	14.85	487.50	Free Outfall	485.81	0.00	0.00	(N/A)	0.00	Weir: H =0.5ft FULLY CHARGED RISER, DOWNSTREAM CONTROL: Kev=0. Hev=0.000
488.00	42.00	488.00	488.00	488.00	0.00	0.00	(N/A)	0.00	

Subsection: Individual Outlet Curves
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
482.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
482.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
483.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
483.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
484.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
484.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.24	486.00	Free Outfall	482.27	0.00	0.00	(N/A)	0.00	H =.33
486.50	0.38	486.50	Free Outfall	482.35	0.00	0.00	(N/A)	0.00	H =.83
487.00	0.48	487.00	Free Outfall	482.39	0.00	0.00	(N/A)	0.00	H =1.33
487.50	0.55	487.50	485.81	485.81	0.00	0.00	(N/A)	0.00	H =1.69 FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE
488.00	0.00	488.00	488.00	488.00	0.00	0.00	(N/A)	0.00	

Subsection: Individual Outlet Curves
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 41.36 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(Into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
482.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
482.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
483.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
483.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
484.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
484.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
485.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
485.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
486.00	0.24	482.27	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
486.50	0.38	482.35	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
487.00	0.49	482.39	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
487.50	15.38	485.81	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
488.00	20.43	488.00	Free Outfall	Free Outfall	0.00	21.57	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .062ft Dcr= .182ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .079ft Dcr= .228ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .089ft Dcr= .258ft CRIT.DEPTH Hev= .00ft
INLET CONTROL... Submerged: HW =3.81
INLET CONTROL... Submerged: HW =6.00

Subsection: Composite Rating Curve
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
482.00	0.00	(N/A)	0.00
482.50	0.00	(N/A)	0.00
483.00	0.00	(N/A)	0.00
483.50	0.00	(N/A)	0.00
484.00	0.00	(N/A)	0.00
484.50	0.00	(N/A)	0.00
485.00	0.00	(N/A)	0.00
485.50	0.00	(N/A)	0.00
486.00	0.24	(N/A)	0.00
486.50	0.38	(N/A)	0.00
487.00	0.49	(N/A)	0.00
487.50	15.38	(N/A)	0.00
488.00	20.43	(N/A)	0.00

Contributing Structures
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	444.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	449.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	448.30	449.00
Orifice-Circular	Orifice 1	Forward	Culvert	447.50	449.00
Culvert-Circular	Culvert	Forward	TW	444.00	449.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	447.50 ft
Orifice Diameter	2.25 in
Orifice Coefficient	0.600

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	448.30 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	112.00 ft
Length (Computed Barrel)	112.01 ft
Slope (Computed)	0.011 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.130
T2 ratio (HW/D)	1.291
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	445.70 ft	T1 Flow	7.58 ft³/s
T2 Elevation	445.94 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
444.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
444.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
445.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
445.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
446.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
446.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
447.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
447.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
448.00	0.08	448.00	Free Outfall	444.16	0.00	0.00	(N/A)	0.00	H =.41
448.30	0.11	448.30	Free Outfall	444.19	0.00	0.00	(N/A)	0.00	H =.71
448.50	0.13	448.50	Free Outfall	445.20	0.00	0.00	(N/A)	0.00	H =.91
449.00	0.00	449.00	449.00	449.00	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE

Subsection: Individual Outlet Curves
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
444.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
444.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
445.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
445.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
446.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
446.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
447.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
447.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
448.00	0.00	0.00	0.00	444.16	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
448.30	0.00	0.00	0.00	444.19	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
448.50	3.76	448.50	Free Outfall	445.20	0.00	0.00	(N/A)	0.00	Weir: H =0.2ft
449.00	24.60	449.00	449.00	449.00	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.7ft

Subsection: Individual Outlet Curves
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 11.94 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
444.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
444.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
445.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
445.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
446.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
446.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
447.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
447.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
448.00	0.09	444.16	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
448.30	0.11	444.19	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
448.50	3.88	445.20	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
449.00	16.47	449.00	Free Outfall	Free Outfall	0.00	8.13	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .036ft
Dcr= .107ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .042ft
Dcr= .123ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .296ft
Dcr= .753ft CRIT.DEPTH Hev= .00ft
FULL FLOW...Lfull=109.96ft
Vh=1.350ft HL=4.727ft Hev= .00ft

Subsection: Composite Rating Curve
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
444.00	0.00	(N/A)	0.00
444.50	0.00	(N/A)	0.00
445.00	0.00	(N/A)	0.00
445.50	0.00	(N/A)	0.00
446.00	0.00	(N/A)	0.00
446.50	0.00	(N/A)	0.00
447.00	0.00	(N/A)	0.00
447.50	0.00	(N/A)	0.00
448.00	0.09	(N/A)	0.00
448.30	0.11	(N/A)	0.00
448.50	3.88	(N/A)	0.00
449.00	16.47	(N/A)	0.00

Contributing Structures
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	454.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	459.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	458.25	459.00
Orifice-Circular	Orifice 1	Forward	Culvert	457.50	459.00
Culvert-Circular	Culvert	Forward	TW	455.00	459.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	458.25 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	457.50 ft
Orifice Diameter	2.25 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	118.00 ft
Length (Computed Barrel)	118.01 ft
Slope (Computed)	0.013 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.129
T2 ratio (HW/D)	1.290
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	456.69 ft	T1 Flow	7.58 ft³/s
T2 Elevation	456.94 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
454.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
454.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
455.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
455.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
456.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
456.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
457.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
457.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
458.00	0.00	0.00	0.00	455.16	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
458.25	0.00	0.00	0.00	455.18	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
458.50	5.25	458.50	Free Outfall	456.45	0.00	0.00	(N/A)	0.00	Weir: H =0.25ft FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.75ft
459.00	27.28	459.00	459.00	459.00	0.00	0.00	(N/A)	0.00	

Subsection: Individual Outlet Curves
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
454.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
454.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
455.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
455.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
456.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
456.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
457.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
457.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
458.00	0.08	458.00	Free Outfall	455.16	0.00	0.00	(N/A)	0.00	H =.41
458.25	0.11	458.25	Free Outfall	455.18	0.00	0.00	(N/A)	0.00	H =.66
458.50	0.13	458.50	Free Outfall	456.45	0.00	0.00	(N/A)	0.00	H =.91 FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE
459.00	0.00	459.00	459.00	459.00	0.00	0.00	(N/A)	0.00	

Subsection: Individual Outlet Curves
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 12.74 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
454.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
454.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
455.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
455.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
456.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
456.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
457.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
457.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
458.00	0.09	455.16	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
458.25	0.11	455.18	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
458.50	5.37	456.45	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
459.00	14.93	459.00	Free Outfall	Free Outfall	0.00	12.35	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .036ft
Dcr= .107ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .041ft
Dcr= .120ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .373ft
Dcr= .893ft CRIT.DEPTH Hev= .00ft
FULL FLOW...Lfull=111.95ft
Vh=1.109ft HL=3.923ft Hev= .00ft

Subsection: Composite Rating Curve
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
454.00	0.00	(N/A)	0.00
454.50	0.00	(N/A)	0.00
455.00	0.00	(N/A)	0.00
455.50	0.00	(N/A)	0.00
456.00	0.00	(N/A)	0.00
456.50	0.00	(N/A)	0.00
457.00	0.00	(N/A)	0.00
457.50	0.00	(N/A)	0.00
458.00	0.09	(N/A)	0.00
458.25	0.11	(N/A)	0.00
458.50	5.37	(N/A)	0.00
459.00	14.93	(N/A)	0.00

Contributing Structures
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	484.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	490.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	Culvert	488.00	490.00
Inlet Box	Riser 1	Forward	Culvert	489.60	490.00
Inlet Box	Riser 2	Forward	Culvert	489.60	490.00
Culvert-Circular	Culvert	Forward	TW	484.25	490.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	489.60 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	488.00 ft
Orifice Diameter	1.90 in
Orifice Coefficient	0.600

Structure ID: Riser 2 Structure Type: Inlet Box	
Number of Openings	1
Elevation	489.60 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	127.00 ft
Length (Computed Barrel)	129.49 ft
Slope (Computed)	0.199 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	0.000
T2 ratio (HW/D)	1.197
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

T1 Elevation	484.25 ft	T1 Flow	7.58 ft³/s
T2 Elevation	486.05 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 1 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
484.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.50	0.00	0.00	0.00	484.39	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.00	0.00	0.00	0.00	484.42	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.50	0.00	0.00	0.00	484.44	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.60	0.00	0.00	0.00	484.44	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
490.00	10.63	490.00	490.00	490.00	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.4ft

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
484.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.50	0.06	488.50	Free Outfall	484.39	0.00	0.00	(N/A)	0.00	H =.42
489.00	0.09	489.00	Free Outfall	484.42	0.00	0.00	(N/A)	0.00	H =.92
489.50	0.11	489.50	Free Outfall	484.44	0.00	0.00	(N/A)	0.00	H =1.42
489.60	0.12	489.60	Free Outfall	484.44	0.00	0.00	(N/A)	0.00	H =1.52
490.00	0.00	490.00	490.00	490.00	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE

Subsection: Individual Outlet Curves
Label: Bio B4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 2 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
484.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.50	0.00	0.00	0.00	484.39	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.00	0.00	0.00	0.00	484.42	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.50	0.00	0.00	0.00	484.44	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
489.50	0.00	0.00	0.00	484.44	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
490.00	10.63	490.00	490.00	490.00	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.4ft

Subsection: Individual Outlet Curves
Label: Bio B4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 50.38 ft^3/s
Upstream ID = Orifice 1, Riser 1, Riser 2
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft^3/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft^3/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
484.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
485.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
486.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
487.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
488.50	0.06	484.39	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .031ft Dcr= .091ft CRIT.DEPTH Hev= .00ft
489.00	0.09	484.42	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .037ft Dcr= .111ft CRIT.DEPTH Hev= .00ft
489.50	0.11	484.44	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .042ft Dcr= .123ft CRIT.DEPTH Hev= .00ft
489.60	0.12	484.44	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .042ft Dcr= .125ft CRIT.DEPTH Hev= .00ft
490.00	20.02	490.00	Free Outfall	Free Outfall	0.00	1.23	(N/A)	0.00	INLET CONTROL.. Submerged: HW =5.75

Subsection: Composite Rating Curve
Label: Bio B4

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
484.50	0.00	(N/A)	0.00
485.00	0.00	(N/A)	0.00
485.50	0.00	(N/A)	0.00
486.00	0.00	(N/A)	0.00
486.50	0.00	(N/A)	0.00
487.00	0.00	(N/A)	0.00
487.50	0.00	(N/A)	0.00
488.00	0.00	(N/A)	0.00
488.50	0.06	(N/A)	0.00
489.00	0.09	(N/A)	0.00
489.50	0.11	(N/A)	0.00
489.60	0.12	(N/A)	0.00
490.00	20.02	(N/A)	0.00

Contributing Structures

(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
Orifice 1,Culvert (no Q: Riser 1,Riser 2)
Orifice 1,Culvert (no Q: Riser 1,Riser 2)
Orifice 1,Culvert (no Q: Riser 1,Riser 2)
Orifice 1,Culvert (no Q: Riser 1,Riser 2)
Riser 1,Riser 2,Culvert (no Q: Orifice 1)

Subsection: Outlet Input Data
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	538.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	544.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser	Forward	Culvert	543.30	544.00
Orifice-Circular	Orifice 1	Forward	Culvert	541.50	544.00
Culvert-Circular	Culvert	Forward	TW	537.50	544.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser Structure Type: Inlet Box	
Number of Openings	1
Elevation	543.30 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	541.50 ft
Orifice Diameter	3.70 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.00 in
Length	29.00 ft
Length (Computed Barrel)	29.07 ft
Slope (Computed)	0.069 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.101
T2 ratio (HW/D)	1.262
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation,
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	539.15 ft	T1 Flow	7.58 ft³/s
T2 Elevation	539.39 ft	T2 Flow	8.66 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
538.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
538.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
542.00	0.00	0.00	0.00	537.76	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
542.50	0.00	0.00	0.00	537.82	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
543.00	0.00	0.00	0.00	537.86	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
543.30	0.00	0.00	0.00	537.88	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
543.50	3.76	543.50	Free Outfall	538.76	0.00	0.00	(N/A)	0.00	Weir: H =0.2ft
544.00	24.60	544.00	544.00	544.00	0.00	0.00	(N/A)	0.00	FULLY CHARGED RISER: ADJUSTED TO WEIR: H =0.7ft

Subsection: Individual Outlet Curves
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
538.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
538.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
542.00	0.21	542.00	Free Outfall	537.76	0.00	0.00	(N/A)	0.00	H =.35
542.50	0.33	542.50	Free Outfall	537.82	0.00	0.00	(N/A)	0.00	H =.85
543.00	0.42	543.00	Free Outfall	537.86	0.00	0.00	(N/A)	0.00	H =1.35
543.30	0.46	543.30	Free Outfall	537.88	0.00	0.00	(N/A)	0.00	H =1.65
543.50	0.49	543.50	Free Outfall	538.76	0.00	0.00	(N/A)	0.00	H =1.85
544.00	0.00	544.00	544.00	544.00	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO DOWNSTREAM CONTROLLING STRUCTURE

Subsection: Individual Outlet Curves
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 29.67 ft³/s
Upstream ID = Riser, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
538.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
538.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
539.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
540.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
541.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
542.00	0.21	537.76	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .058ft Dcr= .169ft CRIT.DEPTH Hev= .00ft
542.50	0.33	537.82	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .073ft Dcr= .212ft CRIT.DEPTH Hev= .00ft
543.00	0.42	537.86	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .082ft Dcr= .239ft CRIT.DEPTH Hev= .00ft
543.30	0.46	537.88	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .087ft Dcr= .251ft CRIT.DEPTH Hev= .00ft
543.50	4.24	538.76	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
544.00	21.32	544.00	Free Outfall	Free Outfall	0.00	3.28	(N/A)	0.00	INLET CONTROL... Submerged: HW =6.50

Subsection: Composite Rating Curve
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
538.00	0.00	(N/A)	0.00
538.50	0.00	(N/A)	0.00
539.00	0.00	(N/A)	0.00
539.50	0.00	(N/A)	0.00
540.00	0.00	(N/A)	0.00
540.50	0.00	(N/A)	0.00
541.00	0.00	(N/A)	0.00
541.50	0.00	(N/A)	0.00
542.00	0.21	(N/A)	0.00
542.50	0.33	(N/A)	0.00
543.00	0.42	(N/A)	0.00
543.30	0.46	(N/A)	0.00
543.50	4.24	(N/A)	0.00
544.00	21.32	(N/A)	0.00

Contributing Structures

(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
(no Q: Riser,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Orifice 1,Culvert (no Q: Riser)
Riser,Orifice 1,Culvert
Riser,Culvert (no Q: Orifice 1)

Subsection: Outlet Input Data
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	466.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	471.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir	Forward	TW	469.50	471.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Weir Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	469.50 ft
Weir Length	25.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
466.00	0.00	(N/A)	0.00
466.50	0.00	(N/A)	0.00
467.00	0.00	(N/A)	0.00
467.50	0.00	(N/A)	0.00
468.00	0.00	(N/A)	0.00
468.50	0.00	(N/A)	0.00
469.00	0.00	(N/A)	0.00
469.50	0.00	(N/A)	0.00
470.00	26.41	(N/A)	0.00
470.50	74.40	(N/A)	0.00
471.00	136.13	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
H=.00; Htw=.00; Qfree=.00;
H=.50; Htw=.00; Qfree=26.41;
H=1.00; Htw=.00; Qfree=74.40;
H=1.50; Htw=.00; Qfree=136.13;

Subsection: Composite Rating Curve
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
466.00	0.00	(N/A)	0.00
466.50	0.00	(N/A)	0.00
467.00	0.00	(N/A)	0.00
467.50	0.00	(N/A)	0.00
468.00	0.00	(N/A)	0.00
468.50	0.00	(N/A)	0.00
469.00	0.00	(N/A)	0.00
469.50	0.00	(N/A)	0.00
470.00	26.41	(N/A)	0.00
470.50	74.40	(N/A)	0.00
471.00	136.13	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Weir
Weir
Weir
Weir

Subsection: Outlet Input Data
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	490.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	498.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	Culvert	493.50	498.00
Inlet Box	Riser 1	Forward	Culvert	497.10	498.00
Inlet Box	Riser 2	Forward	Culvert	497.10	498.00
Culvert-Circular	Culvert	Forward	TW	489.50	498.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	497.10 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	493.50 ft
Orifice Diameter	3.25 in
Orifice Coefficient	0.600

Structure ID: Riser 2 Structure Type: Inlet Box	
Number of Openings	1
Elevation	497.10 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	36.00 in
Length	130.00 ft
Length (Computed Barrel)	133.04 ft
Slope (Computed)	0.218 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.007
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.027
T2 ratio (HW/D)	1.188
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	492.58 ft	T1 Flow	42.85 ft³/s
T2 Elevation	493.06 ft	T2 Flow	48.97 ft³/s

Subsection: Outlet Input Data
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 1 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
490.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
490.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
491.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
491.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
492.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
492.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
493.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
493.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
494.00	0.00	0.00	0.00	489.69	0.00	0.00	(N/A)	0.00
494.50	0.00	0.00	0.00	489.73	0.00	0.00	(N/A)	0.00
495.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
495.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
496.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
496.50	0.00	0.00	0.00	489.82	0.00	0.00	(N/A)	0.00
497.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
497.10	0.00	0.00	0.00	489.83	0.00	0.00	(N/A)	0.00
497.50	10.63	497.50	Free Outfall	491.89	0.00	0.00	(N/A)	0.00
498.00	35.86	498.00	Free Outfall	495.19	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
Weir: H =0.4ft
Weir: H =0.9ft

Subsection: Individual Outlet Curves
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
490.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
490.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
494.00	0.17	494.00	Free Outfall	489.69	0.00	0.00	(N/A)	0.00	H =.36
494.50	0.26	494.50	Free Outfall	489.73	0.00	0.00	(N/A)	0.00	H =.86
495.00	0.32	495.00	Free Outfall	0.00	0.00	0.00	(N/A)	0.00	H =1.36
495.50	0.38	495.50	Free Outfall	0.00	0.00	0.00	(N/A)	0.00	H =1.86
496.00	0.43	496.00	Free Outfall	0.00	0.00	0.00	(N/A)	0.00	H =2.36
496.50	0.47	496.50	Free Outfall	489.82	0.00	0.00	(N/A)	0.00	H =2.86
497.00	0.51	497.00	Free Outfall	0.00	0.00	0.00	(N/A)	0.00	H =3.36
497.10	0.52	497.10	Free Outfall	489.83	0.00	0.00	(N/A)	0.00	H =3.46
497.50	0.55	497.50	Free Outfall	491.89	0.00	0.00	(N/A)	0.00	H =3.86
498.00	0.46	498.00	495.19	495.19	0.00	0.00	(N/A)	0.00	H =2.81

Subsection: Individual Outlet Curves
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 2 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
490.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
490.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
494.00	0.00	0.00	0.00	489.69	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
494.50	0.00	0.00	0.00	489.73	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
495.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
495.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
496.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
496.50	0.00	0.00	0.00	489.82	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
497.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
497.10	0.00	0.00	0.00	489.83	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
497.50	10.63	497.50	Free Outfall	491.89	0.00	0.00	(N/A)	0.00	Weir: H =0.4ft
498.00	35.86	498.00	Free Outfall	495.19	0.00	0.00	(N/A)	0.00	Weir: H =0.9ft

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 334.74 ft³/s
Upstream ID = Orifice 1, Riser 1, Riser 2
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(Into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
490.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
490.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
491.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
492.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
493.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
494.00	0.17	489.69	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .042ft Dcr= .126ft CRIT.DEPTH Hev= .00ft
494.50	0.26	489.73	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .053ft Dcr= .156ft CRIT.DEPTH Hev= .00ft
495.00	0.32	0.00	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .059ft Dcr= .175ft CRIT.DEPTH Hev= .00ft
495.50	0.38	0.00	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .064ft Dcr= .189ft CRIT.DEPTH Hev= .00ft
496.00	0.42	0.00	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .068ft Dcr= .201ft CRIT.DEPTH Hev= .00ft
496.50	0.47	489.82	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .071ft Dcr= .211ft CRIT.DEPTH Hev= .00ft
497.00	0.51	0.00	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .074ft Dcr= .219ft CRIT.DEPTH Hev= .00ft
497.10	0.52	489.83	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00	FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
497.50	21.81	491.89	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .590ft Dcr= 1.502ft CRIT.DEPTH Hev= .00ft
498.00	72.12	495.19	Free Outfall	Free Outfall	0.00	0.06	(N/A)	0.00	INLET CONTROL... Submerged: HW =5.69

Subsection: Individual Outlet Curves
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 334.74 ft³/s
Upstream ID = Orifice 1, Riser 1, Riser 2
Downstream ID = Tailwater (Pond Outfall)

Message
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .590ft Dcr= 1.502ft CRIT.DEPTH Hev= .00ft
INLET CONTROL... Submerged: HW =5.69

Subsection: Composite Rating Curve
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
490.00	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
490.50	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
491.00	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
491.50	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
492.00	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
492.50	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
493.00	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
493.50	0.00	(N/A)	0.00	(no Q: Orifice 1,Riser 1,Riser 2,Culvert)
494.00	0.17	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
494.50	0.26	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
495.00	0.32	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
495.50	0.38	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
496.00	0.42	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
496.50	0.47	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
497.00	0.51	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
497.10	0.52	(N/A)	0.00	Orifice 1,Culvert (no Q: Riser 1,Riser 2)
497.50	21.81	(N/A)	0.00	Orifice 1,Riser 1,Riser 2,Culvert
498.00	72.12	(N/A)	0.00	Orifice 1,Riser 1,Riser 2,Culvert

Subsection: Composite Rating Curve
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Contributing Structures
Orifice 1,Riser 1,Riser 2,Culvert

Requested Pond Water Surface Elevations	
Minimum (Headwater)	427.30 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	434.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Box	Culvert	Forward	TW	427.30	434.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Existing Pond Out-Proposed

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Culvert Structure Type: Culvert-Box	
Number of Barrels	1
Width	5.00 ft
Height	3.50 ft
Length	55.00 ft
Length (Computed Barrel)	55.00 ft
Slope (Computed)	0.009 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.005
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0610
M	0.7500
C	0.0400
Y	0.8000
T1 ratio (HW/D)	1.239
T2 ratio (HW/D)	1.435
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	431.64 ft	T1 Flow	114.59 ft³/s
T2 Elevation	432.32 ft	T2 Flow	130.96 ft³/s

Subsection: Outlet Input Data
Label: Existing Pond Out-Proposed

Return Event: 1 years
Storm Event: 1-Year

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Existing Pond Out-Proposed

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Box)

Mannings open channel maximum capacity: 245.26 ft³/s
Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
427.30	0.00	(N/A)	0.00
427.80	4.33	(N/A)	0.00
428.30	12.26	(N/A)	0.00
428.80	22.53	(N/A)	0.00
429.30	34.65	(N/A)	0.00
429.80	48.43	(N/A)	0.00
430.30	63.67	(N/A)	0.00
430.80	80.21	(N/A)	0.00
431.30	97.98	(N/A)	0.00
431.80	116.94	(N/A)	0.00
432.30	130.39	(N/A)	0.00
432.80	144.20	(N/A)	0.00
433.30	156.93	(N/A)	0.00
433.80	168.66	(N/A)	0.00
434.00	173.14	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .143ft
Dcr= .286ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .286ft
Dcr= .572ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .429ft
Dcr= .858ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .571ft
Dcr= 1.143ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .714ft
Dcr= 1.429ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .857ft
Dcr= 1.714ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.000ft
Dcr= 2.000ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.143ft
Dcr= 2.285ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.286ft
Dcr= 2.571ft CRIT.DEPTH Hev= .00ft
INLET CONTROL... Transition: HW =5.00
INLET CONTROL... Submerged: HW =5.50
INLET CONTROL... Submerged: HW =6.00
INLET CONTROL... Submerged: HW =6.50
INLET CONTROL... Submerged: HW =6.70

Subsection: Composite Rating Curve
Label: Existing Pond Out-Proposed

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
427.30	0.00	(N/A)	0.00
427.80	4.33	(N/A)	0.00
428.30	12.26	(N/A)	0.00
428.80	22.53	(N/A)	0.00
429.30	34.65	(N/A)	0.00
429.80	48.43	(N/A)	0.00
430.30	63.67	(N/A)	0.00
430.80	80.21	(N/A)	0.00
431.30	97.98	(N/A)	0.00
431.80	116.94	(N/A)	0.00
432.30	130.39	(N/A)	0.00
432.80	144.20	(N/A)	0.00
433.30	156.93	(N/A)	0.00
433.80	168.66	(N/A)	0.00
434.00	173.14	(N/A)	0.00

Contributing Structures

None Contributing
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert

Subsection: Outlet Input Data
Label: Existing Wetland Out

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	398.60 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	408.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Box	Culvert	Forward	TW	398.60	408.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert Structure Type: Culvert-Box	
Number of Barrels	1
Width	13.00 ft
Height	7.50 ft
Length	155.00 ft
Length (Computed Barrel)	155.00 ft
Slope (Computed)	0.003 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.002
Kr	0.000
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
K	0.0260
M	1.0000
C	0.0347
Y	0.8100
T1 ratio (HW/D)	1.177
T2 ratio (HW/D)	1.364
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	407.42 ft	T1 Flow	934.55 ft³/s
T2 Elevation	408.83 ft	T2 Flow	1,068.06 ft³/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Existing Wetland Out

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Box)

Mannings open channel maximum capacity: 1,454.14 ft³/s
Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
398.60	0.00	(N/A)	0.00
399.10	11.53	(N/A)	0.00
399.60	31.85	(N/A)	0.00
400.10	58.54	(N/A)	0.00
400.60	90.03	(N/A)	0.00
401.10	125.88	(N/A)	0.00
401.60	165.59	(N/A)	0.00
402.10	208.54	(N/A)	0.00
402.60	254.76	(N/A)	0.00
403.10	304.12	(N/A)	0.00
403.60	356.11	(N/A)	0.00
404.10	410.95	(N/A)	0.00
404.60	468.13	(N/A)	0.00
405.10	527.77	(N/A)	0.00
405.60	590.02	(N/A)	0.00
406.10	654.12	(N/A)	0.00
406.60	720.69	(N/A)	0.00
407.10	789.42	(N/A)	0.00
407.60	860.01	(N/A)	0.00
408.00	917.86	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
BACKWATER CONTROL.. Vh= .126ft
hwDi= .311ft Lbw= 155.0ft
Hev= .00ft
CRIT.DEPTH CONTROL Vh= .286ft
Dcr= .571ft H_JUMP IN PIPE
Hev= .00ft
CRIT.DEPTH CONTROL Vh= .429ft
Dcr= .857ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .571ft
Dcr= 1.142ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .714ft
Dcr= 1.428ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .857ft
Dcr= 1.715ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.000ft
Dcr= 2.000ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.143ft
Dcr= 2.285ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.286ft
Dcr= 2.572ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.429ft
Dcr= 2.857ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.572ft
Dcr= 3.143ft CRIT.DEPTH Hev= .00ft

Subsection: Individual Outlet Curves
Label: Existing Wetland Out

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Box)

Mannings open channel maximum capacity: 1,454.14 ft³/s
Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

CRIT.DEPTH CONTROL Vh= 1.714ft
Dcr= 3.429ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.857ft
Dcr= 3.714ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.000ft
Dcr= 4.001ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.143ft
Dcr= 4.285ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.286ft
Dcr= 4.571ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.429ft
Dcr= 4.857ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.571ft
Dcr= 5.143ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 2.685ft
Dcr= 5.371ft CRIT.DEPTH Hev= .00ft

Subsection: Composite Rating Curve
Label: Existing Wetland Out

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
398.60	0.00	(N/A)	0.00
399.10	11.53	(N/A)	0.00
399.60	31.85	(N/A)	0.00
400.10	58.54	(N/A)	0.00
400.60	90.03	(N/A)	0.00
401.10	125.88	(N/A)	0.00
401.60	165.59	(N/A)	0.00
402.10	208.54	(N/A)	0.00
402.60	254.76	(N/A)	0.00
403.10	304.12	(N/A)	0.00
403.60	356.11	(N/A)	0.00
404.10	410.95	(N/A)	0.00
404.60	468.13	(N/A)	0.00
405.10	527.77	(N/A)	0.00
405.60	590.02	(N/A)	0.00
406.10	654.12	(N/A)	0.00
406.60	720.69	(N/A)	0.00
407.10	789.42	(N/A)	0.00
407.60	860.01	(N/A)	0.00
408.00	917.86	(N/A)	0.00

Contributing Structures

None Contributing
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert
Culvert

Subsection: Outlet Input Data
Label: H-A2

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	432.10 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	441.05 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	434.23	441.05
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-A2

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	434.23 ft
Orifice Diameter	36.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
432.10	0.00	(N/A)	0.00
432.60	0.00	(N/A)	0.00
433.10	0.00	(N/A)	0.00
433.60	0.00	(N/A)	0.00
434.10	0.00	(N/A)	0.00
434.23	0.00	(N/A)	0.00
434.60	0.80	(N/A)	0.00
435.10	4.25	(N/A)	0.00
435.60	10.07	(N/A)	0.00
436.10	17.84	(N/A)	0.00
436.60	27.14	(N/A)	0.00
437.10	37.48	(N/A)	0.00
437.60	46.52	(N/A)	0.00
438.10	52.38	(N/A)	0.00
438.60	57.64	(N/A)	0.00
439.10	62.45	(N/A)	0.00
439.60	66.93	(N/A)	0.00
440.10	71.12	(N/A)	0.00
440.60	75.08	(N/A)	0.00
441.05	78.47	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .094ft
Dcr= .277ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .226ft
Dcr= .644ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .366ft
Dcr= 1.004ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .518ft
Dcr= 1.352ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .686ft
Dcr= 1.684ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .879ft
Dcr= 1.992ft CRIT.DEPTH Hev= .00ft
H =1.87
H =2.37
H =2.87
H =3.37
H =3.87
H =4.37
H =4.87

Subsection: Individual Outlet Curves
Label: H-A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =5.32

Subsection: Outlet Input Data
Label: H-A3

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	502.40 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	508.90 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	503.93	518.90
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-A3

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	503.93 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
502.40	0.00	(N/A)	0.00
502.90	0.00	(N/A)	0.00
503.40	0.00	(N/A)	0.00
503.90	0.00	(N/A)	0.00
503.93	0.00	(N/A)	0.00
504.40	1.03	(N/A)	0.00
504.90	4.09	(N/A)	0.00
505.40	8.68	(N/A)	0.00
505.90	14.26	(N/A)	0.00
506.40	18.33	(N/A)	0.00
506.90	21.22	(N/A)	0.00
507.40	23.76	(N/A)	0.00
507.90	26.06	(N/A)	0.00
508.40	28.17	(N/A)	0.00
508.90	30.13	(N/A)	0.00
509.40	31.97	(N/A)	0.00
509.90	33.71	(N/A)	0.00
510.40	35.36	(N/A)	0.00
510.90	36.95	(N/A)	0.00
511.40	38.46	(N/A)	0.00
511.90	39.92	(N/A)	0.00
512.40	41.33	(N/A)	0.00
512.90	42.69	(N/A)	0.00
513.40	44.01	(N/A)	0.00
513.90	45.29	(N/A)	0.00
514.40	46.53	(N/A)	0.00
514.90	47.74	(N/A)	0.00
515.40	48.93	(N/A)	0.00
515.90	50.08	(N/A)	0.00
516.40	51.21	(N/A)	0.00
516.90	52.31	(N/A)	0.00
517.40	53.40	(N/A)	0.00
517.90	54.46	(N/A)	0.00
518.40	55.49	(N/A)	0.00
518.90	56.52	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .121ft
Dcr= .349ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .261ft
Dcr= .710ft CRIT.DEPTH Hev= .00ft

Subsection: Individual Outlet Curves
Label: H-A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
CRIT.DEPTH CONTROL Vh= .419ft
Dcr= 1.051ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .510ft
Dcr= 1.361ft CRIT.DEPTH Hev= .00ft
H =1.47
H =1.97
H =2.47
H =2.97
H =3.47
H =3.97
H =4.47
H =4.97
H =5.47
H =5.97
H =6.47
H =6.97
H =7.47
H =7.97
H =8.47
H =8.97
H =9.47
H =9.97
H =10.47
H =10.97
H =11.47
H =11.97
H =12.47
H =12.97
H =13.47
H =13.97

Subsection: Outlet Input Data
Label: H-A4

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	504.34 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	520.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	506.33	520.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-A4

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	506.33 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
504.34	0.00	(N/A)	0.00
504.84	0.00	(N/A)	0.00
505.34	0.00	(N/A)	0.00
505.84	0.00	(N/A)	0.00
506.33	0.00	(N/A)	0.00
506.34	0.00	(N/A)	0.00
506.84	1.20	(N/A)	0.00
507.34	4.40	(N/A)	0.00
507.84	9.10	(N/A)	0.00
508.34	15.20	(N/A)	0.00
508.84	18.58	(N/A)	0.00
509.34	21.44	(N/A)	0.00
509.84	23.96	(N/A)	0.00
510.34	26.23	(N/A)	0.00
510.84	28.33	(N/A)	0.00
511.34	30.28	(N/A)	0.00
511.84	32.11	(N/A)	0.00
512.34	33.84	(N/A)	0.00
512.84	35.49	(N/A)	0.00
513.34	37.07	(N/A)	0.00
513.84	38.58	(N/A)	0.00
514.34	40.03	(N/A)	0.00
514.84	41.44	(N/A)	0.00
515.34	42.79	(N/A)	0.00
515.84	44.11	(N/A)	0.00
516.34	45.39	(N/A)	0.00
516.84	46.63	(N/A)	0.00
517.34	47.84	(N/A)	0.00
517.84	49.02	(N/A)	0.00
518.34	50.17	(N/A)	0.00
518.84	51.30	(N/A)	0.00
519.34	52.40	(N/A)	0.00
519.84	53.48	(N/A)	0.00
520.00	53.82	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .002ft
Dcr= .008ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .132ft
Dcr= .378ft CRIT.DEPTH Hev= .00ft

Subsection: Individual Outlet Curves
Label: H-A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
CRIT.DEPTH CONTROL Vh= .272ft
Dcr= .737ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .432ft
Dcr= 1.077ft CRIT.DEPTH Hev= .00ft
H =1.01
H =1.51
H =2.01
H =2.51
H =3.01
H =3.51
H =4.01
H =4.51
H =5.01
H =5.51
H =6.01
H =6.51
H =7.01
H =7.51
H =8.01
H =8.51
H =9.01
H =9.51
H =10.01
H =10.51
H =11.01
H =11.51
H =12.01
H =12.51
H =12.67

Subsection: Outlet Input Data
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	553.27 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	610.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	555.95	610.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	555.95 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
553.27	0.00	(N/A)	0.00
553.77	0.00	(N/A)	0.00
554.27	0.00	(N/A)	0.00
554.77	0.00	(N/A)	0.00
555.27	0.00	(N/A)	0.00
555.77	0.00	(N/A)	0.00
555.95	0.00	(N/A)	0.00
556.27	0.49	(N/A)	0.00
556.77	2.98	(N/A)	0.00
557.27	7.18	(N/A)	0.00
557.77	12.52	(N/A)	0.00
558.27	17.37	(N/A)	0.00
558.77	20.40	(N/A)	0.00
559.27	23.03	(N/A)	0.00
559.77	25.39	(N/A)	0.00
560.27	27.55	(N/A)	0.00
560.77	29.55	(N/A)	0.00
561.27	31.43	(N/A)	0.00
561.77	33.20	(N/A)	0.00
562.27	34.88	(N/A)	0.00
562.77	36.48	(N/A)	0.00
563.27	38.01	(N/A)	0.00
563.77	39.49	(N/A)	0.00
564.27	40.91	(N/A)	0.00
564.77	42.28	(N/A)	0.00
565.27	43.61	(N/A)	0.00
565.77	44.91	(N/A)	0.00
566.27	46.16	(N/A)	0.00
566.77	47.38	(N/A)	0.00
567.27	48.57	(N/A)	0.00
567.77	49.74	(N/A)	0.00
568.27	50.87	(N/A)	0.00
568.77	51.98	(N/A)	0.00
569.27	53.07	(N/A)	0.00
569.77	54.14	(N/A)	0.00
570.27	55.18	(N/A)	0.00
570.77	56.21	(N/A)	0.00
571.27	57.22	(N/A)	0.00
571.77	58.21	(N/A)	0.00
572.27	59.18	(N/A)	0.00
572.77	60.14	(N/A)	0.00
573.27	61.08	(N/A)	0.00
573.77	62.01	(N/A)	0.00
574.27	62.93	(N/A)	0.00
574.77	63.83	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
575.27	64.72	(N/A)	0.00
575.77	65.60	(N/A)	0.00
576.27	66.46	(N/A)	0.00
576.77	67.32	(N/A)	0.00
577.27	68.16	(N/A)	0.00
577.77	68.99	(N/A)	0.00
578.27	69.82	(N/A)	0.00
578.77	70.63	(N/A)	0.00
579.27	71.44	(N/A)	0.00
579.77	72.23	(N/A)	0.00
580.27	73.02	(N/A)	0.00
580.77	73.80	(N/A)	0.00
581.27	74.57	(N/A)	0.00
581.77	75.33	(N/A)	0.00
582.27	76.09	(N/A)	0.00
582.77	76.83	(N/A)	0.00
583.27	77.57	(N/A)	0.00
583.77	78.31	(N/A)	0.00
584.27	79.03	(N/A)	0.00
584.77	79.75	(N/A)	0.00
585.27	80.47	(N/A)	0.00
585.77	81.17	(N/A)	0.00
586.27	81.87	(N/A)	0.00
586.77	82.57	(N/A)	0.00
587.27	83.26	(N/A)	0.00
587.77	83.94	(N/A)	0.00
588.27	84.62	(N/A)	0.00
588.77	85.29	(N/A)	0.00
589.27	85.96	(N/A)	0.00
589.77	86.62	(N/A)	0.00
590.27	87.28	(N/A)	0.00
590.77	87.93	(N/A)	0.00
591.27	88.58	(N/A)	0.00
591.77	89.22	(N/A)	0.00
592.27	89.86	(N/A)	0.00
592.77	90.50	(N/A)	0.00
593.27	91.13	(N/A)	0.00
593.77	91.75	(N/A)	0.00
594.27	92.37	(N/A)	0.00
594.77	92.99	(N/A)	0.00
595.27	93.60	(N/A)	0.00
595.77	94.21	(N/A)	0.00
596.27	94.81	(N/A)	0.00
596.77	95.42	(N/A)	0.00
597.27	96.01	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
597.77	96.61	(N/A)	0.00
598.27	97.20	(N/A)	0.00
598.77	97.78	(N/A)	0.00
599.27	98.37	(N/A)	0.00
599.77	98.94	(N/A)	0.00
600.27	99.52	(N/A)	0.00
600.77	100.09	(N/A)	0.00
601.27	100.66	(N/A)	0.00
601.77	101.23	(N/A)	0.00
602.27	101.79	(N/A)	0.00
602.77	102.35	(N/A)	0.00
603.27	102.91	(N/A)	0.00
603.77	103.46	(N/A)	0.00
604.27	104.01	(N/A)	0.00
604.77	104.56	(N/A)	0.00
605.27	105.11	(N/A)	0.00
605.77	105.65	(N/A)	0.00
606.27	106.19	(N/A)	0.00
606.77	106.73	(N/A)	0.00
607.27	107.26	(N/A)	0.00
607.77	107.79	(N/A)	0.00
608.27	108.32	(N/A)	0.00
608.77	108.85	(N/A)	0.00
609.27	109.37	(N/A)	0.00
609.77	109.89	(N/A)	0.00
610.00	110.13	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .082ft
Dcr= .239ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .217ft
Dcr= .603ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .369ft
Dcr= .951ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .548ft
Dcr= 1.272ft CRIT.DEPTH Hev= .00ft
H =1.32
H =1.82
H =2.32
H =2.82

Subsection: Individual Outlet Curves
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =3.32
H =3.82
H =4.32
H =4.82
H =5.32
H =5.82
H =6.32
H =6.82
H =7.32
H =7.82
H =8.32
H =8.82
H =9.32
H =9.82
H =10.32
H =10.82
H =11.32
H =11.82
H =12.32
H =12.82
H =13.32
H =13.82
H =14.32
H =14.82
H =15.32
H =15.82
H =16.32
H =16.82
H =17.32
H =17.82
H =18.32
H =18.82
H =19.32
H =19.82
H =20.32
H =20.82
H =21.32
H =21.82
H =22.32
H =22.82
H =23.32
H =23.82
H =24.32
H =24.82
H =25.32
H =25.82
H =26.32

Subsection: Individual Outlet Curves
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =26.82
H =27.32
H =27.82
H =28.32
H =28.82
H =29.32
H =29.82
H =30.32
H =30.82
H =31.32
H =31.82
H =32.32
H =32.82
H =33.32
H =33.82
H =34.32
H =34.82
H =35.32
H =35.82
H =36.32
H =36.82
H =37.32
H =37.82
H =38.32
H =38.82
H =39.32
H =39.82
H =40.32
H =40.82
H =41.32
H =41.82
H =42.32
H =42.82
H =43.32
H =43.82
H =44.32
H =44.82
H =45.32
H =45.82
H =46.32
H =46.82
H =47.32
H =47.82
H =48.32
H =48.82
H =49.32
H =49.82

Subsection: Individual Outlet Curves
Label: H-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =50.32
H =50.82
H =51.32
H =51.82
H =52.32
H =52.82
H =53.05

Subsection: Outlet Input Data
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	580.70 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	650.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	583.40	650.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	583.40 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
580.70	0.00	(N/A)	0.00
581.20	0.00	(N/A)	0.00
581.70	0.00	(N/A)	0.00
582.20	0.00	(N/A)	0.00
582.70	0.00	(N/A)	0.00
583.20	0.00	(N/A)	0.00
583.40	0.00	(N/A)	0.00
583.70	0.43	(N/A)	0.00
584.20	2.85	(N/A)	0.00
584.70	6.98	(N/A)	0.00
585.20	12.29	(N/A)	0.00
585.70	17.24	(N/A)	0.00
586.20	20.29	(N/A)	0.00
586.70	22.93	(N/A)	0.00
587.20	25.30	(N/A)	0.00
587.70	27.47	(N/A)	0.00
588.20	29.48	(N/A)	0.00
588.70	31.35	(N/A)	0.00
589.20	33.13	(N/A)	0.00
589.70	34.81	(N/A)	0.00
590.20	36.42	(N/A)	0.00
590.70	37.95	(N/A)	0.00
591.20	39.43	(N/A)	0.00
591.70	40.85	(N/A)	0.00
592.20	42.23	(N/A)	0.00
592.70	43.56	(N/A)	0.00
593.20	44.85	(N/A)	0.00
593.70	46.11	(N/A)	0.00
594.20	47.33	(N/A)	0.00
594.70	48.53	(N/A)	0.00
595.20	49.69	(N/A)	0.00
595.70	50.83	(N/A)	0.00
596.20	51.94	(N/A)	0.00
596.70	53.03	(N/A)	0.00
597.20	54.10	(N/A)	0.00
597.70	55.14	(N/A)	0.00
598.20	56.17	(N/A)	0.00
598.70	57.18	(N/A)	0.00
599.20	58.17	(N/A)	0.00
599.70	59.14	(N/A)	0.00
600.20	60.10	(N/A)	0.00
600.70	61.05	(N/A)	0.00
601.20	61.98	(N/A)	0.00
601.70	62.89	(N/A)	0.00
602.20	63.79	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
602.70	64.68	(N/A)	0.00
603.20	65.56	(N/A)	0.00
603.70	66.43	(N/A)	0.00
604.20	67.28	(N/A)	0.00
604.70	68.13	(N/A)	0.00
605.20	68.96	(N/A)	0.00
605.70	69.78	(N/A)	0.00
606.20	70.60	(N/A)	0.00
606.70	71.40	(N/A)	0.00
607.20	72.20	(N/A)	0.00
607.70	72.99	(N/A)	0.00
608.20	73.77	(N/A)	0.00
608.70	74.54	(N/A)	0.00
609.20	75.30	(N/A)	0.00
609.70	76.06	(N/A)	0.00
610.20	76.80	(N/A)	0.00
610.70	77.54	(N/A)	0.00
611.20	78.28	(N/A)	0.00
611.70	79.00	(N/A)	0.00
612.20	79.72	(N/A)	0.00
612.70	80.44	(N/A)	0.00
613.20	81.15	(N/A)	0.00
613.70	81.85	(N/A)	0.00
614.20	82.54	(N/A)	0.00
614.70	83.23	(N/A)	0.00
615.20	83.92	(N/A)	0.00
615.70	84.59	(N/A)	0.00
616.20	85.27	(N/A)	0.00
616.70	85.93	(N/A)	0.00
617.20	86.60	(N/A)	0.00
617.70	87.26	(N/A)	0.00
618.20	87.91	(N/A)	0.00
618.70	88.56	(N/A)	0.00
619.20	89.20	(N/A)	0.00
619.70	89.84	(N/A)	0.00
620.20	90.47	(N/A)	0.00
620.70	91.10	(N/A)	0.00
621.20	91.73	(N/A)	0.00
621.70	92.35	(N/A)	0.00
622.20	92.96	(N/A)	0.00
622.70	93.58	(N/A)	0.00
623.20	94.19	(N/A)	0.00
623.70	94.79	(N/A)	0.00
624.20	95.39	(N/A)	0.00
624.70	95.99	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
625.20	96.58	(N/A)	0.00
625.70	97.17	(N/A)	0.00
626.20	97.76	(N/A)	0.00
626.70	98.34	(N/A)	0.00
627.20	98.92	(N/A)	0.00
627.70	99.50	(N/A)	0.00
628.20	100.07	(N/A)	0.00
628.70	100.64	(N/A)	0.00
629.20	101.21	(N/A)	0.00
629.70	101.77	(N/A)	0.00
630.20	102.33	(N/A)	0.00
630.70	102.89	(N/A)	0.00
631.20	103.44	(N/A)	0.00
631.70	103.99	(N/A)	0.00
632.20	104.54	(N/A)	0.00
632.70	105.09	(N/A)	0.00
633.20	105.63	(N/A)	0.00
633.70	106.17	(N/A)	0.00
634.20	106.70	(N/A)	0.00
634.70	107.24	(N/A)	0.00
635.20	107.77	(N/A)	0.00
635.70	108.30	(N/A)	0.00
636.20	108.83	(N/A)	0.00
636.70	109.35	(N/A)	0.00
637.20	109.87	(N/A)	0.00
637.70	110.39	(N/A)	0.00
638.20	110.91	(N/A)	0.00
638.70	111.42	(N/A)	0.00
639.20	111.93	(N/A)	0.00
639.70	112.44	(N/A)	0.00
640.20	112.95	(N/A)	0.00
640.70	113.45	(N/A)	0.00
641.20	113.96	(N/A)	0.00
641.70	114.46	(N/A)	0.00
642.20	114.96	(N/A)	0.00
642.70	115.45	(N/A)	0.00
643.20	115.95	(N/A)	0.00
643.70	116.44	(N/A)	0.00
644.20	116.93	(N/A)	0.00
644.70	117.42	(N/A)	0.00
645.20	117.90	(N/A)	0.00
645.70	118.39	(N/A)	0.00
646.20	118.87	(N/A)	0.00
646.70	119.35	(N/A)	0.00
647.20	119.83	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
647.70	120.30	(N/A)	0.00
648.20	120.78	(N/A)	0.00
648.70	121.25	(N/A)	0.00
649.20	121.72	(N/A)	0.00
649.70	122.19	(N/A)	0.00
650.00	122.47	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .076ft
Dcr= .224ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .212ft
Dcr= .589ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .362ft
Dcr= .938ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .540ft
Dcr= 1.260ft CRIT.DEPTH Hev= .00ft
H =1.30
H =1.80
H =2.30
H =2.80
H =3.30
H =3.80
H =4.30
H =4.80
H =5.30
H =5.80
H =6.30
H =6.80
H =7.30
H =7.80
H =8.30
H =8.80
H =9.30
H =9.80
H =10.30
H =10.80
H =11.30
H =11.80
H =12.30
H =12.80

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =13.30
H =13.80
H =14.30
H =14.80
H =15.30
H =15.80
H =16.30
H =16.80
H =17.30
H =17.80
H =18.30
H =18.80
H =19.30
H =19.80
H =20.30
H =20.80
H =21.30
H =21.80
H =22.30
H =22.80
H =23.30
H =23.80
H =24.30
H =24.80
H =25.30
H =25.80
H =26.30
H =26.80
H =27.30
H =27.80
H =28.30
H =28.80
H =29.30
H =29.80
H =30.30
H =30.80
H =31.30
H =31.80
H =32.30
H =32.80
H =33.30
H =33.80
H =34.30
H =34.80
H =35.30
H =35.80
H =36.30

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =36.80
H =37.30
H =37.80
H =38.30
H =38.80
H =39.30
H =39.80
H =40.30
H =40.80
H =41.30
H =41.80
H =42.30
H =42.80
H =43.30
H =43.80
H =44.30
H =44.80
H =45.30
H =45.80
H =46.30
H =46.80
H =47.30
H =47.80
H =48.30
H =48.80
H =49.30
H =49.80
H =50.30
H =50.80
H =51.30
H =51.80
H =52.30
H =52.80
H =53.30
H =53.80
H =54.30
H =54.80
H =55.30
H =55.80
H =56.30
H =56.80
H =57.30
H =57.80
H =58.30
H =58.80
H =59.30
H =59.80

Subsection: Individual Outlet Curves
Label: H-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =60.30
H =60.80
H =61.30
H =61.80
H =62.30
H =62.80
H =63.30
H =63.80
H =64.30
H =64.80
H =65.30
H =65.60

Requested Pond Water Surface Elevations	
Minimum (Headwater)	570.31 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	576.81 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	571.63	586.81
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	571.63 ft
Orifice Diameter	18.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
570.31	0.00	(N/A)	0.00
570.81	0.00	(N/A)	0.00
571.31	0.00	(N/A)	0.00
571.63	0.00	(N/A)	0.00
571.81	0.13	(N/A)	0.00
572.31	1.76	(N/A)	0.00
572.81	4.76	(N/A)	0.00
573.31	8.20	(N/A)	0.00
573.81	10.17	(N/A)	0.00
574.31	11.82	(N/A)	0.00
574.81	13.26	(N/A)	0.00
575.31	14.56	(N/A)	0.00
575.81	15.75	(N/A)	0.00
576.31	16.86	(N/A)	0.00
576.81	17.90	(N/A)	0.00
577.31	18.88	(N/A)	0.00
577.81	19.82	(N/A)	0.00
578.31	20.71	(N/A)	0.00
578.81	21.57	(N/A)	0.00
579.31	22.39	(N/A)	0.00
579.81	23.18	(N/A)	0.00
580.31	23.95	(N/A)	0.00
580.81	24.69	(N/A)	0.00
581.31	25.42	(N/A)	0.00
581.81	26.12	(N/A)	0.00
582.31	26.80	(N/A)	0.00
582.81	27.47	(N/A)	0.00
583.31	28.12	(N/A)	0.00
583.81	28.76	(N/A)	0.00
584.31	29.38	(N/A)	0.00
584.81	29.99	(N/A)	0.00
585.31	30.58	(N/A)	0.00
585.81	31.17	(N/A)	0.00
586.31	31.74	(N/A)	0.00
586.81	32.31	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .045ft
Dcr= .134ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .182ft
Dcr= .499ft CRIT.DEPTH Hev= .00ft

Subsection: Individual Outlet Curves
Label: H-A7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

CRIT.DEPTH CONTROL Vh= .341ft
Dcr= .839ft CRIT.DEPTH Hev= .00ft
H =.93
H =1.43
H =1.93
H =2.43
H =2.93
H =3.43
H =3.93
H =4.43
H =4.93
H =5.43
H =5.93
H =6.43
H =6.93
H =7.43
H =7.93
H =8.43
H =8.93
H =9.43
H =9.93
H =10.43
H =10.93
H =11.43
H =11.93
H =12.43
H =12.93
H =13.43
H =13.93
H =14.43

Requested Pond Water Surface Elevations	
Minimum (Headwater)	485.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	590.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	485.50	590.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	485.50 ft
Orifice Diameter	36.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
485.00	0.00	(N/A)	0.00
485.50	0.00	(N/A)	0.00
486.00	1.44	(N/A)	0.00
486.50	5.55	(N/A)	0.00
487.00	11.92	(N/A)	0.00
487.50	20.14	(N/A)	0.00
488.00	29.75	(N/A)	0.00
488.50	41.67	(N/A)	0.00
489.00	48.11	(N/A)	0.00
489.50	53.79	(N/A)	0.00
490.00	58.93	(N/A)	0.00
490.50	63.65	(N/A)	0.00
491.00	68.04	(N/A)	0.00
491.50	72.17	(N/A)	0.00
492.00	76.07	(N/A)	0.00
492.50	79.79	(N/A)	0.00
493.00	83.33	(N/A)	0.00
493.50	86.74	(N/A)	0.00
494.00	90.01	(N/A)	0.00
494.50	93.17	(N/A)	0.00
495.00	96.23	(N/A)	0.00
495.50	99.19	(N/A)	0.00
496.00	102.06	(N/A)	0.00
496.50	104.86	(N/A)	0.00
497.00	107.58	(N/A)	0.00
497.50	110.24	(N/A)	0.00
498.00	112.84	(N/A)	0.00
498.50	115.37	(N/A)	0.00
499.00	117.85	(N/A)	0.00
499.50	120.28	(N/A)	0.00
500.00	122.67	(N/A)	0.00
500.50	125.00	(N/A)	0.00
501.00	127.30	(N/A)	0.00
501.50	129.55	(N/A)	0.00
502.00	131.76	(N/A)	0.00
502.50	133.94	(N/A)	0.00
503.00	136.09	(N/A)	0.00
503.50	138.20	(N/A)	0.00
504.00	140.27	(N/A)	0.00
504.50	142.32	(N/A)	0.00
505.00	144.34	(N/A)	0.00
505.50	146.33	(N/A)	0.00
506.00	148.30	(N/A)	0.00
506.50	150.23	(N/A)	0.00
507.00	152.15	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
507.50	154.04	(N/A)	0.00
508.00	155.91	(N/A)	0.00
508.50	157.75	(N/A)	0.00
509.00	159.57	(N/A)	0.00
509.50	161.38	(N/A)	0.00
510.00	163.16	(N/A)	0.00
510.50	164.92	(N/A)	0.00
511.00	166.67	(N/A)	0.00
511.50	168.40	(N/A)	0.00
512.00	170.11	(N/A)	0.00
512.50	171.80	(N/A)	0.00
513.00	173.48	(N/A)	0.00
513.50	175.14	(N/A)	0.00
514.00	176.78	(N/A)	0.00
514.50	178.41	(N/A)	0.00
515.00	180.02	(N/A)	0.00
515.50	181.62	(N/A)	0.00
516.00	183.21	(N/A)	0.00
516.50	184.78	(N/A)	0.00
517.00	186.34	(N/A)	0.00
517.50	187.89	(N/A)	0.00
518.00	189.42	(N/A)	0.00
518.50	190.94	(N/A)	0.00
519.00	192.45	(N/A)	0.00
519.50	193.95	(N/A)	0.00
520.00	195.44	(N/A)	0.00
520.50	196.91	(N/A)	0.00
521.00	198.38	(N/A)	0.00
521.50	199.83	(N/A)	0.00
522.00	201.27	(N/A)	0.00
522.50	202.71	(N/A)	0.00
523.00	204.13	(N/A)	0.00
523.50	205.54	(N/A)	0.00
524.00	206.94	(N/A)	0.00
524.50	208.34	(N/A)	0.00
525.00	209.72	(N/A)	0.00
525.50	211.10	(N/A)	0.00
526.00	212.46	(N/A)	0.00
526.50	213.82	(N/A)	0.00
527.00	215.17	(N/A)	0.00
527.50	216.51	(N/A)	0.00
528.00	217.84	(N/A)	0.00
528.50	219.17	(N/A)	0.00
529.00	220.48	(N/A)	0.00
529.50	221.79	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
530.00	223.09	(N/A)	0.00
530.50	224.39	(N/A)	0.00
531.00	225.67	(N/A)	0.00
531.50	226.95	(N/A)	0.00
532.00	228.22	(N/A)	0.00
532.50	229.49	(N/A)	0.00
533.00	230.74	(N/A)	0.00
533.50	231.99	(N/A)	0.00
534.00	233.24	(N/A)	0.00
534.50	234.48	(N/A)	0.00
535.00	235.71	(N/A)	0.00
535.50	236.93	(N/A)	0.00
536.00	238.15	(N/A)	0.00
536.50	239.36	(N/A)	0.00
537.00	240.57	(N/A)	0.00
537.50	241.77	(N/A)	0.00
538.00	242.96	(N/A)	0.00
538.50	244.15	(N/A)	0.00
539.00	245.33	(N/A)	0.00
539.50	246.51	(N/A)	0.00
540.00	247.68	(N/A)	0.00
540.50	248.84	(N/A)	0.00
541.00	250.00	(N/A)	0.00
541.50	251.16	(N/A)	0.00
542.00	252.31	(N/A)	0.00
542.50	253.45	(N/A)	0.00
543.00	254.59	(N/A)	0.00
543.50	255.73	(N/A)	0.00
544.00	256.86	(N/A)	0.00
544.50	257.98	(N/A)	0.00
545.00	259.10	(N/A)	0.00
545.50	260.21	(N/A)	0.00
546.00	261.32	(N/A)	0.00
546.50	262.43	(N/A)	0.00
547.00	263.53	(N/A)	0.00
547.50	264.62	(N/A)	0.00
548.00	265.72	(N/A)	0.00
548.50	266.80	(N/A)	0.00
549.00	267.88	(N/A)	0.00
549.50	268.96	(N/A)	0.00
550.00	270.04	(N/A)	0.00
550.50	271.11	(N/A)	0.00
551.00	272.17	(N/A)	0.00
551.50	273.23	(N/A)	0.00
552.00	274.29	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
552.50	275.34	(N/A)	0.00
553.00	276.39	(N/A)	0.00
553.50	277.44	(N/A)	0.00
554.00	278.48	(N/A)	0.00
554.50	279.51	(N/A)	0.00
555.00	280.55	(N/A)	0.00
555.50	281.58	(N/A)	0.00
556.00	282.60	(N/A)	0.00
556.50	283.62	(N/A)	0.00
557.00	284.64	(N/A)	0.00
557.50	285.66	(N/A)	0.00
558.00	286.67	(N/A)	0.00
558.50	287.68	(N/A)	0.00
559.00	288.68	(N/A)	0.00
559.50	289.68	(N/A)	0.00
560.00	290.68	(N/A)	0.00
560.50	291.67	(N/A)	0.00
561.00	292.66	(N/A)	0.00
561.50	293.65	(N/A)	0.00
562.00	294.63	(N/A)	0.00
562.50	295.61	(N/A)	0.00
563.00	296.59	(N/A)	0.00
563.50	297.57	(N/A)	0.00
564.00	298.54	(N/A)	0.00
564.50	299.50	(N/A)	0.00
565.00	300.47	(N/A)	0.00
565.50	301.43	(N/A)	0.00
566.00	302.39	(N/A)	0.00
566.50	303.34	(N/A)	0.00
567.00	304.30	(N/A)	0.00
567.50	305.25	(N/A)	0.00
568.00	306.19	(N/A)	0.00
568.50	307.14	(N/A)	0.00
569.00	308.08	(N/A)	0.00
569.50	309.01	(N/A)	0.00
570.00	309.95	(N/A)	0.00
570.50	310.88	(N/A)	0.00
571.00	311.81	(N/A)	0.00
571.50	312.74	(N/A)	0.00
572.00	313.66	(N/A)	0.00
572.50	314.58	(N/A)	0.00
573.00	315.50	(N/A)	0.00
573.50	316.42	(N/A)	0.00
574.00	317.33	(N/A)	0.00
574.50	318.24	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
575.00	319.15	(N/A)	0.00
575.50	320.05	(N/A)	0.00
576.00	320.96	(N/A)	0.00
576.50	321.86	(N/A)	0.00
577.00	322.75	(N/A)	0.00
577.50	323.65	(N/A)	0.00
578.00	324.54	(N/A)	0.00
578.50	325.43	(N/A)	0.00
579.00	326.32	(N/A)	0.00
579.50	327.21	(N/A)	0.00
580.00	328.09	(N/A)	0.00
580.50	328.97	(N/A)	0.00
581.00	329.85	(N/A)	0.00
581.50	330.73	(N/A)	0.00
582.00	331.60	(N/A)	0.00
582.50	332.47	(N/A)	0.00
583.00	333.34	(N/A)	0.00
583.50	334.21	(N/A)	0.00
584.00	335.07	(N/A)	0.00
584.50	335.93	(N/A)	0.00
585.00	336.79	(N/A)	0.00
585.50	337.65	(N/A)	0.00
586.00	338.51	(N/A)	0.00
586.50	339.36	(N/A)	0.00
587.00	340.21	(N/A)	0.00
587.50	341.06	(N/A)	0.00
588.00	341.91	(N/A)	0.00
588.50	342.76	(N/A)	0.00
589.00	343.60	(N/A)	0.00
589.50	344.44	(N/A)	0.00
590.00	345.28	(N/A)	0.00

Computation Messages

HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .127ft
Dcr= .372ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .262ft
Dcr= .739ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .404ft
Dcr= 1.096ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .560ft
Dcr= 1.441ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .733ft
Dcr= 1.767ft CRIT.DEPTH Hev= .00ft
H =1.50
H =2.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =2.50
H =3.00
H =3.50
H =4.00
H =4.50
H =5.00
H =5.50
H =6.00
H =6.50
H =7.00
H =7.50
H =8.00
H =8.50
H =9.00
H =9.50
H =10.00
H =10.50
H =11.00
H =11.50
H =12.00
H =12.50
H =13.00
H =13.50
H =14.00
H =14.50
H =15.00
H =15.50
H =16.00
H =16.50
H =17.00
H =17.50
H =18.00
H =18.50
H =19.00
H =19.50
H =20.00
H =20.50
H =21.00
H =21.50
H =22.00
H =22.50
H =23.00
H =23.50
H =24.00
H =24.50
H =25.00
H =25.50

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =26.00
H =26.50
H =27.00
H =27.50
H =28.00
H =28.50
H =29.00
H =29.50
H =30.00
H =30.50
H =31.00
H =31.50
H =32.00
H =32.50
H =33.00
H =33.50
H =34.00
H =34.50
H =35.00
H =35.50
H =36.00
H =36.50
H =37.00
H =37.50
H =38.00
H =38.50
H =39.00
H =39.50
H =40.00
H =40.50
H =41.00
H =41.50
H =42.00
H =42.50
H =43.00
H =43.50
H =44.00
H =44.50
H =45.00
H =45.50
H =46.00
H =46.50
H =47.00
H =47.50
H =48.00
H =48.50
H =49.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =49.50
H =50.00
H =50.50
H =51.00
H =51.50
H =52.00
H =52.50
H =53.00
H =53.50
H =54.00
H =54.50
H =55.00
H =55.50
H =56.00
H =56.50
H =57.00
H =57.50
H =58.00
H =58.50
H =59.00
H =59.50
H =60.00
H =60.50
H =61.00
H =61.50
H =62.00
H =62.50
H =63.00
H =63.50
H =64.00
H =64.50
H =65.00
H =65.50
H =66.00
H =66.50
H =67.00
H =67.50
H =68.00
H =68.50
H =69.00
H =69.50
H =70.00
H =70.50
H =71.00
H =71.50
H =72.00
H =72.50

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =73.00
H =73.50
H =74.00
H =74.50
H =75.00
H =75.50
H =76.00
H =76.50
H =77.00
H =77.50
H =78.00
H =78.50
H =79.00
H =79.50
H =80.00
H =80.50
H =81.00
H =81.50
H =82.00
H =82.50
H =83.00
H =83.50
H =84.00
H =84.50
H =85.00
H =85.50
H =86.00
H =86.50
H =87.00
H =87.50
H =88.00
H =88.50
H =89.00
H =89.50
H =90.00
H =90.50
H =91.00
H =91.50
H =92.00
H =92.50
H =93.00
H =93.50
H =94.00
H =94.50
H =95.00
H =95.50
H =96.00

Subsection: Individual Outlet Curves
Label: H-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =96.50
H =97.00
H =97.50
H =98.00
H =98.50
H =99.00
H =99.50
H =100.00
H =100.50
H =101.00
H =101.50
H =102.00
H =102.50
H =103.00

Requested Pond Water Surface Elevations	
Minimum (Headwater)	463.25 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	473.25 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	464.16	475.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	464.16 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
462.60	0.00	(N/A)	0.00
463.10	0.00	(N/A)	0.00
463.60	0.00	(N/A)	0.00
464.10	0.00	(N/A)	0.00
464.16	0.00	(N/A)	0.00
464.60	0.90	(N/A)	0.00
465.10	3.85	(N/A)	0.00
465.60	8.37	(N/A)	0.00
466.10	13.91	(N/A)	0.00
466.60	18.14	(N/A)	0.00
467.10	21.06	(N/A)	0.00
467.60	23.62	(N/A)	0.00
468.10	25.93	(N/A)	0.00
468.60	28.04	(N/A)	0.00
469.10	30.01	(N/A)	0.00
469.60	31.86	(N/A)	0.00
470.10	33.61	(N/A)	0.00
470.60	35.27	(N/A)	0.00
471.10	36.85	(N/A)	0.00
471.60	38.37	(N/A)	0.00
472.10	39.83	(N/A)	0.00
472.60	41.24	(N/A)	0.00
473.10	42.61	(N/A)	0.00
473.60	43.93	(N/A)	0.00
474.10	45.21	(N/A)	0.00
474.60	46.46	(N/A)	0.00
475.00	47.43	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .113ft
Dcr= .326ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .252ft
Dcr= .688ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .409ft
Dcr= 1.031ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .597ft
Dcr= 1.343ft CRIT.DEPTH Hev= .00ft
H =1.44
H =1.94
H =2.44
H =2.94

Subsection: Individual Outlet Curves
Label: H-B10

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =3.44
H =3.94
H =4.44
H =4.94
H =5.44
H =5.94
H =6.44
H =6.94
H =7.44
H =7.94
H =8.44
H =8.94
H =9.44
H =9.84

Requested Pond Water Surface Elevations	
Minimum (Headwater)	542.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	551.61 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	544.12	551.61
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	544.12 ft
Orifice Diameter	30.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Subsection: Individual Outlet Curves
Label: H-B6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
542.00	0.00	(N/A)	0.00
542.50	0.00	(N/A)	0.00
543.00	0.00	(N/A)	0.00
543.50	0.00	(N/A)	0.00
544.00	0.00	(N/A)	0.00
544.12	0.00	(N/A)	0.00
544.50	0.77	(N/A)	0.00
545.00	3.90	(N/A)	0.00
545.50	9.07	(N/A)	0.00
546.00	15.79	(N/A)	0.00
546.50	23.55	(N/A)	0.00
547.00	30.16	(N/A)	0.00
547.50	34.48	(N/A)	0.00
548.00	38.31	(N/A)	0.00
548.50	41.80	(N/A)	0.00
549.00	45.01	(N/A)	0.00
549.50	48.01	(N/A)	0.00
550.00	50.84	(N/A)	0.00
550.50	53.51	(N/A)	0.00
551.00	56.06	(N/A)	0.00
551.50	58.50	(N/A)	0.00
551.61	59.02	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .097ft
Dcr= .284ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .231ft
Dcr= .649ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .376ft
Dcr= 1.004ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .538ft
Dcr= 1.341ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .727ft
Dcr= 1.652ft CRIT.DEPTH Hev= .00ft
H =1.63
H =2.13
H =2.63
H =3.13
H =3.63
H =4.13
H =4.63

Subsection: Individual Outlet Curves
Label: H-B6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =5.13
H =5.63
H =6.13
H =6.24

Requested Pond Water Surface Elevations	
Minimum (Headwater)	466.83 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	471.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir	Forward	TW	469.50	471.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-B7

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Weir Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	469.50 ft
Weir Length	20.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
466.83	0.00	(N/A)	0.00
467.33	0.00	(N/A)	0.00
467.83	0.00	(N/A)	0.00
468.33	0.00	(N/A)	0.00
468.83	0.00	(N/A)	0.00
469.33	0.00	(N/A)	0.00
469.50	0.00	(N/A)	0.00
469.83	11.34	(N/A)	0.00
470.33	44.99	(N/A)	0.00
470.83	90.81	(N/A)	0.00
471.00	108.57	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
HW & TW below Inv.El.=469.500
H=.00; Htw=.00; Qfree=.00;
H=.33; Htw=.00; Qfree=11.34;
H=.83; Htw=.00; Qfree=44.99;
H=1.33; Htw=.00; Qfree=90.81;
H=1.50; Htw=.00; Qfree=108.57;

Subsection: Outlet Input Data
Label: H-B9

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	494.36 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	504.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	496.30	504.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: H-B9

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	496.30 ft
Orifice Diameter	36.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: H-B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
494.20	0.00	(N/A)	0.00
494.70	0.00	(N/A)	0.00
495.20	0.00	(N/A)	0.00
495.70	0.00	(N/A)	0.00
496.20	0.00	(N/A)	0.00
496.30	0.00	(N/A)	0.00
496.70	0.94	(N/A)	0.00
497.20	4.54	(N/A)	0.00
497.70	10.48	(N/A)	0.00
498.20	18.35	(N/A)	0.00
498.70	27.75	(N/A)	0.00
499.20	38.09	(N/A)	0.00
499.70	46.90	(N/A)	0.00
500.20	52.71	(N/A)	0.00
500.70	57.94	(N/A)	0.00
501.20	62.73	(N/A)	0.00
501.70	67.19	(N/A)	0.00
502.20	71.36	(N/A)	0.00
502.70	75.31	(N/A)	0.00
503.20	79.06	(N/A)	0.00
503.70	82.64	(N/A)	0.00
504.00	84.71	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .102ft
Dcr= .299ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .234ft
Dcr= .666ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .375ft
Dcr= 1.025ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .527ft
Dcr= 1.372ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .697ft
Dcr= 1.704ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .891ft
Dcr= 2.008ft CRIT.DEPTH Hev= .00ft
H =1.90
H =2.40
H =2.90
H =3.40
H =3.90

Subsection: Individual Outlet Curves
Label: H-B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =4.40
H =4.90
H =5.40
H =5.90
H =6.20

Subsection: Outlet Input Data
Label: L-A2

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	432.10 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	441.05 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	432.10	441.05
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: L-A2

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	432.10 ft
Orifice Diameter	21.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: L-A2

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
432.10	0.00	(N/A)	0.00
432.60	1.07	(N/A)	0.00
433.10	3.96	(N/A)	0.00
433.60	8.10	(N/A)	0.00
434.10	12.28	(N/A)	0.00
434.60	14.76	(N/A)	0.00
435.10	16.88	(N/A)	0.00
435.60	18.76	(N/A)	0.00
436.10	20.46	(N/A)	0.00
436.60	22.04	(N/A)	0.00
437.10	23.51	(N/A)	0.00
437.60	24.90	(N/A)	0.00
438.10	26.21	(N/A)	0.00
438.60	27.46	(N/A)	0.00
439.10	28.65	(N/A)	0.00
439.60	29.80	(N/A)	0.00
440.10	30.90	(N/A)	0.00
440.60	31.97	(N/A)	0.00
441.05	32.90	(N/A)	0.00

Computation Messages

```
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL  Vh= .130ft
Dcr= .370ft  CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL  Vh= .273ft
Dcr= .726ft  CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL  Vh= .443ft
Dcr= 1.056ft  CRIT.DEPTH Hev= .00ft
H =1.13
H =1.63
H =2.13
H =2.63
H =3.13
H =3.63
H =4.13
H =4.63
H =5.13
H =5.63
H =6.13
H =6.63
H =7.13
H =7.63
H =8.08
```

Requested Pond Water Surface Elevations	
Minimum (Headwater)	502.40 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	518.90 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	502.40	518.90
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	502.40 ft
Orifice Diameter	21.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Subsection: Individual Outlet Curves
Label: L-A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
502.40	0.00	(N/A)	0.00
502.90	1.07	(N/A)	0.00
503.40	3.96	(N/A)	0.00
503.90	8.10	(N/A)	0.00
504.40	12.28	(N/A)	0.00
504.90	14.76	(N/A)	0.00
505.40	16.88	(N/A)	0.00
505.90	18.76	(N/A)	0.00
506.40	20.46	(N/A)	0.00
506.90	22.04	(N/A)	0.00
507.40	23.51	(N/A)	0.00
507.90	24.90	(N/A)	0.00
508.40	26.21	(N/A)	0.00
508.90	27.46	(N/A)	0.00
509.40	28.65	(N/A)	0.00
509.90	29.80	(N/A)	0.00
510.40	30.90	(N/A)	0.00
510.90	31.97	(N/A)	0.00
511.40	33.00	(N/A)	0.00
511.90	34.00	(N/A)	0.00
512.40	34.97	(N/A)	0.00
512.90	35.92	(N/A)	0.00
513.40	36.84	(N/A)	0.00
513.90	37.74	(N/A)	0.00
514.40	38.61	(N/A)	0.00
514.90	39.47	(N/A)	0.00
515.40	40.31	(N/A)	0.00
515.90	41.13	(N/A)	0.00
516.40	41.94	(N/A)	0.00
516.90	42.73	(N/A)	0.00
517.40	43.51	(N/A)	0.00
517.90	44.27	(N/A)	0.00
518.40	45.02	(N/A)	0.00
518.90	45.76	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .130ft
Dcr= .370ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .273ft
Dcr= .726ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .443ft
Dcr= 1.056ft CRIT.DEPTH Hev= .00ft
H =1.13
H =1.63
H =2.13

Subsection: Individual Outlet Curves
Label: L-A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =2.63
H =3.13
H =3.63
H =4.13
H =4.63
H =5.13
H =5.63
H =6.13
H =6.63
H =7.13
H =7.63
H =8.13
H =8.63
H =9.13
H =9.63
H =10.13
H =10.63
H =11.13
H =11.63
H =12.13
H =12.63
H =13.13
H =13.63
H =14.13
H =14.63
H =15.13
H =15.63

Requested Pond Water Surface Elevations	
Minimum (Headwater)	504.34 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	520.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	504.34	520.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	504.34 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: L-A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
504.34	0.00	(N/A)	0.00
504.84	1.16	(N/A)	0.00
505.34	4.33	(N/A)	0.00
505.84	9.01	(N/A)	0.00
506.34	15.12	(N/A)	0.00
506.84	18.52	(N/A)	0.00
507.34	21.38	(N/A)	0.00
507.84	23.91	(N/A)	0.00
508.34	26.19	(N/A)	0.00
508.84	28.29	(N/A)	0.00
509.34	30.24	(N/A)	0.00
509.84	32.08	(N/A)	0.00
510.34	33.81	(N/A)	0.00
510.84	35.46	(N/A)	0.00
511.34	37.04	(N/A)	0.00
511.84	38.55	(N/A)	0.00
512.34	40.01	(N/A)	0.00
512.84	41.41	(N/A)	0.00
513.34	42.77	(N/A)	0.00
513.84	44.08	(N/A)	0.00
514.34	45.36	(N/A)	0.00
514.84	46.60	(N/A)	0.00
515.34	47.82	(N/A)	0.00
515.84	49.00	(N/A)	0.00
516.34	50.15	(N/A)	0.00
516.84	51.28	(N/A)	0.00
517.34	52.38	(N/A)	0.00
517.84	53.46	(N/A)	0.00
518.34	54.52	(N/A)	0.00
518.84	55.56	(N/A)	0.00
519.34	56.58	(N/A)	0.00
519.84	57.58	(N/A)	0.00
520.00	57.89	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .129ft
Dcr= .371ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .270ft
Dcr= .731ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .429ft
Dcr= 1.071ft CRIT.DEPTH Hev= .00ft
H =1.00
H =1.50
H =2.00
H =2.50

Subsection: Individual Outlet Curves
Label: L-A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =3.00
H =3.50
H =4.00
H =4.50
H =5.00
H =5.50
H =6.00
H =6.50
H =7.00
H =7.50
H =8.00
H =8.50
H =9.00
H =9.50
H =10.00
H =10.50
H =11.00
H =11.50
H =12.00
H =12.50
H =13.00
H =13.50
H =14.00
H =14.50
H =14.66

Subsection: Outlet Input Data
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	553.27 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	610.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	553.27	610.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	553.27 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
553.27	0.00	(N/A)	0.00
553.77	1.16	(N/A)	0.00
554.27	4.33	(N/A)	0.00
554.77	9.01	(N/A)	0.00
555.27	15.12	(N/A)	0.00
555.77	18.52	(N/A)	0.00
556.27	21.38	(N/A)	0.00
556.77	23.91	(N/A)	0.00
557.27	26.19	(N/A)	0.00
557.77	28.29	(N/A)	0.00
558.27	30.24	(N/A)	0.00
558.77	32.08	(N/A)	0.00
559.27	33.81	(N/A)	0.00
559.77	35.46	(N/A)	0.00
560.27	37.04	(N/A)	0.00
560.77	38.55	(N/A)	0.00
561.27	40.01	(N/A)	0.00
561.77	41.41	(N/A)	0.00
562.27	42.77	(N/A)	0.00
562.77	44.08	(N/A)	0.00
563.27	45.36	(N/A)	0.00
563.77	46.60	(N/A)	0.00
564.27	47.82	(N/A)	0.00
564.77	49.00	(N/A)	0.00
565.27	50.15	(N/A)	0.00
565.77	51.28	(N/A)	0.00
566.27	52.38	(N/A)	0.00
566.77	53.46	(N/A)	0.00
567.27	54.52	(N/A)	0.00
567.77	55.56	(N/A)	0.00
568.27	56.58	(N/A)	0.00
568.77	57.58	(N/A)	0.00
569.27	58.56	(N/A)	0.00
569.77	59.53	(N/A)	0.00
570.27	60.48	(N/A)	0.00
570.77	61.42	(N/A)	0.00
571.27	62.34	(N/A)	0.00
571.77	63.25	(N/A)	0.00
572.27	64.15	(N/A)	0.00
572.77	65.04	(N/A)	0.00
573.27	65.91	(N/A)	0.00
573.77	66.77	(N/A)	0.00
574.27	67.62	(N/A)	0.00
574.77	68.46	(N/A)	0.00
575.27	69.29	(N/A)	0.00

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
575.77	70.11	(N/A)	0.00
576.27	70.92	(N/A)	0.00
576.77	71.72	(N/A)	0.00
577.27	72.52	(N/A)	0.00
577.77	73.30	(N/A)	0.00
578.27	74.08	(N/A)	0.00
578.77	74.84	(N/A)	0.00
579.27	75.60	(N/A)	0.00
579.77	76.36	(N/A)	0.00
580.27	77.10	(N/A)	0.00
580.77	77.84	(N/A)	0.00
581.27	78.57	(N/A)	0.00
581.77	79.29	(N/A)	0.00
582.27	80.01	(N/A)	0.00
582.77	80.72	(N/A)	0.00
583.27	81.43	(N/A)	0.00
583.77	82.13	(N/A)	0.00
584.27	82.82	(N/A)	0.00
584.77	83.51	(N/A)	0.00
585.27	84.19	(N/A)	0.00
585.77	84.86	(N/A)	0.00
586.27	85.53	(N/A)	0.00
586.77	86.20	(N/A)	0.00
587.27	86.86	(N/A)	0.00
587.77	87.52	(N/A)	0.00
588.27	88.17	(N/A)	0.00
588.77	88.81	(N/A)	0.00
589.27	89.45	(N/A)	0.00
589.77	90.09	(N/A)	0.00
590.27	90.72	(N/A)	0.00
590.77	91.35	(N/A)	0.00
591.27	91.97	(N/A)	0.00
591.77	92.59	(N/A)	0.00
592.27	93.21	(N/A)	0.00
592.77	93.82	(N/A)	0.00
593.27	94.43	(N/A)	0.00
593.77	95.03	(N/A)	0.00
594.27	95.63	(N/A)	0.00
594.77	96.23	(N/A)	0.00
595.27	96.82	(N/A)	0.00
595.77	97.41	(N/A)	0.00
596.27	97.99	(N/A)	0.00
596.77	98.57	(N/A)	0.00
597.27	99.15	(N/A)	0.00
597.77	99.73	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
598.27	100.30	(N/A)	0.00
598.77	100.87	(N/A)	0.00
599.27	101.43	(N/A)	0.00
599.77	101.99	(N/A)	0.00
600.27	102.55	(N/A)	0.00
600.77	103.11	(N/A)	0.00
601.27	103.66	(N/A)	0.00
601.77	104.21	(N/A)	0.00
602.27	104.76	(N/A)	0.00
602.77	105.30	(N/A)	0.00
603.27	105.84	(N/A)	0.00
603.77	106.38	(N/A)	0.00
604.27	106.92	(N/A)	0.00
604.77	107.45	(N/A)	0.00
605.27	107.98	(N/A)	0.00
605.77	108.51	(N/A)	0.00
606.27	109.04	(N/A)	0.00
606.77	109.56	(N/A)	0.00
607.27	110.08	(N/A)	0.00
607.77	110.60	(N/A)	0.00
608.27	111.11	(N/A)	0.00
608.77	111.63	(N/A)	0.00
609.27	112.14	(N/A)	0.00
609.77	112.65	(N/A)	0.00
610.00	112.88	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .129ft
Dcr= .371ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .270ft
Dcr= .731ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .429ft
Dcr= 1.071ft CRIT.DEPTH Hev= .00ft
H =1.00
H =1.50
H =2.00
H =2.50
H =3.00
H =3.50
H =4.00
H =4.50
H =5.00
H =5.50
H =6.00
H =6.50

Subsection: Individual Outlet Curves
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =7.00
H =7.50
H =8.00
H =8.50
H =9.00
H =9.50
H =10.00
H =10.50
H =11.00
H =11.50
H =12.00
H =12.50
H =13.00
H =13.50
H =14.00
H =14.50
H =15.00
H =15.50
H =16.00
H =16.50
H =17.00
H =17.50
H =18.00
H =18.50
H =19.00
H =19.50
H =20.00
H =20.50
H =21.00
H =21.50
H =22.00
H =22.50
H =23.00
H =23.50
H =24.00
H =24.50
H =25.00
H =25.50
H =26.00
H =26.50
H =27.00
H =27.50
H =28.00
H =28.50
H =29.00
H =29.50
H =30.00

Subsection: Individual Outlet Curves
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =30.50
H =31.00
H =31.50
H =32.00
H =32.50
H =33.00
H =33.50
H =34.00
H =34.50
H =35.00
H =35.50
H =36.00
H =36.50
H =37.00
H =37.50
H =38.00
H =38.50
H =39.00
H =39.50
H =40.00
H =40.50
H =41.00
H =41.50
H =42.00
H =42.50
H =43.00
H =43.50
H =44.00
H =44.50
H =45.00
H =45.50
H =46.00
H =46.50
H =47.00
H =47.50
H =48.00
H =48.50
H =49.00
H =49.50
H =50.00
H =50.50
H =51.00
H =51.50
H =52.00
H =52.50
H =53.00
H =53.50

Subsection: Individual Outlet Curves
Label: L-A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =54.00
H =54.50
H =55.00
H =55.50
H =55.73

Requested Pond Water Surface Elevations	
Minimum (Headwater)	580.70 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	600.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	580.70	650.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	580.70 ft
Orifice Diameter	24.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Subsection: Individual Outlet Curves
Label: L-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
580.70	0.00	(N/A)	0.00
581.20	1.16	(N/A)	0.00
581.70	4.33	(N/A)	0.00
582.20	9.01	(N/A)	0.00
582.70	15.12	(N/A)	0.00
583.20	18.52	(N/A)	0.00
583.70	21.38	(N/A)	0.00
584.20	23.91	(N/A)	0.00
584.70	26.19	(N/A)	0.00
585.20	28.29	(N/A)	0.00
585.70	30.24	(N/A)	0.00
586.20	32.08	(N/A)	0.00
586.70	33.81	(N/A)	0.00
587.20	35.46	(N/A)	0.00
587.70	37.04	(N/A)	0.00
588.20	38.55	(N/A)	0.00
588.70	40.01	(N/A)	0.00
589.20	41.41	(N/A)	0.00
589.70	42.77	(N/A)	0.00
590.20	44.08	(N/A)	0.00
590.70	45.36	(N/A)	0.00
591.20	46.60	(N/A)	0.00
591.70	47.82	(N/A)	0.00
592.20	49.00	(N/A)	0.00
592.70	50.15	(N/A)	0.00
593.20	51.28	(N/A)	0.00
593.70	52.38	(N/A)	0.00
594.20	53.46	(N/A)	0.00
594.70	54.52	(N/A)	0.00
595.20	55.56	(N/A)	0.00
595.70	56.58	(N/A)	0.00
596.20	57.58	(N/A)	0.00
596.70	58.56	(N/A)	0.00
597.20	59.53	(N/A)	0.00
597.70	60.48	(N/A)	0.00
598.20	61.42	(N/A)	0.00
598.70	62.34	(N/A)	0.00
599.20	63.25	(N/A)	0.00
599.70	64.15	(N/A)	0.00
600.20	65.04	(N/A)	0.00
600.70	65.91	(N/A)	0.00
601.20	66.77	(N/A)	0.00
601.70	67.62	(N/A)	0.00
602.20	68.46	(N/A)	0.00
602.70	69.29	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
603.20	70.11	(N/A)	0.00
603.70	70.92	(N/A)	0.00
604.20	71.72	(N/A)	0.00
604.70	72.52	(N/A)	0.00
605.20	73.30	(N/A)	0.00
605.70	74.08	(N/A)	0.00
606.20	74.84	(N/A)	0.00
606.70	75.60	(N/A)	0.00
607.20	76.36	(N/A)	0.00
607.70	77.10	(N/A)	0.00
608.20	77.84	(N/A)	0.00
608.70	78.57	(N/A)	0.00
609.20	79.29	(N/A)	0.00
609.70	80.01	(N/A)	0.00
610.20	80.72	(N/A)	0.00
610.70	81.43	(N/A)	0.00
611.20	82.13	(N/A)	0.00
611.70	82.82	(N/A)	0.00
612.20	83.51	(N/A)	0.00
612.70	84.19	(N/A)	0.00
613.20	84.86	(N/A)	0.00
613.70	85.53	(N/A)	0.00
614.20	86.20	(N/A)	0.00
614.70	86.86	(N/A)	0.00
615.20	87.52	(N/A)	0.00
615.70	88.17	(N/A)	0.00
616.20	88.81	(N/A)	0.00
616.70	89.45	(N/A)	0.00
617.20	90.09	(N/A)	0.00
617.70	90.72	(N/A)	0.00
618.20	91.35	(N/A)	0.00
618.70	91.97	(N/A)	0.00
619.20	92.59	(N/A)	0.00
619.70	93.21	(N/A)	0.00
620.20	93.82	(N/A)	0.00
620.70	94.43	(N/A)	0.00
621.20	95.03	(N/A)	0.00
621.70	95.63	(N/A)	0.00
622.20	96.23	(N/A)	0.00
622.70	96.82	(N/A)	0.00
623.20	97.41	(N/A)	0.00
623.70	97.99	(N/A)	0.00
624.20	98.57	(N/A)	0.00
624.70	99.15	(N/A)	0.00
625.20	99.73	(N/A)	0.00

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
625.70	100.30	(N/A)	0.00
626.20	100.87	(N/A)	0.00
626.70	101.43	(N/A)	0.00
627.20	101.99	(N/A)	0.00
627.70	102.55	(N/A)	0.00
628.20	103.11	(N/A)	0.00
628.70	103.66	(N/A)	0.00
629.20	104.21	(N/A)	0.00
629.70	104.76	(N/A)	0.00
630.20	105.30	(N/A)	0.00
630.70	105.84	(N/A)	0.00
631.20	106.38	(N/A)	0.00
631.70	106.92	(N/A)	0.00
632.20	107.45	(N/A)	0.00
632.70	107.98	(N/A)	0.00
633.20	108.51	(N/A)	0.00
633.70	109.04	(N/A)	0.00
634.20	109.56	(N/A)	0.00
634.70	110.08	(N/A)	0.00
635.20	110.60	(N/A)	0.00
635.70	111.11	(N/A)	0.00
636.20	111.63	(N/A)	0.00
636.70	112.14	(N/A)	0.00
637.20	112.65	(N/A)	0.00
637.70	113.15	(N/A)	0.00
638.20	113.66	(N/A)	0.00
638.70	114.16	(N/A)	0.00
639.20	114.66	(N/A)	0.00
639.70	115.15	(N/A)	0.00
640.20	115.65	(N/A)	0.00
640.70	116.14	(N/A)	0.00
641.20	116.63	(N/A)	0.00
641.70	117.12	(N/A)	0.00
642.20	117.61	(N/A)	0.00
642.70	118.10	(N/A)	0.00
643.20	118.58	(N/A)	0.00
643.70	119.06	(N/A)	0.00
644.20	119.54	(N/A)	0.00
644.70	120.02	(N/A)	0.00
645.20	120.49	(N/A)	0.00
645.70	120.96	(N/A)	0.00
646.20	121.44	(N/A)	0.00
646.70	121.91	(N/A)	0.00
647.20	122.37	(N/A)	0.00
647.70	122.84	(N/A)	0.00

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
648.20	123.30	(N/A)	0.00
648.70	123.77	(N/A)	0.00
649.20	124.23	(N/A)	0.00
649.70	124.69	(N/A)	0.00
650.00	124.96	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .129ft
Dcr= .371ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .270ft
Dcr= .731ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .429ft
Dcr= 1.071ft CRIT.DEPTH Hev= .00ft
H =1.00
H =1.50
H =2.00
H =2.50
H =3.00
H =3.50
H =4.00
H =4.50
H =5.00
H =5.50
H =6.00
H =6.50
H =7.00
H =7.50
H =8.00
H =8.50
H =9.00
H =9.50
H =10.00
H =10.50
H =11.00
H =11.50
H =12.00
H =12.50
H =13.00
H =13.50
H =14.00
H =14.50
H =15.00
H =15.50
H =16.00
H =16.50

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =17.00
H =17.50
H =18.00
H =18.50
H =19.00
H =19.50
H =20.00
H =20.50
H =21.00
H =21.50
H =22.00
H =22.50
H =23.00
H =23.50
H =24.00
H =24.50
H =25.00
H =25.50
H =26.00
H =26.50
H =27.00
H =27.50
H =28.00
H =28.50
H =29.00
H =29.50
H =30.00
H =30.50
H =31.00
H =31.50
H =32.00
H =32.50
H =33.00
H =33.50
H =34.00
H =34.50
H =35.00
H =35.50
H =36.00
H =36.50
H =37.00
H =37.50
H =38.00
H =38.50
H =39.00
H =39.50
H =40.00

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =40.50
H =41.00
H =41.50
H =42.00
H =42.50
H =43.00
H =43.50
H =44.00
H =44.50
H =45.00
H =45.50
H =46.00
H =46.50
H =47.00
H =47.50
H =48.00
H =48.50
H =49.00
H =49.50
H =50.00
H =50.50
H =51.00
H =51.50
H =52.00
H =52.50
H =53.00
H =53.50
H =54.00
H =54.50
H =55.00
H =55.50
H =56.00
H =56.50
H =57.00
H =57.50
H =58.00
H =58.50
H =59.00
H =59.50
H =60.00
H =60.50
H =61.00
H =61.50
H =62.00
H =62.50
H =63.00
H =63.50

Subsection: Individual Outlet Curves
Label: L-A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =64.00
H =64.50
H =65.00
H =65.50
H =66.00
H =66.50
H =67.00
H =67.50
H =68.00
H =68.30

Subsection: Outlet Input Data
Label: L-A7

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	570.31 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	586.81 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	570.31	586.81
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	570.31 ft
Orifice Diameter	18.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
570.31	0.00	(N/A)	0.00
570.81	0.98	(N/A)	0.00
571.31	3.55	(N/A)	0.00
571.81	7.37	(N/A)	0.00
572.31	9.51	(N/A)	0.00
572.81	11.25	(N/A)	0.00
573.31	12.76	(N/A)	0.00
573.81	14.10	(N/A)	0.00
574.31	15.33	(N/A)	0.00
574.81	16.47	(N/A)	0.00
575.31	17.53	(N/A)	0.00
575.81	18.54	(N/A)	0.00
576.31	19.49	(N/A)	0.00
576.81	20.40	(N/A)	0.00
577.31	21.26	(N/A)	0.00
577.81	22.10	(N/A)	0.00
578.31	22.90	(N/A)	0.00
578.81	23.68	(N/A)	0.00
579.31	24.43	(N/A)	0.00
579.81	25.16	(N/A)	0.00
580.31	25.87	(N/A)	0.00
580.81	26.56	(N/A)	0.00
581.31	27.23	(N/A)	0.00
581.81	27.89	(N/A)	0.00
582.31	28.53	(N/A)	0.00
582.81	29.15	(N/A)	0.00
583.31	29.77	(N/A)	0.00
583.81	30.37	(N/A)	0.00
584.31	30.96	(N/A)	0.00
584.81	31.54	(N/A)	0.00
585.31	32.11	(N/A)	0.00
585.81	32.67	(N/A)	0.00
586.31	33.21	(N/A)	0.00
586.81	33.75	(N/A)	0.00

Computation Messages

```
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL  Vh= .130ft
Dcr= .369ft  CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL  Vh= .279ft
Dcr= .720ft  CRIT.DEPTH Hev= .00ft
H =.75
H =1.25
H =1.75
H =2.25
H =2.75
```

Subsection: Individual Outlet Curves
Label: L-A7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =3.25
H =3.75
H =4.25
H =4.75
H =5.25
H =5.75
H =6.25
H =6.75
H =7.25
H =7.75
H =8.25
H =8.75
H =9.25
H =9.75
H =10.25
H =10.75
H =11.25
H =11.75
H =12.25
H =12.75
H =13.25
H =13.75
H =14.25
H =14.75
H =15.25
H =15.75

Subsection: Outlet Input Data
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	485.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	590.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	485.00	590.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	485.00 ft
Orifice Diameter	10.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
485.00	0.00	(N/A)	0.00
485.50	0.68	(N/A)	0.00
486.00	2.00	(N/A)	0.00
486.50	2.73	(N/A)	0.00
487.00	3.30	(N/A)	0.00
487.50	3.79	(N/A)	0.00
488.00	4.22	(N/A)	0.00
488.50	4.61	(N/A)	0.00
489.00	4.97	(N/A)	0.00
489.50	5.30	(N/A)	0.00
490.00	5.62	(N/A)	0.00
490.50	5.92	(N/A)	0.00
491.00	6.20	(N/A)	0.00
491.50	6.47	(N/A)	0.00
492.00	6.74	(N/A)	0.00
492.50	6.99	(N/A)	0.00
493.00	7.23	(N/A)	0.00
493.50	7.46	(N/A)	0.00
494.00	7.69	(N/A)	0.00
494.50	7.91	(N/A)	0.00
495.00	8.13	(N/A)	0.00
495.50	8.34	(N/A)	0.00
496.00	8.54	(N/A)	0.00
496.50	8.74	(N/A)	0.00
497.00	8.93	(N/A)	0.00
497.50	9.13	(N/A)	0.00
498.00	9.31	(N/A)	0.00
498.50	9.50	(N/A)	0.00
499.00	9.67	(N/A)	0.00
499.50	9.85	(N/A)	0.00
500.00	10.02	(N/A)	0.00
500.50	10.20	(N/A)	0.00
501.00	10.36	(N/A)	0.00
501.50	10.53	(N/A)	0.00
502.00	10.69	(N/A)	0.00
502.50	10.85	(N/A)	0.00
503.00	11.01	(N/A)	0.00
503.50	11.16	(N/A)	0.00
504.00	11.32	(N/A)	0.00
504.50	11.47	(N/A)	0.00
505.00	11.62	(N/A)	0.00
505.50	11.76	(N/A)	0.00
506.00	11.91	(N/A)	0.00
506.50	12.05	(N/A)	0.00
507.00	12.20	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
507.50	12.34	(N/A)	0.00
508.00	12.47	(N/A)	0.00
508.50	12.61	(N/A)	0.00
509.00	12.75	(N/A)	0.00
509.50	12.88	(N/A)	0.00
510.00	13.02	(N/A)	0.00
510.50	13.15	(N/A)	0.00
511.00	13.28	(N/A)	0.00
511.50	13.41	(N/A)	0.00
512.00	13.53	(N/A)	0.00
512.50	13.66	(N/A)	0.00
513.00	13.79	(N/A)	0.00
513.50	13.91	(N/A)	0.00
514.00	14.03	(N/A)	0.00
514.50	14.16	(N/A)	0.00
515.00	14.28	(N/A)	0.00
515.50	14.40	(N/A)	0.00
516.00	14.52	(N/A)	0.00
516.50	14.64	(N/A)	0.00
517.00	14.75	(N/A)	0.00
517.50	14.87	(N/A)	0.00
518.00	14.98	(N/A)	0.00
518.50	15.10	(N/A)	0.00
519.00	15.21	(N/A)	0.00
519.50	15.33	(N/A)	0.00
520.00	15.44	(N/A)	0.00
520.50	15.55	(N/A)	0.00
521.00	15.66	(N/A)	0.00
521.50	15.77	(N/A)	0.00
522.00	15.88	(N/A)	0.00
522.50	15.99	(N/A)	0.00
523.00	16.09	(N/A)	0.00
523.50	16.20	(N/A)	0.00
524.00	16.31	(N/A)	0.00
524.50	16.41	(N/A)	0.00
525.00	16.52	(N/A)	0.00
525.50	16.62	(N/A)	0.00
526.00	16.72	(N/A)	0.00
526.50	16.83	(N/A)	0.00
527.00	16.93	(N/A)	0.00
527.50	17.03	(N/A)	0.00
528.00	17.13	(N/A)	0.00
528.50	17.23	(N/A)	0.00
529.00	17.33	(N/A)	0.00
529.50	17.43	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
530.00	17.53	(N/A)	0.00
530.50	17.63	(N/A)	0.00
531.00	17.72	(N/A)	0.00
531.50	17.82	(N/A)	0.00
532.00	17.92	(N/A)	0.00
532.50	18.01	(N/A)	0.00
533.00	18.11	(N/A)	0.00
533.50	18.20	(N/A)	0.00
534.00	18.30	(N/A)	0.00
534.50	18.39	(N/A)	0.00
535.00	18.48	(N/A)	0.00
535.50	18.58	(N/A)	0.00
536.00	18.67	(N/A)	0.00
536.50	18.76	(N/A)	0.00
537.00	18.85	(N/A)	0.00
537.50	18.95	(N/A)	0.00
538.00	19.04	(N/A)	0.00
538.50	19.13	(N/A)	0.00
539.00	19.22	(N/A)	0.00
539.50	19.31	(N/A)	0.00
540.00	19.39	(N/A)	0.00
540.50	19.48	(N/A)	0.00
541.00	19.57	(N/A)	0.00
541.50	19.66	(N/A)	0.00
542.00	19.75	(N/A)	0.00
542.50	19.83	(N/A)	0.00
543.00	19.92	(N/A)	0.00
543.50	20.01	(N/A)	0.00
544.00	20.09	(N/A)	0.00
544.50	20.18	(N/A)	0.00
545.00	20.26	(N/A)	0.00
545.50	20.35	(N/A)	0.00
546.00	20.43	(N/A)	0.00
546.50	20.52	(N/A)	0.00
547.00	20.60	(N/A)	0.00
547.50	20.68	(N/A)	0.00
548.00	20.77	(N/A)	0.00
548.50	20.85	(N/A)	0.00
549.00	20.93	(N/A)	0.00
549.50	21.01	(N/A)	0.00
550.00	21.10	(N/A)	0.00
550.50	21.18	(N/A)	0.00
551.00	21.26	(N/A)	0.00
551.50	21.34	(N/A)	0.00
552.00	21.42	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
552.50	21.50	(N/A)	0.00
553.00	21.58	(N/A)	0.00
553.50	21.66	(N/A)	0.00
554.00	21.74	(N/A)	0.00
554.50	21.82	(N/A)	0.00
555.00	21.90	(N/A)	0.00
555.50	21.98	(N/A)	0.00
556.00	22.05	(N/A)	0.00
556.50	22.13	(N/A)	0.00
557.00	22.21	(N/A)	0.00
557.50	22.29	(N/A)	0.00
558.00	22.36	(N/A)	0.00
558.50	22.44	(N/A)	0.00
559.00	22.52	(N/A)	0.00
559.50	22.59	(N/A)	0.00
560.00	22.67	(N/A)	0.00
560.50	22.75	(N/A)	0.00
561.00	22.82	(N/A)	0.00
561.50	22.90	(N/A)	0.00
562.00	22.97	(N/A)	0.00
562.50	23.05	(N/A)	0.00
563.00	23.12	(N/A)	0.00
563.50	23.20	(N/A)	0.00
564.00	23.27	(N/A)	0.00
564.50	23.34	(N/A)	0.00
565.00	23.42	(N/A)	0.00
565.50	23.49	(N/A)	0.00
566.00	23.57	(N/A)	0.00
566.50	23.64	(N/A)	0.00
567.00	23.71	(N/A)	0.00
567.50	23.78	(N/A)	0.00
568.00	23.86	(N/A)	0.00
568.50	23.93	(N/A)	0.00
569.00	24.00	(N/A)	0.00
569.50	24.07	(N/A)	0.00
570.00	24.14	(N/A)	0.00
570.50	24.21	(N/A)	0.00
571.00	24.29	(N/A)	0.00
571.50	24.36	(N/A)	0.00
572.00	24.43	(N/A)	0.00
572.50	24.50	(N/A)	0.00
573.00	24.57	(N/A)	0.00
573.50	24.64	(N/A)	0.00
574.00	24.71	(N/A)	0.00
574.50	24.78	(N/A)	0.00

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
575.00	24.85	(N/A)	0.00
575.50	24.92	(N/A)	0.00
576.00	24.98	(N/A)	0.00
576.50	25.05	(N/A)	0.00
577.00	25.12	(N/A)	0.00
577.50	25.19	(N/A)	0.00
578.00	25.26	(N/A)	0.00
578.50	25.33	(N/A)	0.00
579.00	25.39	(N/A)	0.00
579.50	25.46	(N/A)	0.00
580.00	25.53	(N/A)	0.00
580.50	25.60	(N/A)	0.00
581.00	25.66	(N/A)	0.00
581.50	25.73	(N/A)	0.00
582.00	25.80	(N/A)	0.00
582.50	25.87	(N/A)	0.00
583.00	25.93	(N/A)	0.00
583.50	26.00	(N/A)	0.00
584.00	26.06	(N/A)	0.00
584.50	26.13	(N/A)	0.00
585.00	26.20	(N/A)	0.00
585.50	26.26	(N/A)	0.00
586.00	26.33	(N/A)	0.00
586.50	26.39	(N/A)	0.00
587.00	26.46	(N/A)	0.00
587.50	26.52	(N/A)	0.00
588.00	26.59	(N/A)	0.00
588.50	26.65	(N/A)	0.00
589.00	26.72	(N/A)	0.00
589.50	26.78	(N/A)	0.00
590.00	26.85	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .137ft
Dcr= .362ft CRIT.DEPTH Hev= .00ft
H =.58
H =1.08
H =1.58
H =2.08
H =2.58
H =3.08
H =3.58
H =4.08
H =4.58
H =5.08

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =5.58
H =6.08
H =6.58
H =7.08
H =7.58
H =8.08
H =8.58
H =9.08
H =9.58
H =10.08
H =10.58
H =11.08
H =11.58
H =12.08
H =12.58
H =13.08
H =13.58
H =14.08
H =14.58
H =15.08
H =15.58
H =16.08
H =16.58
H =17.08
H =17.58
H =18.08
H =18.58
H =19.08
H =19.58
H =20.08
H =20.58
H =21.08
H =21.58
H =22.08
H =22.58
H =23.08
H =23.58
H =24.08
H =24.58
H =25.08
H =25.58
H =26.08
H =26.58
H =27.08
H =27.58
H =28.08
H =28.58

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =29.08
H =29.58
H =30.08
H =30.58
H =31.08
H =31.58
H =32.08
H =32.58
H =33.08
H =33.58
H =34.08
H =34.58
H =35.08
H =35.58
H =36.08
H =36.58
H =37.08
H =37.58
H =38.08
H =38.58
H =39.08
H =39.58
H =40.08
H =40.58
H =41.08
H =41.58
H =42.08
H =42.58
H =43.08
H =43.58
H =44.08
H =44.58
H =45.08
H =45.58
H =46.08
H =46.58
H =47.08
H =47.58
H =48.08
H =48.58
H =49.08
H =49.58
H =50.08
H =50.58
H =51.08
H =51.58
H =52.08

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =52.58
H =53.08
H =53.58
H =54.08
H =54.58
H =55.08
H =55.58
H =56.08
H =56.58
H =57.08
H =57.58
H =58.08
H =58.58
H =59.08
H =59.58
H =60.08
H =60.58
H =61.08
H =61.58
H =62.08
H =62.58
H =63.08
H =63.58
H =64.08
H =64.58
H =65.08
H =65.58
H =66.08
H =66.58
H =67.08
H =67.58
H =68.08
H =68.58
H =69.08
H =69.58
H =70.08
H =70.58
H =71.08
H =71.58
H =72.08
H =72.58
H =73.08
H =73.58
H =74.08
H =74.58
H =75.08
H =75.58

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =76.08
H =76.58
H =77.08
H =77.58
H =78.08
H =78.58
H =79.08
H =79.58
H =80.08
H =80.58
H =81.08
H =81.58
H =82.08
H =82.58
H =83.08
H =83.58
H =84.08
H =84.58
H =85.08
H =85.58
H =86.08
H =86.58
H =87.08
H =87.58
H =88.08
H =88.58
H =89.08
H =89.58
H =90.08
H =90.58
H =91.08
H =91.58
H =92.08
H =92.58
H =93.08
H =93.58
H =94.08
H =94.58
H =95.08
H =95.58
H =96.08
H =96.58
H =97.08
H =97.58
H =98.08
H =98.58
H =99.08

Subsection: Individual Outlet Curves
Label: L-A9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =99.58
H =100.08
H =100.58
H =101.08
H =101.58
H =102.08
H =102.58
H =103.08
H =103.58
H =104.08
H =104.58

Subsection: Outlet Input Data
Label: L-B10

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	462.60 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	469.07 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	462.60	475.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	462.60 ft
Orifice Diameter	18.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
462.60	0.00	(N/A)	0.00
463.10	0.98	(N/A)	0.00
463.60	3.55	(N/A)	0.00
464.10	7.37	(N/A)	0.00
464.60	9.51	(N/A)	0.00
465.10	11.25	(N/A)	0.00
465.60	12.76	(N/A)	0.00
466.10	14.10	(N/A)	0.00
466.60	15.33	(N/A)	0.00
467.10	16.47	(N/A)	0.00
467.60	17.53	(N/A)	0.00
468.10	18.54	(N/A)	0.00
468.60	19.49	(N/A)	0.00
469.10	20.40	(N/A)	0.00
469.60	21.26	(N/A)	0.00
470.10	22.10	(N/A)	0.00
470.60	22.90	(N/A)	0.00
471.10	23.68	(N/A)	0.00
471.60	24.43	(N/A)	0.00
472.10	25.16	(N/A)	0.00
472.60	25.87	(N/A)	0.00
473.10	26.56	(N/A)	0.00
473.60	27.23	(N/A)	0.00
474.10	27.89	(N/A)	0.00
474.60	28.53	(N/A)	0.00
475.00	29.03	(N/A)	0.00

Computation Messages

```
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL  Vh= .130ft
Dcr= .369ft  CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL  Vh= .279ft
Dcr= .720ft  CRIT.DEPTH Hev= .00ft
H =.75
H =1.25
H =1.75
H =2.25
H =2.75
H =3.25
H =3.75
H =4.25
H =4.75
H =5.25
H =5.75
H =6.25
H =6.75
```

Subsection: Individual Outlet Curves
Label: L-B10

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages
H =7.25
H =7.75
H =8.25
H =8.75
H =9.25
H =9.75
H =10.25
H =10.75
H =11.25
H =11.65

Subsection: Outlet Input Data
Label: L-B6

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	542.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	551.61 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	542.00	551.61
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: L-B6

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	542.00 ft
Orifice Diameter	18.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: L-B6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
542.00	0.00	(N/A)	0.00
542.50	0.98	(N/A)	0.00
543.00	3.55	(N/A)	0.00
543.50	7.37	(N/A)	0.00
544.00	9.51	(N/A)	0.00
544.50	11.25	(N/A)	0.00
545.00	12.76	(N/A)	0.00
545.50	14.10	(N/A)	0.00
546.00	15.33	(N/A)	0.00
546.50	16.47	(N/A)	0.00
547.00	17.53	(N/A)	0.00
547.50	18.54	(N/A)	0.00
548.00	19.49	(N/A)	0.00
548.50	20.40	(N/A)	0.00
549.00	21.26	(N/A)	0.00
549.50	22.10	(N/A)	0.00
550.00	22.90	(N/A)	0.00
550.50	23.68	(N/A)	0.00
551.00	24.43	(N/A)	0.00
551.50	25.16	(N/A)	0.00
551.61	25.32	(N/A)	0.00

Computation Messages

```
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL  Vh= .130ft
Dcr= .369ft  CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL  Vh= .279ft
Dcr= .720ft  CRIT.DEPTH Hev= .00ft
H =.75
H =1.25
H =1.75
H =2.25
H =2.75
H =3.25
H =3.75
H =4.25
H =4.75
H =5.25
H =5.75
H =6.25
H =6.75
H =7.25
H =7.75
H =8.25
H =8.75
H =8.86
```

Requested Pond Water Surface Elevations	
Minimum (Headwater)	466.83 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	471.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir	Forward	TW	469.00	471.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: L-B7

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Weir Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	469.00 ft
Weir Length	20.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: L-B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
466.83	0.00	(N/A)	0.00
467.33	0.00	(N/A)	0.00
467.83	0.00	(N/A)	0.00
468.33	0.00	(N/A)	0.00
468.83	0.00	(N/A)	0.00
469.00	0.00	(N/A)	0.00
469.33	11.34	(N/A)	0.00
469.83	44.99	(N/A)	0.00
470.33	90.81	(N/A)	0.00
470.83	145.82	(N/A)	0.00
471.00	166.31	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=469.000
HW & TW below Inv.El.=469.000
HW & TW below Inv.El.=469.000
HW & TW below Inv.El.=469.000
HW & TW below Inv.El.=469.000
H=.00; Htw=.00; Qfree=.00;
H=.33; Htw=.00; Qfree=11.34;
H=.83; Htw=.00; Qfree=44.99;
H=1.33; Htw=.00; Qfree=90.81;
H=1.83; Htw=.00; Qfree=145.82;
H=2.00; Htw=.00; Qfree=166.31;

Subsection: Outlet Input Data
Label: L-B9

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	494.20 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	504.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	TW	494.20	504.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: L-B9

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	494.20 ft
Orifice Diameter	21.00 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: L-B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
494.20	0.00	(N/A)	0.00
494.70	1.07	(N/A)	0.00
495.20	3.96	(N/A)	0.00
495.70	8.10	(N/A)	0.00
496.20	12.28	(N/A)	0.00
496.70	14.76	(N/A)	0.00
497.20	16.88	(N/A)	0.00
497.70	18.76	(N/A)	0.00
498.20	20.46	(N/A)	0.00
498.70	22.04	(N/A)	0.00
499.20	23.51	(N/A)	0.00
499.70	24.90	(N/A)	0.00
500.20	26.21	(N/A)	0.00
500.70	27.46	(N/A)	0.00
501.20	28.65	(N/A)	0.00
501.70	29.80	(N/A)	0.00
502.20	30.90	(N/A)	0.00
502.70	31.97	(N/A)	0.00
503.20	33.00	(N/A)	0.00
503.70	34.00	(N/A)	0.00
504.00	34.59	(N/A)	0.00

Computation Messages

Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .130ft
Dcr= .370ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .273ft
Dcr= .726ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .443ft
Dcr= 1.056ft CRIT.DEPTH Hev= .00ft
H =1.13
H =1.63
H =2.13
H =2.63
H =3.13
H =3.63
H =4.13
H =4.63
H =5.13
H =5.63
H =6.13
H =6.63
H =7.13
H =7.63
H =8.13
H =8.63

Subsection: Individual Outlet Curves
Label: L-B9

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Computation Messages

H =8.93

Subsection: Outlet Input Data
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	458.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	471.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 2	Forward	Culvert	464.25	471.00
Inlet Box	Riser 1	Forward	Culvert	468.75	471.00
Orifice-Circular	Orifice 1	Forward	Culvert	462.00	471.00
Culvert-Circular	Culvert	Forward	TW	462.00	471.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	468.75 ft
Orifice Area	12.3 ft²
Orifice Coefficient	0.600
Weir Length	14.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	462.00 ft
Orifice Diameter	7.00 in
Orifice Coefficient	0.600

Structure ID: Orifice 2 Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	464.25 ft
Orifice Diameter	10.00 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	48.00 in
Length	350.00 ft
Length (Computed Barrel)	350.02 ft
Slope (Computed)	0.010 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.005
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900

Inlet Control Data	
T1 ratio (HW/D)	1.131
T2 ratio (HW/D)	1.291
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	466.52 ft	T1 Flow	87.96 ft³/s
T2 Elevation	467.17 ft	T2 Flow	100.53 ft³/s

Subsection: Outlet Input Data
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 1 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
458.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
458.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.50	0.00	0.00	0.00	462.30	0.00	0.00	(N/A)	0.00
463.00	0.00	0.00	0.00	462.43	0.00	0.00	(N/A)	0.00
463.50	0.00	0.00	0.00	462.49	0.00	0.00	(N/A)	0.00
464.00	0.00	0.00	0.00	462.54	0.00	0.00	(N/A)	0.00
464.25	0.00	0.00	0.00	462.56	0.00	0.00	(N/A)	0.00
464.50	0.00	0.00	0.00	462.64	0.00	0.00	(N/A)	0.00
465.00	0.00	0.00	0.00	462.94	0.00	0.00	(N/A)	0.00
465.50	0.00	0.00	0.00	463.15	0.00	0.00	(N/A)	0.00
466.00	0.00	0.00	0.00	463.27	0.00	0.00	(N/A)	0.00
466.50	0.00	0.00	0.00	463.36	0.00	0.00	(N/A)	0.00
467.00	0.00	0.00	0.00	463.44	0.00	0.00	(N/A)	0.00
467.50	0.00	0.00	0.00	463.51	0.00	0.00	(N/A)	0.00
468.00	0.00	0.00	0.00	463.57	0.00	0.00	(N/A)	0.00
468.50	0.00	0.00	0.00	463.63	0.00	0.00	(N/A)	0.00
468.75	0.00	0.00	0.00	463.65	0.00	0.00	(N/A)	0.00
469.00	5.25	469.00	Free Outfall	463.98	0.00	0.00	(N/A)	0.00
469.50	27.28	469.50	Free Outfall	465.03	0.00	0.00	(N/A)	0.00
470.00	58.70	470.00	Free Outfall	466.21	0.00	0.00	(N/A)	0.00
470.50	78.00	470.50	Free Outfall	466.91	0.00	0.00	(N/A)	0.00
471.00	88.44	471.00	Free Outfall	467.30	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Riser 1 (Inlet Box)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
Weir: H =0.25ft
Weir: H =0.75ft
Weir: H =1.25ft
Orifice: H =1.75; Riser orifice equation controlling.
Orifice: H =2.25; Riser orifice equation controlling.

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
458.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
458.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.50	0.48	462.50	462.30	462.30	0.00	0.00	(N/A)	0.00
463.00	0.97	463.00	462.43	462.43	0.00	0.00	(N/A)	0.00
463.50	1.29	463.50	462.49	462.49	0.00	0.00	(N/A)	0.00
464.00	1.55	464.00	462.54	462.54	0.00	0.00	(N/A)	0.00
464.25	1.67	464.25	462.56	462.56	0.00	0.00	(N/A)	0.00
464.50	1.76	464.50	462.64	462.64	0.00	0.00	(N/A)	0.00
465.00	1.85	465.00	462.94	462.94	0.00	0.00	(N/A)	0.00
465.50	1.97	465.50	463.15	463.15	0.00	0.00	(N/A)	0.00
466.00	2.13	466.00	463.27	463.27	0.00	0.00	(N/A)	0.00
466.50	2.28	466.50	463.36	463.36	0.00	0.00	(N/A)	0.00
467.00	2.43	467.00	463.44	463.44	0.00	0.00	(N/A)	0.00
467.50	2.57	467.50	463.51	463.51	0.00	0.00	(N/A)	0.00
468.00	2.71	468.00	463.57	463.57	0.00	0.00	(N/A)	0.00
468.50	2.84	468.50	463.63	463.63	0.00	0.00	(N/A)	0.00
468.75	2.91	468.75	463.65	463.65	0.00	0.00	(N/A)	0.00
469.00	2.88	469.00	463.98	463.98	0.00	0.00	(N/A)	0.00
469.50	2.72	469.50	465.03	465.03	0.00	0.00	(N/A)	0.00
470.00	2.50	470.00	466.21	466.21	0.00	0.00	(N/A)	0.00
470.50	2.44	470.50	466.91	466.91	0.00	0.00	(N/A)	0.00
471.00	2.47	471.00	467.30	467.30	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .148ft
Dcr= .352ft CRIT.DEPTH Hev= .00ft
H =.57
H =1.01

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Message
H =1.46
H =1.69
H =1.86
H =2.06
H =2.35
H =2.73
H =3.14
H =3.56
H =3.99
H =4.43
H =4.87
H =5.10
H =5.02
H =4.47
H =3.79
H =3.59
H =3.70

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
458.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
458.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
459.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
460.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
461.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.50	0.00	0.00	0.00	462.30	0.00	0.00	(N/A)	0.00
463.00	0.00	0.00	0.00	462.43	0.00	0.00	(N/A)	0.00
463.50	0.00	0.00	0.00	462.49	0.00	0.00	(N/A)	0.00
464.00	0.00	0.00	0.00	462.54	0.00	0.00	(N/A)	0.00
464.25	0.00	0.00	0.00	462.56	0.00	0.00	(N/A)	0.00
464.50	0.37	464.50	Free Outfall	462.64	0.00	0.00	(N/A)	0.00
465.00	2.75	465.00	Free Outfall	462.94	0.00	0.00	(N/A)	0.00
465.50	4.79	465.50	Free Outfall	463.15	0.00	0.00	(N/A)	0.00
466.00	6.06	466.00	Free Outfall	463.27	0.00	0.00	(N/A)	0.00
466.50	7.11	466.50	Free Outfall	463.36	0.00	0.00	(N/A)	0.00
467.00	8.02	467.00	Free Outfall	463.44	0.00	0.00	(N/A)	0.00
467.50	8.84	467.50	Free Outfall	463.51	0.00	0.00	(N/A)	0.00
468.00	9.59	468.00	Free Outfall	463.57	0.00	0.00	(N/A)	0.00
468.50	10.28	468.50	Free Outfall	463.63	0.00	0.00	(N/A)	0.00
468.75	10.61	468.75	Free Outfall	463.65	0.00	0.00	(N/A)	0.00
469.00	10.93	469.00	Free Outfall	463.98	0.00	0.00	(N/A)	0.00
469.50	11.10	469.50	465.03	465.03	0.00	0.00	(N/A)	0.00
470.00	10.22	470.00	466.21	466.21	0.00	0.00	(N/A)	0.00
470.50	9.95	470.50	466.91	466.91	0.00	0.00	(N/A)	0.00
471.00	10.10	471.00	467.30	467.30	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Message
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .065ft
Dcr= .185ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .225ft
Dcr= .525ft CRIT.DEPTH Hev= .00ft
H =.83
H =1.33
H =1.83
H =2.33
H =2.83
H =3.33
H =3.83
H =4.08
H =4.33
H =4.47
H =3.79
H =3.59
H =3.70

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 154.51 ft³/s
Upstream ID = Orifice 2, Riser 1, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
458.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
458.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
459.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
459.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
460.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
460.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
461.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
461.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
462.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
462.50	0.48	462.30	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
463.00	0.97	462.43	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
463.50	1.30	462.49	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
464.00	1.56	462.54	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
464.25	1.67	462.56	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
464.50	2.13	462.64	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
465.00	4.59	462.94	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
465.50	6.77	463.15	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
466.00	8.19	463.27	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
466.50	9.38	463.36	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
467.00	10.44	463.44	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
467.50	11.40	463.51	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
468.00	12.29	463.57	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
468.50	13.17	463.63	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
468.75	13.51	463.65	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
469.00	19.05	463.98	Free Outfall	Free Outfall	0.00	0.02	(N/A)	0.00
469.50	41.10	465.03	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
470.00	71.36	466.21	Free Outfall	Free Outfall	0.00	0.06	(N/A)	0.00
470.50	90.33	466.91	Free Outfall	Free Outfall	0.00	0.05	(N/A)	0.00
471.00	101.01	467.30	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .067ft
Dcr= .199ft CRIT.DEPTH Hev= .00ft

Subsection: Individual Outlet Curves
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 154.51 ft³/s
Upstream ID = Orifice 2, Riser 1, Orifice 1
Downstream ID = Tailwater (Pond Outfall)

Message
CRIT.DEPTH CONTROL Vh= .095ft Dcr= .282ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .111ft Dcr= .326ft CRIT.DEPTH Hev= .00ft
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .214ft Dcr= .620ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .263ft Dcr= .755ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .291ft Dcr= .832ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .314ft Dcr= .891ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .333ft Dcr= .942ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .349ft Dcr= .985ft CRIT.DEPTH Hev= .00ft
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .466ft Dcr= 1.283ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .743ft Dcr= 1.915ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.102ft Dcr= 2.555ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.350ft Dcr= 2.882ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= 1.505ft Dcr= 3.045ft CRIT.DEPTH Hev= .00ft

Subsection: Composite Rating Curve
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
458.00	0.00	(N/A)	0.00
458.50	0.00	(N/A)	0.00
459.00	0.00	(N/A)	0.00
459.50	0.00	(N/A)	0.00
460.00	0.00	(N/A)	0.00
460.50	0.00	(N/A)	0.00
461.00	0.00	(N/A)	0.00
461.50	0.00	(N/A)	0.00
462.00	0.00	(N/A)	0.00
462.50	0.48	(N/A)	0.00
463.00	0.97	(N/A)	0.00
463.50	1.29	(N/A)	0.00
464.00	1.55	(N/A)	0.00
464.25	1.67	(N/A)	0.00
464.50	2.13	(N/A)	0.00
465.00	4.60	(N/A)	0.00
465.50	6.77	(N/A)	0.00
466.00	8.19	(N/A)	0.00
466.50	9.38	(N/A)	0.00
467.00	10.44	(N/A)	0.00
467.50	11.40	(N/A)	0.00
468.00	12.29	(N/A)	0.00
468.50	13.12	(N/A)	0.00
468.75	13.51	(N/A)	0.00
469.00	19.05	(N/A)	0.00
469.50	41.10	(N/A)	0.00
470.00	71.36	(N/A)	0.00
470.50	90.33	(N/A)	0.00
471.00	101.01	(N/A)	0.00

Contributing Structures
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
(no Q: Orifice 2,Riser 1,Orifice 1,Culvert)
Orifice 1,Culvert (no Q: Orifice 2,Riser 1)
Orifice 1,Culvert (no Q: Orifice 2,Riser 1)

Subsection: Composite Rating Curve
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Contributing Structures
Orifice 1,Culvert (no Q: Orifice 2,Riser 1)
Orifice 1,Culvert (no Q: Orifice 2,Riser 1)
Orifice 1,Culvert (no Q: Orifice 2,Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Orifice 1,Culvert (no Q: Riser 1)
Orifice 2,Riser 1,Orifice 1,Culvert
Orifice 2,Riser 1,Orifice 1,Culvert
Orifice 2,Riser 1,Orifice 1,Culvert
Orifice 2,Riser 1,Orifice 1,Culvert
Orifice 2,Riser 1,Orifice 1,Culvert

Subsection: Outlet Input Data
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	501.65 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	507.40 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	TW	503.40	507.40
Rectangular Weir	Weir 1	Forward	TW	504.25	507.40
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	503.40 ft
Orifice Diameter	5.75 in
Orifice Coefficient	0.600

Structure ID: Weir 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	504.25 ft
Weir Length	1.25 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
501.65	0.00	(N/A)	0.00
502.15	0.00	(N/A)	0.00
502.65	0.00	(N/A)	0.00
503.15	0.00	(N/A)	0.00
503.40	0.00	(N/A)	0.00
503.65	0.13	(N/A)	0.00
504.15	0.62	(N/A)	0.00
504.25	0.68	(N/A)	0.00
504.65	0.87	(N/A)	0.00
505.15	1.07	(N/A)	0.00
505.65	1.23	(N/A)	0.00
506.15	1.38	(N/A)	0.00
506.65	1.51	(N/A)	0.00
507.15	1.63	(N/A)	0.00
507.40	1.68	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .068ft
Dcr= .181ft CRIT.DEPTH Hev= .00ft
H =.51
H =.61
H =1.01
H =1.51
H =2.01
H =2.51
H =3.01
H =3.51
H =3.76

Subsection: Individual Outlet Curves
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
501.65	0.00	(N/A)	0.00
502.15	0.00	(N/A)	0.00
502.65	0.00	(N/A)	0.00
503.15	0.00	(N/A)	0.00
503.40	0.00	(N/A)	0.00
503.65	0.00	(N/A)	0.00
504.15	0.00	(N/A)	0.00
504.25	0.00	(N/A)	0.00
504.65	0.89	(N/A)	0.00
505.15	2.74	(N/A)	0.00
505.65	4.82	(N/A)	0.00
506.15	6.84	(N/A)	0.00
506.65	8.59	(N/A)	0.00
507.15	9.93	(N/A)	0.00
507.40	10.40	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
HW & TW below Inv.El.=504.250
H=.00; Htw=.00; Qfree=.00;
H=.40; Htw=.00; Qfree=.89;
H=.90; Htw=.00; Qfree=2.74;
H=1.40; Htw=.00; Qfree=4.82;
H=1.90; Htw=.00; Qfree=6.84;
H=2.40; Htw=.00; Qfree=8.59;
H=2.90; Htw=.00; Qfree=9.93;
H=3.15; Htw=.00; Qfree=10.40;

Subsection: Composite Rating Curve
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
501.65	0.00	(N/A)	0.00
502.15	0.00	(N/A)	0.00
502.65	0.00	(N/A)	0.00
503.15	0.00	(N/A)	0.00
503.40	0.00	(N/A)	0.00
503.65	0.13	(N/A)	0.00
504.15	0.62	(N/A)	0.00
504.25	0.68	(N/A)	0.00
504.65	1.76	(N/A)	0.00
505.15	3.81	(N/A)	0.00
505.65	6.05	(N/A)	0.00
506.15	8.21	(N/A)	0.00
506.65	10.09	(N/A)	0.00
507.15	11.55	(N/A)	0.00
507.40	12.08	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice 1
Orifice 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	503.59 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	509.34 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	TW	505.34	509.34
Rectangular Weir	Weir 1	Forward	TW	506.75	509.34
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	505.34 ft
Orifice Diameter	5.25 in
Orifice Coefficient	0.600

Structure ID: Weir 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	506.75 ft
Weir Length	2.50 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
503.59	0.00	(N/A)	0.00
504.09	0.00	(N/A)	0.00
504.59	0.00	(N/A)	0.00
505.09	0.00	(N/A)	0.00
505.34	0.00	(N/A)	0.00
505.59	0.12	(N/A)	0.00
506.09	0.53	(N/A)	0.00
506.59	0.73	(N/A)	0.00
506.75	0.79	(N/A)	0.00
507.09	0.90	(N/A)	0.00
507.59	1.03	(N/A)	0.00
508.09	1.15	(N/A)	0.00
508.59	1.26	(N/A)	0.00
509.09	1.36	(N/A)	0.00
509.34	1.41	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .069ft
Dcr= .182ft CRIT.DEPTH Hev= .00ft
H =.53
H =1.03
H =1.19
H =1.53
H =2.03
H =2.53
H =3.03
H =3.53
H =3.78

Subsection: Individual Outlet Curves
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
503.59	0.00	(N/A)	0.00
504.09	0.00	(N/A)	0.00
504.59	0.00	(N/A)	0.00
505.09	0.00	(N/A)	0.00
505.34	0.00	(N/A)	0.00
505.59	0.00	(N/A)	0.00
506.09	0.00	(N/A)	0.00
506.59	0.00	(N/A)	0.00
506.75	0.00	(N/A)	0.00
507.09	1.45	(N/A)	0.00
507.59	5.39	(N/A)	0.00
508.09	10.39	(N/A)	0.00
508.59	15.96	(N/A)	0.00
509.09	21.82	(N/A)	0.00
509.34	24.78	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
HW & TW below Inv.El.=506.750
H=.00; Htw=.00; Qfree=.00;
H=.34; Htw=.00; Qfree=1.45;
H=.84; Htw=.00; Qfree=5.39;
H=1.34; Htw=.00; Qfree=10.39;
H=1.84; Htw=.00; Qfree=15.96;
H=2.34; Htw=.00; Qfree=21.82;
H=2.59; Htw=.00; Qfree=24.78;

Subsection: Composite Rating Curve
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
503.59	0.00	(N/A)	0.00
504.09	0.00	(N/A)	0.00
504.59	0.00	(N/A)	0.00
505.09	0.00	(N/A)	0.00
505.34	0.00	(N/A)	0.00
505.59	0.12	(N/A)	0.00
506.09	0.53	(N/A)	0.00
506.59	0.73	(N/A)	0.00
506.75	0.79	(N/A)	0.00
507.09	2.34	(N/A)	0.00
507.59	6.42	(N/A)	0.00
508.09	11.54	(N/A)	0.00
508.59	17.22	(N/A)	0.00
509.09	23.18	(N/A)	0.00
509.34	26.19	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice 1
Orifice 1
Orifice 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1

Subsection: Outlet Input Data
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	552.52 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	558.27 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	TW	554.27	558.27
Rectangular Weir	Weir 1	Forward	TW	555.90	558.27
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	554.27 ft
Orifice Diameter	5.50 in
Orifice Coefficient	0.600

Structure ID: Weir 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	555.90 ft
Weir Length	3.25 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
552.52	0.00	(N/A)	0.00
553.02	0.00	(N/A)	0.00
553.52	0.00	(N/A)	0.00
554.02	0.00	(N/A)	0.00
554.27	0.00	(N/A)	0.00
554.52	0.13	(N/A)	0.00
555.02	0.57	(N/A)	0.00
555.52	0.80	(N/A)	0.00
555.90	0.94	(N/A)	0.00
556.02	0.98	(N/A)	0.00
556.52	1.13	(N/A)	0.00
557.02	1.26	(N/A)	0.00
557.52	1.38	(N/A)	0.00
558.02	1.49	(N/A)	0.00
558.27	1.54	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .068ft
Dcr= .183ft CRIT.DEPTH Hev= .00ft
H =.52
H =1.02
H =1.40
H =1.52
H =2.02
H =2.52
H =3.02
H =3.52
H =3.77

Subsection: Individual Outlet Curves
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
552.52	0.00	(N/A)	0.00
553.02	0.00	(N/A)	0.00
553.52	0.00	(N/A)	0.00
554.02	0.00	(N/A)	0.00
554.27	0.00	(N/A)	0.00
554.52	0.00	(N/A)	0.00
555.02	0.00	(N/A)	0.00
555.52	0.00	(N/A)	0.00
555.90	0.00	(N/A)	0.00
556.02	0.40	(N/A)	0.00
556.52	4.58	(N/A)	0.00
557.02	10.76	(N/A)	0.00
557.52	18.10	(N/A)	0.00
558.02	26.17	(N/A)	0.00
558.27	30.39	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
HW & TW below Inv.El.=555.900
H=.00; Htw=.00; Qfree=.00;
H=.12; Htw=.00; Qfree=.40;
H=.62; Htw=.00; Qfree=4.58;
H=1.12; Htw=.00; Qfree=10.76;
H=1.62; Htw=.00; Qfree=18.10;
H=2.12; Htw=.00; Qfree=26.17;
H=2.37; Htw=.00; Qfree=30.39;

Subsection: Composite Rating Curve
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
552.52	0.00	(N/A)	0.00
553.02	0.00	(N/A)	0.00
553.52	0.00	(N/A)	0.00
554.02	0.00	(N/A)	0.00
554.27	0.00	(N/A)	0.00
554.52	0.13	(N/A)	0.00
555.02	0.57	(N/A)	0.00
555.52	0.80	(N/A)	0.00
555.90	0.94	(N/A)	0.00
556.02	1.38	(N/A)	0.00
556.52	5.71	(N/A)	0.00
557.02	12.02	(N/A)	0.00
557.52	19.48	(N/A)	0.00
558.02	27.66	(N/A)	0.00
558.27	31.93	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice 1
Orifice 1
Orifice 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	579.95 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	585.70 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	TW	581.70	585.70
Rectangular Weir	Weir 1	Forward	TW	583.10	585.70
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	581.70 ft
Orifice Diameter	5.50 in
Orifice Coefficient	0.600

Structure ID: Weir 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	583.10 ft
Weir Length	3.25 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
579.95	0.00	(N/A)	0.00
580.45	0.00	(N/A)	0.00
580.95	0.00	(N/A)	0.00
581.45	0.00	(N/A)	0.00
581.70	0.00	(N/A)	0.00
581.95	0.13	(N/A)	0.00
582.45	0.57	(N/A)	0.00
582.95	0.80	(N/A)	0.00
583.10	0.86	(N/A)	0.00
583.45	0.98	(N/A)	0.00
583.95	1.13	(N/A)	0.00
584.45	1.26	(N/A)	0.00
584.95	1.38	(N/A)	0.00
585.45	1.49	(N/A)	0.00
585.70	1.54	(N/A)	0.00

Computation Messages

HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .068ft
Dcr= .183ft CRIT.DEPTH Hev= .00ft
H =.52
H =1.02
H =1.17
H =1.52
H =2.02
H =2.52
H =3.02
H =3.52
H =3.77

Subsection: Individual Outlet Curves
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
579.95	0.00	(N/A)	0.00
580.45	0.00	(N/A)	0.00
580.95	0.00	(N/A)	0.00
581.45	0.00	(N/A)	0.00
581.70	0.00	(N/A)	0.00
581.95	0.00	(N/A)	0.00
582.45	0.00	(N/A)	0.00
582.95	0.00	(N/A)	0.00
583.10	0.00	(N/A)	0.00
583.45	1.98	(N/A)	0.00
583.95	7.24	(N/A)	0.00
584.45	14.02	(N/A)	0.00
584.95	21.74	(N/A)	0.00
585.45	30.04	(N/A)	0.00
585.70	34.34	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
HW & TW below Inv.El.=583.100
H=.00; Htw=.00; Qfree=.00;
H=.35; Htw=.00; Qfree=1.98;
H=.85; Htw=.00; Qfree=7.24;
H=1.35; Htw=.00; Qfree=14.02;
H=1.85; Htw=.00; Qfree=21.74;
H=2.35; Htw=.00; Qfree=30.04;
H=2.60; Htw=.00; Qfree=34.34;

Subsection: Composite Rating Curve
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
579.95	0.00	(N/A)	0.00
580.45	0.00	(N/A)	0.00
580.95	0.00	(N/A)	0.00
581.45	0.00	(N/A)	0.00
581.70	0.00	(N/A)	0.00
581.95	0.13	(N/A)	0.00
582.45	0.57	(N/A)	0.00
582.95	0.80	(N/A)	0.00
583.10	0.86	(N/A)	0.00
583.45	2.95	(N/A)	0.00
583.95	8.37	(N/A)	0.00
584.45	15.28	(N/A)	0.00
584.95	23.12	(N/A)	0.00
585.45	31.53	(N/A)	0.00
585.70	35.88	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice 1
Orifice 1
Orifice 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1

Subsection: Outlet Input Data
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	569.56 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	575.31 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	TW	571.31	575.31
Rectangular Weir	Weir 1	Forward	TW	573.20	575.31
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	571.31 ft
Orifice Diameter	2.75 in
Orifice Coefficient	0.600

Structure ID: Weir 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	573.20 ft
Weir Length	2.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
569.56	0.00	(N/A)	0.00
570.06	0.00	(N/A)	0.00
570.56	0.00	(N/A)	0.00
571.06	0.00	(N/A)	0.00
571.31	0.00	(N/A)	0.00
571.56	0.07	(N/A)	0.00
572.06	0.16	(N/A)	0.00
572.56	0.21	(N/A)	0.00
573.06	0.25	(N/A)	0.00
573.20	0.26	(N/A)	0.00
573.56	0.29	(N/A)	0.00
574.06	0.32	(N/A)	0.00
574.56	0.35	(N/A)	0.00
575.06	0.38	(N/A)	0.00
575.31	0.39	(N/A)	0.00

Computation Messages
HW & TW below invert
HW & TW below invert
HW & TW below invert
HW & TW below invert
Upstream HW & DNstream TW < Inv.El
H =.14
H =.64
H =1.14
H =1.64
H =1.78
H =2.14
H =2.64
H =3.14
H =3.64
H =3.89

Subsection: Individual Outlet Curves
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
569.56	0.00	(N/A)	0.00
570.06	0.00	(N/A)	0.00
570.56	0.00	(N/A)	0.00
571.06	0.00	(N/A)	0.00
571.31	0.00	(N/A)	0.00
571.56	0.00	(N/A)	0.00
572.06	0.00	(N/A)	0.00
572.56	0.00	(N/A)	0.00
573.06	0.00	(N/A)	0.00
573.20	0.00	(N/A)	0.00
573.56	1.25	(N/A)	0.00
574.06	4.37	(N/A)	0.00
574.56	8.22	(N/A)	0.00
575.06	12.39	(N/A)	0.00
575.31	14.51	(N/A)	0.00

Computation Messages

HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
HW & TW below Inv.El.=573.200
H=.00; Htw=.00; Qfree=.00;
H=.36; Htw=.00; Qfree=1.25;
H=.86; Htw=.00; Qfree=4.37;
H=1.36; Htw=.00; Qfree=8.22;
H=1.86; Htw=.00; Qfree=12.39;
H=2.11; Htw=.00; Qfree=14.51;

Subsection: Composite Rating Curve
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
569.56	0.00	(N/A)	0.00
570.06	0.00	(N/A)	0.00
570.56	0.00	(N/A)	0.00
571.06	0.00	(N/A)	0.00
571.31	0.00	(N/A)	0.00
571.56	0.07	(N/A)	0.00
572.06	0.16	(N/A)	0.00
572.56	0.21	(N/A)	0.00
573.06	0.25	(N/A)	0.00
573.20	0.26	(N/A)	0.00
573.56	1.54	(N/A)	0.00
574.06	4.70	(N/A)	0.00
574.56	8.57	(N/A)	0.00
575.06	12.77	(N/A)	0.00
575.31	14.90	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice 1
Orifice 1
Orifice 1
Orifice 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1
Orifice 1 + Weir 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	461.75 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	467.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice 1	Forward	Culvert	463.50	467.50
Rectangular Weir	Weir	Forward	Culvert	466.25	467.50
Culvert-Circular	Culvert	Forward	TW	460.25	467.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	466.25 ft
Weir Length	4.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	463.50 ft
Orifice Diameter	3.25 in
Orifice Coefficient	0.600

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	24.00 in
Length	55.00 ft
Length (Computed Barrel)	55.65 ft
Slope (Computed)	0.155 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.012
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0078
M	2.0000
C	0.0379
Y	0.6900
T1 ratio (HW/D)	1.058
T2 ratio (HW/D)	1.219
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	462.37 ft	T1 Flow	15.55 ft^3/s
T2 Elevation	462.69 ft	T2 Flow	17.77 ft^3/s

Subsection: Outlet Input Data
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)	Message
461.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
462.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
462.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
463.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
463.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
463.75	0.00	0.00	0.00	460.40	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
464.25	0.00	0.00	0.00	460.49	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
464.75	0.00	0.00	0.00	460.53	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
465.25	0.00	0.00	0.00	460.56	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
465.75	0.00	0.00	0.00	460.58	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
466.25	0.00	0.00	0.00	460.60	0.00	0.00	(N/A)	0.00	WS below an invert; no flow.
466.75	4.14	466.75	Free Outfall	461.43	0.00	0.00	(N/A)	0.00	H=.50; Htw=.00; Qfree=4.14;
467.25	11.40	467.25	Free Outfall	462.28	0.00	0.00	(N/A)	0.00	H=1.00; Htw=.00; Qfree=11.40;
467.50	15.72	467.50	Free Outfall	462.73	0.00	0.00	(N/A)	0.00	H=1.25; Htw=.00; Qfree=15.72;

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
461.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
462.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
463.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
463.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
463.75	0.09	463.75	Free Outfall	460.40	0.00	0.00	(N/A)	0.00
464.25	0.22	464.25	Free Outfall	460.49	0.00	0.00	(N/A)	0.00
464.75	0.29	464.75	Free Outfall	460.53	0.00	0.00	(N/A)	0.00
465.25	0.35	465.25	Free Outfall	460.56	0.00	0.00	(N/A)	0.00
465.75	0.40	465.75	Free Outfall	460.58	0.00	0.00	(N/A)	0.00
466.25	0.45	466.25	Free Outfall	460.60	0.00	0.00	(N/A)	0.00
466.75	0.49	466.75	Free Outfall	461.43	0.00	0.00	(N/A)	0.00
467.25	0.53	467.25	Free Outfall	462.28	0.00	0.00	(N/A)	0.00
467.50	0.55	467.50	Free Outfall	462.73	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .076ft Dcr= .173ft CRIT.DEPTH Hev= .00ft H =.61
H =1.11
H =1.61
H =2.11
H =2.61
H =3.11
H =3.61
H =3.86

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert (Culvert-Circular)

Mannings open channel maximum capacity: 95.66 ft³/s
Upstream ID = Orifice 1, Weir
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft²/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
461.75	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
462.25	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
462.75	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
463.25	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
463.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
463.75	0.09	460.40	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
464.25	0.22	460.49	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
464.75	0.29	460.53	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
465.25	0.35	460.56	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
465.75	0.40	460.58	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
466.25	0.45	460.60	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
466.75	4.63	461.43	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
467.25	11.92	462.28	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
467.50	16.26	462.73	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .034ft Dcr= .100ft CRIT.DEPTH Hev= .00ft
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .069ft Dcr= .203ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .074ft Dcr= .217ft CRIT.DEPTH Hev= .00ft
FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
CRIT.DEPTH CONTROL Vh= .281ft Dcr= .756ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .527ft Dcr= 1.240ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .686ft Dcr= 1.454ft CRIT.DEPTH Hev= .00ft

Subsection: Composite Rating Curve
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
461.75	0.00	(N/A)	0.00
462.25	0.00	(N/A)	0.00
462.75	0.00	(N/A)	0.00
463.25	0.00	(N/A)	0.00
463.50	0.00	(N/A)	0.00
463.75	0.09	(N/A)	0.00
464.25	0.22	(N/A)	0.00
464.75	0.29	(N/A)	0.00
465.25	0.35	(N/A)	0.00
465.75	0.40	(N/A)	0.00
466.25	0.45	(N/A)	0.00
466.75	4.63	(N/A)	0.00
467.25	11.92	(N/A)	0.00
467.50	16.26	(N/A)	0.00

Contributing Structures
(no Q: Orifice 1,Weir,Culvert)
(no Q: Orifice 1,Weir,Culvert)
(no Q: Orifice 1,Weir,Culvert)
(no Q: Orifice 1,Weir,Culvert)
(no Q: Orifice 1,Weir,Culvert)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Culvert (no Q: Weir)
Orifice 1,Weir,Culvert
Orifice 1,Weir,Culvert
Orifice 1,Weir,Culvert

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio A2

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	429.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
429.00	0.00	0.000	3,040	0.00	0.00	0.00
429.50	0.00	0.035	3,040	0.00	0.00	16.89
430.00	0.00	0.070	3,040	0.00	0.00	33.78
430.50	0.00	0.105	3,040	0.00	0.00	50.67
431.00	0.00	0.140	3,040	0.00	0.00	67.56
431.50	0.00	0.174	3,040	0.00	0.00	84.44
432.00	0.00	0.222	15,200	0.00	0.00	107.23
432.50	0.00	0.404	16,569	0.00	0.00	195.45
433.00	0.35	0.602	17,997	0.00	0.35	291.79
433.50	0.58	0.817	19,484	0.00	0.58	396.11
434.00	15.59	1.050	21,031	0.00	15.59	523.63
434.50	21.48	1.300	22,636	0.00	21.48	650.78
435.00	22.41	1.570	24,300	0.00	22.41	782.07

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio A8

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	556.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
556.00	0.00	0.000	845	0.00	0.00	0.00
556.50	0.00	0.010	845	0.00	0.00	4.69
557.00	0.00	0.019	845	0.00	0.00	9.39
557.50	0.00	0.029	845	0.00	0.00	14.08
558.00	0.00	0.039	845	0.00	0.00	18.78
558.50	0.00	0.048	845	0.00	0.00	23.47
559.00	0.00	0.062	4,226	0.00	0.00	29.81
559.50	0.00	0.115	5,067	0.00	0.00	55.58
560.00	0.10	0.178	5,984	0.00	0.10	86.35
560.50	0.16	0.253	6,977	0.00	0.16	122.37
561.00	0.19	0.339	8,046	0.00	0.19	164.10
561.20	0.21	0.377	8,496	0.00	0.21	182.49
561.50	7.13	0.438	9,192	0.00	7.13	218.89
562.00	17.18	0.550	10,414	0.00	17.18	283.37

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio A9

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	482.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
482.00	0.00	0.000	1,106	0.00	0.00	0.00
482.50	0.00	0.013	1,106	0.00	0.00	6.14
483.00	0.00	0.025	1,106	0.00	0.00	12.29
483.50	0.00	0.038	1,106	0.00	0.00	18.43
484.00	0.00	0.051	1,106	0.00	0.00	24.58
484.50	0.00	0.063	1,106	0.00	0.00	30.72
485.00	0.00	0.081	5,534	0.00	0.00	39.01
485.50	0.00	0.148	6,255	0.00	0.00	71.74
486.00	0.24	0.224	7,021	0.00	0.24	108.84
486.50	0.38	0.310	7,830	0.00	0.38	150.21
487.00	0.49	0.404	8,684	0.00	0.49	196.17
487.50	15.38	0.508	9,407	0.00	15.38	261.31
488.00	20.43	0.620	10,159	0.00	20.43	320.69

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B2

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	444.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
444.00	0.00	0.000	476	0.00	0.00	0.00
444.50	0.00	0.005	476	0.00	0.00	2.64
445.00	0.00	0.011	476	0.00	0.00	5.29
445.50	0.00	0.016	476	0.00	0.00	7.93
446.00	0.00	0.022	476	0.00	0.00	10.58
446.50	0.00	0.027	476	0.00	0.00	13.22
447.00	0.00	0.035	2,380	0.00	0.00	16.79
447.50	0.00	0.068	3,375	0.00	0.00	32.70
448.00	0.09	0.113	4,543	0.00	0.09	54.70
448.30	0.11	0.147	5,328	0.00	0.11	71.16
448.50	3.88	0.173	5,885	0.00	3.88	87.38
449.00	16.47	0.249	7,400	0.00	16.47	136.79

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B3

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	454.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
454.00	0.00	0.000	570	0.00	0.00	0.00
454.50	0.00	0.007	570	0.00	0.00	3.17
455.00	0.00	0.013	570	0.00	0.00	6.33
455.50	0.00	0.020	570	0.00	0.00	9.50
456.00	0.00	0.026	570	0.00	0.00	12.67
456.50	0.00	0.033	570	0.00	0.00	15.83
457.00	0.00	0.042	2,850	0.00	0.00	20.11
457.50	0.00	0.078	3,563	0.00	0.00	37.88
458.00	0.09	0.124	4,356	0.00	0.09	59.93
458.25	0.11	0.150	4,782	0.00	0.11	72.64
458.50	5.37	0.179	5,228	0.00	5.37	91.80
459.00	14.93	0.244	6,180	0.00	14.93	133.01

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B4

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	484.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
484.50	0.00	0.000	362	0.00	0.00	0.00
485.00	0.00	0.004	362	0.00	0.00	2.01
485.50	0.00	0.008	362	0.00	0.00	4.02
486.00	0.00	0.012	362	0.00	0.00	6.03
486.50	0.00	0.017	362	0.00	0.00	8.04
487.00	0.00	0.021	362	0.00	0.00	10.06
487.50	0.00	0.026	1,810	0.00	0.00	12.77
488.00	0.00	0.050	2,228	0.00	0.00	23.96
488.50	0.06	0.078	2,689	0.00	0.06	37.66
489.00	0.09	0.111	3,193	0.00	0.09	54.01
489.50	0.11	0.151	3,741	0.00	0.11	73.28
489.60	0.12	0.160	3,856	0.00	0.12	77.50
490.00	20.02	0.197	4,332	0.00	20.02	115.59

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B6

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	538.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
538.00	0.00	0.000	1,522	0.00	0.00	0.00
538.50	0.00	0.017	1,522	0.00	0.00	8.46
539.00	0.00	0.035	1,522	0.00	0.00	16.91
539.50	0.00	0.052	1,522	0.00	0.00	25.37
540.00	0.00	0.070	1,522	0.00	0.00	33.82
540.50	0.00	0.087	1,522	0.00	0.00	42.28
541.00	0.00	0.111	7,610	0.00	0.00	53.68
541.50	0.00	0.203	8,462	0.00	0.00	98.31
542.00	0.21	0.305	9,359	0.00	0.21	148.00
542.50	0.33	0.418	10,302	0.00	0.33	202.71
543.00	0.42	0.542	11,289	0.00	0.42	262.75
543.30	0.46	0.622	11,903	0.00	0.46	301.45
543.50	4.24	0.677	12,322	0.00	4.24	332.15
544.00	21.32	0.825	13,400	0.00	21.32	420.65

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B7

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	466.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
466.00	0.00	0.000	5,920	0.00	0.00	0.00
466.50	0.00	0.068	5,920	0.00	0.00	32.89
467.00	0.00	0.136	5,920	0.00	0.00	65.78
467.50	0.00	0.204	5,920	0.00	0.00	98.67
468.00	0.00	0.272	5,920	0.00	0.00	131.56
468.50	0.00	0.340	5,920	0.00	0.00	164.44
469.00	0.00	0.431	29,600	0.00	0.00	208.81
469.50	0.00	0.779	31,029	0.00	0.00	377.21
470.00	26.41	1.144	32,491	0.00	26.41	580.05
470.50	74.40	1.525	33,987	0.00	74.40	812.68
471.00	136.13	1.924	35,516	0.00	136.13	1,067.46

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Bio B9

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	490.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
490.00	0.00	0.000	1,060	0.00	0.00	0.00
490.50	0.00	0.012	1,060	0.00	0.00	5.89
491.00	0.00	0.024	1,060	0.00	0.00	11.78
491.50	0.00	0.037	1,060	0.00	0.00	17.67
492.00	0.00	0.049	1,060	0.00	0.00	23.56
492.50	0.00	0.061	1,060	0.00	0.00	29.44
493.00	0.00	0.077	5,300	0.00	0.00	37.39
493.50	0.00	0.141	5,783	0.00	0.00	68.17
494.00	0.17	0.210	6,287	0.00	0.17	101.85
494.50	0.26	0.285	6,813	0.00	0.26	138.32
495.00	0.32	0.367	7,359	0.00	0.32	177.74
495.50	0.38	0.454	7,927	0.00	0.38	220.25
496.00	0.42	0.549	8,515	0.00	0.42	265.96
496.50	0.47	0.650	9,125	0.00	0.47	314.99
497.00	0.51	0.758	9,755	0.00	0.51	367.46
497.10	0.52	0.781	9,884	0.00	0.52	378.39
497.50	21.81	0.874	10,407	0.00	21.81	444.77
498.00	72.12	0.997	11,080	0.00	72.12	554.75

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Existing Pond-Revised

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	427.30 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
427.30	0.00	0.000	100	0.00	0.00	0.00
427.80	4.33	1.148	143,135	0.00	4.33	559.83
428.30	12.26	3.093	187,836	0.00	12.26	1,509.13
428.80	22.53	5.437	221,093	0.00	22.53	2,654.06
429.30	34.65	8.179	257,058	0.00	34.65	3,993.12
429.80	48.43	11.349	295,733	0.00	48.43	5,541.18
430.30	63.67	14.993	341,629	0.00	63.67	7,320.50
430.80	80.21	19.212	394,070	0.00	80.21	9,378.91
431.30	97.98	24.054	450,254	0.00	97.98	11,740.30
431.80	116.94	29.563	510,180	0.00	116.94	14,425.39
432.30	130.39	35.735	560,371	0.00	130.39	17,426.05
432.80	144.20	42.414	603,610	0.00	144.20	20,672.40
433.30	156.93	49.598	648,455	0.00	156.93	24,162.34
433.80	168.66	57.306	694,907	0.00	168.66	27,904.89
434.00	173.14	60.540	713,938	0.00	173.14	29,474.71

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Existing Wetland

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	398.60 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
398.60	0.00	0.000	15	0.00	0.00	0.00
399.10	11.53	0.027	6,654	0.00	11.53	24.46
399.60	31.85	0.199	25,366	0.00	31.85	128.13
400.10	58.54	0.667	66,785	0.00	58.54	381.38
400.60	90.03	2.113	196,638	0.00	90.03	1,112.91
401.10	125.88	5.443	394,950	0.00	125.88	2,760.36
401.60	165.59	11.442	661,720	0.00	165.59	5,703.56
402.10	208.54	20.877	980,387	0.00	208.54	10,313.13
402.60	254.76	33.839	1,284,856	0.00	254.76	16,632.66
403.10	304.12	50.531	1,630,435	0.00	304.12	24,761.02
403.60	356.11	71.426	2,017,124	0.00	356.11	34,926.09
404.10	410.95	96.923	2,382,034	0.00	410.95	47,321.67
404.60	468.13	125.019	2,513,965	0.00	468.13	60,977.21
405.10	527.77	154.649	2,649,451	0.00	527.77	75,378.02
405.60	590.02	185.855	2,788,493	0.00	590.02	90,544.03
406.10	654.12	218.685	2,937,041	0.00	654.12	106,497.52
406.60	720.69	253.407	3,113,912	0.00	720.69	123,369.89
407.10	789.42	290.190	3,295,954	0.00	789.42	141,241.41
407.60	860.01	329.092	3,483,168	0.00	860.01	160,140.50
408.00	917.86	361.779	3,636,662	0.00	917.86	176,018.97

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Pond B7

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	462.00 ft
Volume (Initial)	1.220 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
458.00	0.00	0.000	8,710	0.00	0.00	0.00
458.50	0.00	0.105	9,571	0.00	0.00	50.76
459.00	0.00	0.220	10,472	0.00	0.00	106.42
459.50	0.00	0.345	11,414	0.00	0.00	167.19
460.00	0.00	0.482	12,396	0.00	0.00	233.31
460.50	0.00	0.630	13,419	0.00	0.00	305.00
461.00	0.00	0.790	14,482	0.00	0.00	382.48
461.50	0.00	0.980	18,639	0.00	0.00	474.24
462.00	0.00	1.220	23,319	0.00	0.00	590.55
462.50	0.48	1.580	34,698	0.00	0.48	765.41
463.00	0.97	1.988	36,253	0.00	0.97	962.97
463.50	1.29	2.413	37,841	0.00	1.29	1,169.09
464.00	1.55	2.856	39,463	0.00	1.55	1,384.07
464.25	1.67	3.085	40,287	0.00	1.67	1,494.95
464.50	2.13	3.319	41,120	0.00	2.13	1,608.47
465.00	4.60	3.801	42,810	0.00	4.60	1,844.06
465.50	6.77	4.302	44,535	0.00	6.77	2,088.84
466.00	8.19	4.823	46,293	0.00	8.19	2,342.54
466.50	9.38	5.365	48,086	0.00	9.38	2,605.89
467.00	10.44	5.927	49,913	0.00	10.44	2,879.15
467.50	11.40	6.511	51,773	0.00	11.40	3,162.55
468.00	12.29	7.116	53,668	0.00	12.29	3,456.32
468.50	13.12	7.743	55,597	0.00	13.12	3,760.65
468.75	13.51	8.065	56,574	0.00	13.51	3,916.83
469.00	19.05	8.392	57,560	0.00	19.05	4,080.88
469.50	41.10	9.064	59,557	0.00	41.10	4,428.24
470.00	71.36	9.760	61,588	0.00	71.36	4,795.00
470.50	90.33	10.478	63,653	0.00	90.33	5,161.85
471.00	101.01	11.221	65,752	0.00	101.01	5,531.97

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG A3

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	501.65 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
501.65	0.00	0.000	0	0.00	0.00	0.00
502.15	0.00	0.089	0	0.00	0.00	42.97
502.65	0.00	0.231	0	0.00	0.00	111.61
503.15	0.00	0.422	0	0.00	0.00	204.32
503.40	0.00	0.516	0	0.00	0.00	249.92
503.65	0.13	0.611	0	0.00	0.13	295.64
504.15	0.62	0.794	0	0.00	0.62	385.08
504.25	0.68	0.830	0	0.00	0.68	402.27
504.65	1.76	0.971	0	0.00	1.76	471.87
505.15	3.81	1.139	0	0.00	3.81	554.88
505.65	6.05	1.292	0	0.00	6.05	631.53
506.15	8.21	1.425	0	0.00	8.21	697.82
506.65	10.09	1.520	0	0.00	10.09	745.92
507.15	11.55	1.609	0	0.00	11.55	790.34
507.40	12.08	1.653	0	0.00	12.08	812.35

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG A4

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	503.59 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
503.59	0.00	0.000	0	0.00	0.00	0.00
504.09	0.00	0.094	0	0.00	0.00	45.62
504.59	0.00	0.245	0	0.00	0.00	118.53
505.09	0.00	0.448	0	0.00	0.00	217.00
505.34	0.00	0.548	0	0.00	0.00	265.44
505.59	0.12	0.648	0	0.00	0.12	313.99
506.09	0.53	0.844	0	0.00	0.53	408.87
506.59	0.73	1.032	0	0.00	0.73	500.05
506.75	0.79	1.089	0	0.00	0.79	527.63
507.09	2.34	1.209	0	0.00	2.34	587.66
507.59	6.42	1.373	0	0.00	6.42	670.76
508.09	11.54	1.513	0	0.00	11.54	743.98
508.59	17.22	1.615	0	0.00	17.22	798.75
509.09	23.18	1.709	0	0.00	23.18	850.33
509.34	26.19	1.756	0	0.00	26.19	876.15

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG A5

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	552.52 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
552.52	0.00	0.000	0	0.00	0.00	0.00
553.02	0.00	0.110	0	0.00	0.00	53.34
553.52	0.00	0.286	0	0.00	0.00	138.63
554.02	0.00	0.525	0	0.00	0.00	253.88
554.27	0.00	0.642	0	0.00	0.00	310.56
554.52	0.13	0.759	0	0.00	0.13	367.37
555.02	0.57	0.987	0	0.00	0.57	478.37
555.52	0.80	1.207	0	0.00	0.80	585.06
555.90	0.94	1.365	0	0.00	0.94	661.68
556.02	1.38	1.415	0	0.00	1.38	686.27
556.52	5.71	1.606	0	0.00	5.71	783.06
557.02	12.02	1.771	0	0.00	12.02	869.05
557.52	19.48	1.889	0	0.00	19.48	933.90
558.02	27.66	1.999	0	0.00	27.66	995.42
558.27	31.93	2.055	0	0.00	31.93	1,026.36

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG A6

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.95 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.95	0.00	0.000	0	0.00	0.00	0.00
580.45	0.00	0.110	0	0.00	0.00	53.17
580.95	0.00	0.286	0	0.00	0.00	138.19
581.45	0.00	0.523	0	0.00	0.00	253.06
581.70	0.00	0.640	0	0.00	0.00	309.56
581.95	0.13	0.756	0	0.00	0.13	366.18
582.45	0.57	0.984	0	0.00	0.57	476.82
582.95	0.80	1.203	0	0.00	0.80	583.17
583.10	0.86	1.265	0	0.00	0.86	613.31
583.45	2.95	1.410	0	0.00	2.95	685.62
583.95	8.37	1.601	0	0.00	8.37	783.20
584.45	15.28	1.765	0	0.00	15.28	869.53
584.95	23.12	1.883	0	0.00	23.12	934.57
585.45	31.53	1.993	0	0.00	31.53	996.16
585.70	35.88	2.048	0	0.00	35.88	1,027.09

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG A7

Return Event: 1 years
Storm Event: 1-Year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	569.56 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
569.56	0.00	0.000	0	0.00	0.00	0.00
570.06	0.00	0.031	0	0.00	0.00	15.16
570.56	0.00	0.081	0	0.00	0.00	39.23
571.06	0.00	0.148	0	0.00	0.00	71.67
571.31	0.00	0.181	0	0.00	0.00	87.62
571.56	0.07	0.214	0	0.00	0.07	103.65
572.06	0.16	0.278	0	0.00	0.16	134.86
572.56	0.21	0.340	0	0.00	0.21	164.89
573.06	0.25	0.399	0	0.00	0.25	193.29
573.20	0.26	0.414	0	0.00	0.26	200.60
573.56	1.54	0.453	0	0.00	1.54	220.65
574.06	4.70	0.499	0	0.00	4.70	246.31
574.56	8.57	0.533	0	0.00	8.57	266.48
575.06	12.77	0.564	0	0.00	12.77	285.83
575.31	14.90	0.580	0	0.00	14.90	295.55

Subsection: Elevation-Volume-Flow Table (Pond)
Label: UG B10

Return Event: 1 years
Storm Event: 1-Year

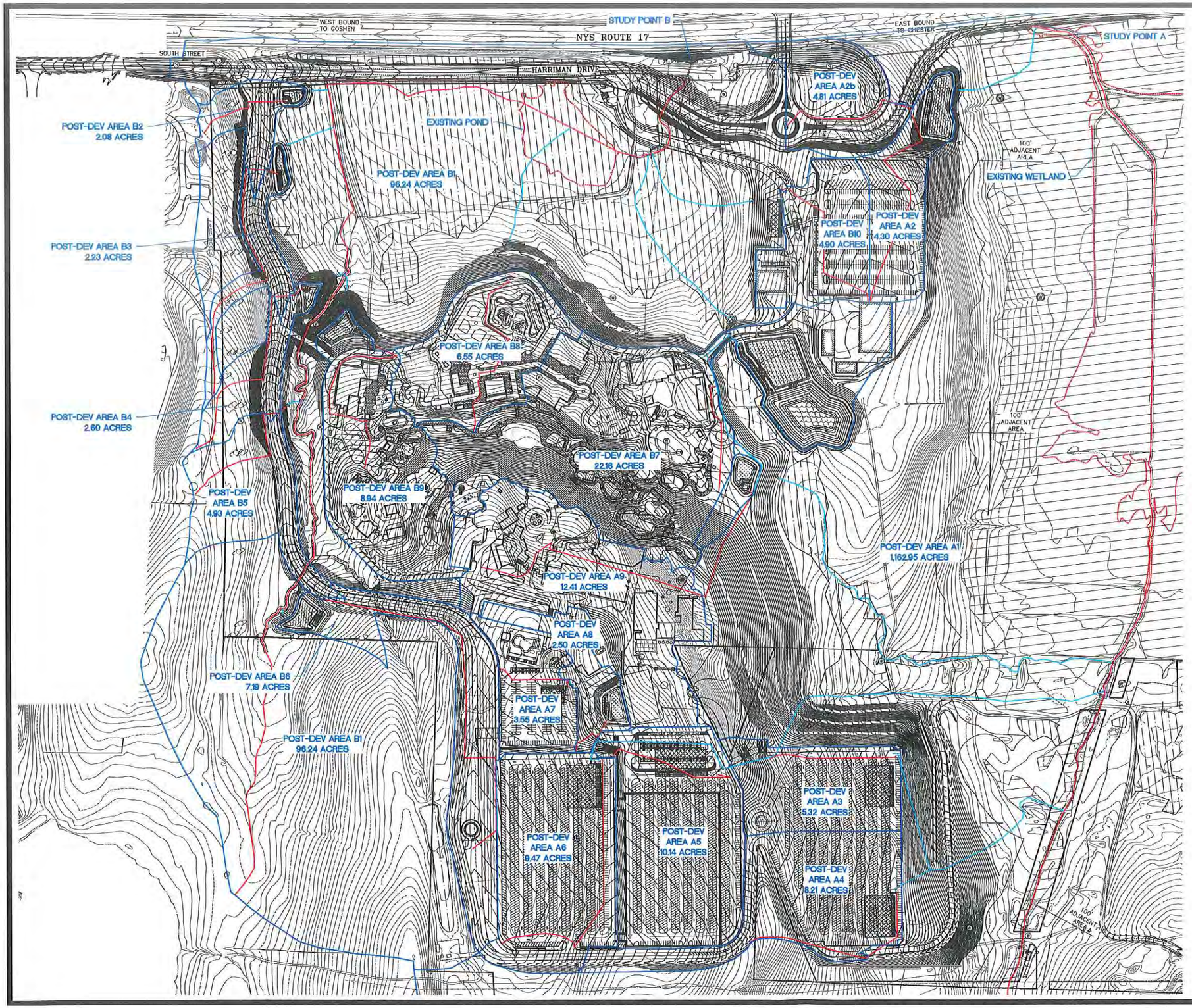
Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	461.75 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
461.75	0.00	0.000	0	0.00	0.00	0.00
462.25	0.00	0.039	0	0.00	0.00	18.85
462.75	0.00	0.101	0	0.00	0.00	48.83
463.25	0.00	0.184	0	0.00	0.00	89.24
463.50	0.00	0.225	0	0.00	0.00	109.11
463.75	0.09	0.267	0	0.00	0.09	129.08
464.25	0.22	0.347	0	0.00	0.22	167.98
464.75	0.29	0.424	0	0.00	0.29	205.41
465.25	0.35	0.497	0	0.00	0.35	240.79
465.75	0.40	0.564	0	0.00	0.40	273.31
466.25	0.45	0.622	0	0.00	0.45	301.38
466.75	4.63	0.664	0	0.00	4.63	325.82
467.25	11.92	0.703	0	0.00	11.92	351.96
467.50	16.26	0.722	0	0.00	16.26	365.73

APPENDIX B

POST-DEVELOPMENT DRAINAGE CONDITIONS MAPS
STORMWATER PRACTICE MAP



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POST-DEVELOPMENT DRAINAGE CONDITIONS MAP

LEGOLAND NEW YORK
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

Date:	SEPTEMBER 16, 2016
Revisions:	APRIL 7, 2017 DECEMBER 4, 2017 JULY 19, 2018
CAD File:	160042-DRAINAGE
Layout:	POST 2
Sheet No.:	4 OF 5
Drawing No.:	C3D
Drawn By:	ESR
Checked By:	
Scale:	1" = 400'
Tax Map No.:	SEE SITE PLANS
	D - 16 - 0042 - 04

SHEETFLOW TO RIPARIAN BUFFER
TOTAL SITE AREA 218.8 ACRES
TOTAL IMPERVIOUS 3.47 ACRES

OFF-SITE WATER QUALITY VOLUME AREA
12.92 ACRES

BIO-RETENTION AREA B2
A=2,300 SF

BIO-RETENTION AREA B3
A=2,850 SF

BIO-RETENTION AREA B4
A=1,810 SF

BIO-RETENTION AREA B9
A=5,300 SF

DRY SWALES B5
L=924 SF

WETLANDS

BIO-RETENTION AREA B6
A=7,610 SF

UNDERGROUND SAND FILTER A7
10 ROWS X 25 CHAMBERS
CULTEC 902HD

UNDERGROUND SAND FILTER A6
19 ROWS X 47 CHAMBERS
CULTEC 902HD

WETLANDS

ON-SITE WATER QUALITY VOLUME AREA
149.78 ACRES

SHEETFLOW TO RIPARIAN BUFFER

DRY SWALE B9
L=194 FT

WETLANDS

DRY SWALE B8
L=510 FT

SHEETFLOW TO RIPARIAN BUFFER

WETLAND BUFFER

DRY SWALE B7
L=236 FT

POROUS PAVERS
122,080 SF

RAIN GARDENS A8
A=520 SF

UNDERGROUND SAND FILTER A5
16 ROWS X 56 CHAMBERS
CULTEC 902HD

UNDERGROUND SAND FILTER A3
16 ROWS X 45 CHAMBERS
CULTEC 902HD

UNDERGROUND SAND FILTER A4
17 ROWS X 45 CHAMBERS
CULTEC 902HD

BIO-RETENTION AREA A2
A=15,800 SF

SHEETFLOW TO RIPARIAN BUFFER

UNDERGROUND SAND FILTER B10
8 ROWS X 39 CHAMBERS
CULTEC 902HD

NYSDEC
WETLAND BUFFER

BIO-RETENTION AREA B7
A=29,500 SF

STORMWATER POND B7
PERM. POOL=53,140 CF

NYSDEC
WETLANDS

SHEETFLOW TO RIPARIAN BUFFER

BIO-RETENTION AREA A9
BIO AREA=5,530 SF

WETLANDS

BIO-RETENTION AREA A8
A=4,200 SF

SHEETFLOW TO RIPARIAN BUFFER

WETLANDS

NYSDEC
WETLANDS

NYSDEC
WETLAND BUFFER

WETLANDS

SHEETFLOW TO RIPARIAN BUFFER

SHEETFLOW TO RIPARIAN BUFFER

WETLANDS

SHEETFLOW TO RIPARIAN BUFFER

STREAM

GRID

LEGEND

- WATER QUALITY AREA
- STORMWATER PRACTICE
- WETLAND/NYSDEC WETLAND BUFFER
- SHEETFLOW TO RIPARIAN BUFFERS AREA

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WATER QUALITY PRACTICE MAP

LEGOLAND NEW YORK
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

Date:	SEPTEMBER 16, 2016
Revisions:	APRIL 7, 2017 DECEMBER 4, 2017 JULY 19, 2018
CAD File:	160042-DRAINAGE
Layout:	WQ
Sheet No.:	5 OF 5

Drawn By:	Checked By:	Scale:	Tax Map No.:	Drawing No.:
ESR		1" = 250'	SEE SITE PLANS	C3D D - 16 - 0042 - 05

APPENDIX C

CALCULATIONS:
WATER QUALITY/RUNOFF REDUCTION VOLUME
CHANNEL PROTECTION VOLUME
STORMWATER PRACTICE DESIGN
FLOW DIFFUSER

LEGOLAND NEW YORK
Town of Goshen, New York

Water Quality/Runoff Reduction Volume Summary
Total Site

Required Water Quality Volume (WQv)

Drainage Area = 7,087,113 SF
Impervious Area = 3,385,289 SF
Required WQv = 382,626 CF (from water quality calc sheet)

NYSDEC requires that WQv be treated through use of Green Infrastructure Practices. These practices reduce the required WQv by reducing the drainage area or impervious area in the WQv calculation or by direct volume reduction of the required WQv. WQv treatment provided by the Green Infrastructure Practices is called Runoff Reduction Volume (RRv). The project must provide a minimum amount of WQv treatment in the Green Infrastructure Practices based on the Hydrologic Soil Group at the site.

Runoff Reduction/Water Quality Treatment Practices	RRv Deductions			WQv Treatment Volume (CF)
	Drainage Area (SF)	Impervious Area (SF)	Volume (CF)	
Sheetflow to Riparian Buffers or Filter Strips (Area Based Deduction) Notes: Portions of Harriman Drive, emergency access, & perimeter grading throughout project. Total Drainage Area to Buffers = **965,606** SF Impervious Area Draining to Buffers = **144,118** SF	965,606	144,118		
Tree Planting/Tree Pit (Area Based Deduction) Notes: Based on preliminary landscaping plan. Number of Roadside Proposed Trees = 880 Impervious Area Reduction (100 SF/Tree)= **88,000** SF		88,000		
Rain Garden (Volume Based Deduction) Notes: Rain gardens for hotel roof. Rain Garden Water Quality Volume = **468** CF (from rain garden calc sheet)			468	
Porous Pavers (Area Based Deduction) Notes: Pavers in theme park and hotel areas. Area of Porous Pavers = **122,080** SF (from pavers calc sheet)		122,080		
Standard SMP - Dry Swale (Volume Based Deduction) Notes: Dry swales around park perimeter and portion of park entrance road. Total Dry Swale Treatment Capacity = 17,068 CF (from dry swale calc sheet) Maximum Deduction Allowed = **3,414** CF Deduction = 20% Remaining Treatment is standard WQv = **13,654** CF			3,414	13,654
Standard SMP - Bio-Retention Areas (Volume Based Deduction) Notes: 9 bio-retention areas throughout project. Total Bio. Area Treatment Capacity = 112,076 CF (from bio calc sheet) Maximum Deduction Allowed = **44,830** CF Deduction = 40% Remaining Treatment is standard WQv = **67,245** CF			44,830	67,245
Standard SMP - Underground Sand Filtration Areas (Volume Based Deduction) Notes: 6 underground sand filters for parking areas and portion of back of house, no RRv provided. Total UG Treatment Capacity = **190,523** CF (from sand filter calc sheet)				190,523
Standard SMP - Stormwater Pond (Volume Based Deduction) Notes: Stormwater wet pond (P-2), no RRv provided. Stormwater Pond Water Quality Volume = **53,143** CF (from pond calc sheet)				53,143

LEGOLAND NEW YORK
Town of Goshen, New York

Total	965,606	354,198	48,712	324,565

Provided Runoff Reduction Volume Calculation

Drainage Area =	7,087,113	SF
- Drainage Area Deduction =	965,606	SF
New Drainage Area =	6,121,507	SF
Impervious Area =	3,385,289	SF
- Impervious Area Deduction =	354,198	SF
New Impervious Area =	3,031,091	SF
New Drainage Area =	6,121,507	
New Impervious Area =	3,031,091	
New Rv =	0.50	
Reduced WQv =	341,331	CF
- Volume Deduction =	48,712	CF
Reduced WQv =	292,620	CF
Provided RRv =	Original WQv - Reduced WQv	
Provided RRv =	**90,006**	**CF**

Required Water Quality Volume (WQv) =	**382,626**	**CF**
Provided Runoff Reduction Volume (RRv) =	**90,006**	**CF**
Provided Water Quality Volume (WQv) =	**324,565**	**CF**
Total Provided RRv and WQv =	**414,571**	**CF**

Minimum Required Runoff Reduction Volume Treatment

$$\text{Minimum RRv} = \frac{P * Rv * Ai}{12}$$

P = 1.35 inch

Rv = 0.05+0.009*I (I=100%)

Ai (Impervious for Runoff Reduction) =	S* Aic	
Aic (New Impervious Cover) =	3,385,289	SF
Specific Reduction Factor (HSG C) =	0.206	
Ai =	697,370	SF

Specific Reduction Factor Calculation

HSG	Reduction Factor	Percent of Site	Weighted Reduction Factor
A	0.55	0.00%	0.000
B	0.40	0.00%	0.000
C	0.30	6.00%	0.018
D	0.20	94.00%	0.188
			0.206

Minimum RRv =	**74,531**	**CF**
Provided RRv =	**90,006**	**CF**
Provided RRv is Greater than the Minimum.		

Lanc and Tully Engineering, P.C.

Project Name: LEGOLAND New York - Total Site (includes road work flowing into site)
Project Location: Town of Goshen, New York

Water Quality Volume Calculation:

$$WQv = \frac{(P) * (Rv) * (A)}{12}$$

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

WQv = Water Quality Volume (ac-ft)
P = 90% Rainfall Event (in)
Rv = Runoff Coefficient
I = % impervious of the site
A = Area of the site (Contributing Acreage)

Impervious Acreage	=	77.72	Acres
Contributing Site Area	=	162.70	Acres
I (% Impervious)	=	47.8	%
Runoff Coefficient (Rv)	=	0.48	
90% Rainfall Event		P 1.35	*Rainfall from NYSDEC SWM Figure 4.1
Site Area (Contributing)		A 162.70	

REQUIRED WATER QUALITY VOLUME	=	8.784	AC-FT
		382,626	CU-FT

LEGOLAND NEW YORK
Town of Goshen, New York

Bio-Retention Area Water Quality Volume and Design

Bio-Retention Area Characteristics

$Af = (WQv \times df)/(k\ (hf+df)\ tf)$

Af = surface area of filter bed, sf
df = filter bed depth, ft
k = media permeability, ft/day 0.5
hf = average water height, ft 0.25
tf = bed drain time, days 2

Area I.D.	Filter Bed Area (SF)	Filter Bed Depth (FT)	Underdrain Inv. El.	Bed El.	Berm El.	Lowest Orifice/Riser El.	Provided Water Quality Volume (CF)	Provided Pre-Treatment (CF)	Total Provided Treatment (CF)	Required 75% WQ Ponding (CF)	Area at Top of Ponding (SF)	Capacity of Ponding (CF)
A2	15,800	2.5	429.00	432.00	435.00	432.50	17,380	5,820	23,200	13,035	16,914	13,999
A8	4,200	2.5	556.00	559.00	562.00	559.50	4,620	3,342	7,962	3,465	4,784	5,588
A9	5,530	2.5	482.00	485.00	488.00	485.50	6,083	3,429	9,512	4,562	5,971	6,304
B2	2,300	2.5	444.00	447.00	449.00	447.50	2,530	756	3,286	1,898	2,690	2,004
B3	2,850	2.5	454.00	457.00	459.00	457.50	3,135	1,232	4,367	2,351	3,370	2,787
B4	1,810	2.5	484.50	487.50	490.00	488.00	1,991	633	2,624	1,493	2,138	1,620
B6	7,610	2.5	538.00	541.00	544.00	541.50	8,371	2,405	10,776	6,278	8,123	6,338
B7	29,500	2.5	466.00	469.00	471.00	469.50	32,450	9,993	42,443	24,338	31,290	25,191
B9	5,300	2.5	490.00	493.00	498.00	493.50	5,830	2,076	7,906	4,373	5,668	4,818
Total									112,076			

LEGOLAND NEW YORK
Town of Goshen, New York

Bio-Retention Area Underdrain System Length
L = 10% Af/W

Area I.D.	Filter Bed Area (SF)	10% of Filter Area (SF)	Width (FT)	Required Underdrain Length (FT)	Provided Underdrain Length (FT)
A2	15,800	1,580	4.0	395	1,296
A8	4,200	420	4.0	105	391
A9	5,530	553	4.0	138	501
B2	2,300	230	4.0	58	142
B3	2,850	285	4.0	71	142
B4	1,810	181	4.0	45	103
B6	7,610	761	4.0	190	556
B7	29,500	2,950	4.0	738	1,778
B9	6,300	630	4.0	158	384

Forebay Water Quality Volume (Pre-Treatment)

Area I.D.	Bottom Area (SF)	Top Area (SF)	Depth (FT)	Required Pre-Treatment Volume (25%) (CF)	Provided Pre-Treatment Volume (CF)
A2	312	3,568	3	4,345	5,820
A8	211	2,017	3	1,155	3,342
A9	583	1,703	3	1,521	3,429
B2	166	590	2	633	756
B3	132	1,100	2	784	1,232
B4	113	520	2	498	633
B6	186	1,417	3	2,093	2,405
B7	1,457	5,205	3	8,113	9,993
B9	142	1,242	3	1,458	2,076

LEGOLAND NEW YORK

Town of Goshen, New York

Underground Sand Filtration Area Water Quality Volume and Design

Filtration Area Characteristics

Af = (WQv x df)/(k (hf+df) tf)

Af = surface area of filter bed, sf
df = filter media depth, ft
k = infiltration rate, ft/day 3.5
hf = average water height, ft 0.50
tf = bed drain time, days 1.67

Area I.D.	Sand Filter Chamber Row Length (LF)	No. of Sand Filter Rows	Filter Bed Area[1] (SF)	Filter Bed Depth (FT)	Underdrain Inv. El.	Bed El. (Top of Sand)	Top of UG System El.	Lowest Outlet El.	Provided Water Quality Volume (CF)	Provided Pre-Treatment (CF)	Total Provided Treatment (CF)	Required 75% WQ Ponding (CF)	Capacity of Ponding[2] (CF)
A3	165	2	2,145	1	500.15	501.65	507.40	503.40	18,806	8,999	27,805	14,105	22,760
A4	165	2	2,145	1	502.09	503.59	509.34	505.34	18,806	8,999	27,805	14,105	24,173
A5	205	3	3,998	1	551.02	552.52	558.27	554.27	35,048	16,771	51,819	26,286	28,258
A6	172	3	3,354	1	578.45	579.95	585.70	581.70	29,406	14,071	43,478	22,055	28,186
A7	91	2	1,183	1	568.06	569.56	575.31	571.31	10,372	5,145	15,517	7,779	28,187
B10	143	2	1,859	1	461.00	462.50	468.25	464.25	16,299	7,799	24,098	12,224	15,269
Total											190,523		

Notes:

1. Filter bed width is 6.5' under chamber row.
2. Ponding volume of underground system below the lowest outlet, volume taken from Cultec calculation sheets.

LEGOLAND NEW YORK
Town of Goshen, New York

Separator Row (Pre-Treatment)

Geotextile wrapped separator rows to provide water quality pre-treatment, above each sand filter row.
Volume of chamber and surrounding stone from manufacturer cut sheets.

Area I.D.	Chamber Row Length (LF)	No. of Rows	Chamber and Stone Volume /LF (CF/FT)	Total Volume of Separator Rows (CF)	Required Pre-Treatment Volume (CF)
A3	165	2	27.27	8,999	4,702
A4	165	2	27.27	8,999	4,702
A5	205	3	27.27	16,771	8,762
A6	172	3	27.27	14,071	7,352
A7	91	2	28.27	5,145	2,593
B10	143	2	27.27	7,799	4,075

Filtration Area Underdrain System Length

$L = 10\% \, Af/W$

Area I.D.	Filter Bed Area (SF)	10% of Filter Area (SF)	Width of Pipe Bed (FT)	Required Underdrain Length (FT)	Provided Underdrain Length (FT)
A3	2,145	215	6.0	36	165
A4	2,145	215	6.0	36	165
A5	3,998	400	6.0	67	205
A6	3,354	335	6.0	56	172
A7	1,183	118	7.0	17	91
B10	1,859	186	6.0	31	143

LEGOLAND NEW YORK
Town of Goshen, New York

Dry Swale Water Quality Volume

d = filter media depth 2.5
n = media porosity 0.2
Slope = must be less than 4%

Swale I.D.	Swale Dimensions						Provided Water Quality Volume (CF)	Provided Pre-Treatment (CF)	Total Provided Treatment (CF)
	Length (FT)	Depth (FT)	Side Slope (y:1)	Bottom Width (SF)	Underdrain Volume (SF)	Flow Area (SF)			
B5	924	1	3.0	3	1.5	6	6,930	832	7,762
B7	236	1	3.0	4	2	7	2,124	212	2,336
B8	510	1	3.0	4	2	7	4,590	459	5,049
B9	194	1	3.0	4	2	7	1,746	175	1,921
Total	1,864								17,068

Gravel Diaphragm Water Quality Volume

n = stone porosity 0.4

Gravel Diaphragm I.D.	Length (FT)	Width (FT)	Depth (FT)	Volume (CF)	Required Pre-Treatment Volume (10%) (CF)	Quality Pre-Treatment Volume (CF)
B5	924	1.5	1.5	832	693	832
B7	236	1.5	1.5	212	212	212
B8	510	1.5	1.5	459	459	459
B9	194	1.5	1.5	175	175	175

LEGOLAND NEW YORK
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Porous Pavers Water Quality Volume and Design

n = stone porosity 0.4
90% Rainfall = 1.35

Area I.D.	Impervious Area (SF)	Runoff Coefficient	Provided Water Quality Volume (CF)
B7	80,320	0.950	8,584
B8	24,920	0.950	2,663
B9	16,840	0.950	1,800
Total	122,080		13,047

LEGOLAND NEW YORK
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Rain Garden Design

V=Asm*Dsm*ndl+Adl+Ddl+ndl+Asm*Dp

Vdl= volume of drainage layer (CF)		Vsm= volume of soil media (CF)	
Adl= area of drainage layer (SF)		Asm= area of soil media (SF)	
Ddl= depth of drainage layer (FT)	0.5	Dsm= depth of soil media (FT)	1
ndl= drainage layer porosity	0.4	nsm= soil media porosity	0.2
Dp= ponding depth (ft)	0.5		

Area I.D.	Bed El.	Berm El.	Riser El.	Rain Garden Area (SF)	Vsm (CF)	Vdl (CF)	Volume of Ponding (CF)	Provided Treatment Volume (CF)
A8 #1	576.75	577.75	577.25	260	52	52	130	234
A8 #2	577.50	578.50	578.00	260	52	52	130	234
Total								468

LEGOLAND NEW YORK
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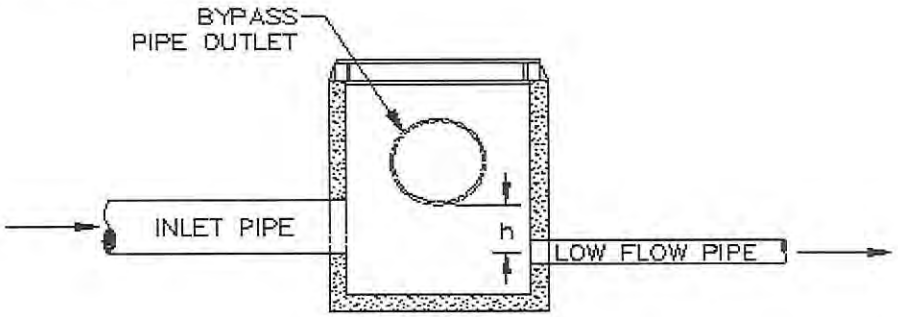
Diversion Structure Design

Low flow pipe sized using orifice equation



Q = CA*sqrt(2gh)

Q = Low Flow Pipe discharge, CFS
h = head at orifice centerline, ft
C = Orifice Coefficient = 0.6
g = 32.2, ft^/s

SMP Downstream	Watershed Area	1-Year Storm Flowrate (CFS)	Low Flow Pipe Diameter (in.)	Low Flow Pipe Invert	Minimum h (FT)	Bypass Pipe Invert
Bio A2	A2 & A2b	12.99	21	432.10	1.26	434.23
UG A3	A3	9.39	21	502.40	0.66	503.93
UG A4	A4	15.01	24	504.34	0.99	506.33
UG A5	A5	19.62	24	553.51	1.68	556.19
UG A6	A6	19.71	24	580.70	1.70	583.40
UG A7	A7	6.41	18	570.31	0.57	571.63
Bio A9*	A9	-	10	485.00	-	485.50
Bio B6	B6	9.96	18	542.00	1.37	544.12
Bio B9	B9	12.80	21	494.20	1.22	496.30
UG B10	B10	9.14	18	462.60	1.16	464.51

* Diversion structure splits flows between Bio A9 and Bio/Pond B7. Flowrate sent to Bio A9 is maximum allowed by bed area.

LEGOLAND NEW YORK
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Diversion Forebay Structure Design

Outlet structure will be installed in the bio-retention area pre-treatment (forebay) area. The grate of this structure will be located at the same elevation as the 1-year design storm. Any storms greater than the 1-year storm will flow into this structure and bypass the filter bed area. The outlet structure located in the filter bed area will have it's grate located above the 100-year design storm water elevation to prevent any water flowing through to the filter bed area during any analyzed storms.

SMP Downstream	Watershed Area	1-Year Storm Flowrate (CFS)	Spillway Invert	Spillway Length (FT)	1-Year Depth over Spillway (FT)	Min. Bypass Structure Grate El.	Chosen Bypass Grate El.	100-Year Filter Bed Water Surface	Filter Bed Grate El.
Bio A8	A8	4.21	561.00	25	0.20	561.20	561.20	561.78	561.80
Bio B2	B2	2.47	448.00	15	0.14	448.14	448.30	448.70	448.75
Bio B3	B3	2.22	458.00	15	0.13	458.13	458.25	458.64	458.70
Bio B4	B4	2.63	489.00	15	0.15	489.15	489.60	489.87	489.90
Bio B7*	B7	41.83	469.00	20	0.63		469.50*	-	-

* This forebay uses 2 spillways, 1 to the bio-retention area and 1 to the pond area. Since both area will provide water quality treatment, the bypass spillway to the pond area is located lower than necessary.

Weir Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jul 17 2018

Bio-Retention A8 Forebay Spillway

Trapezoidal Weir

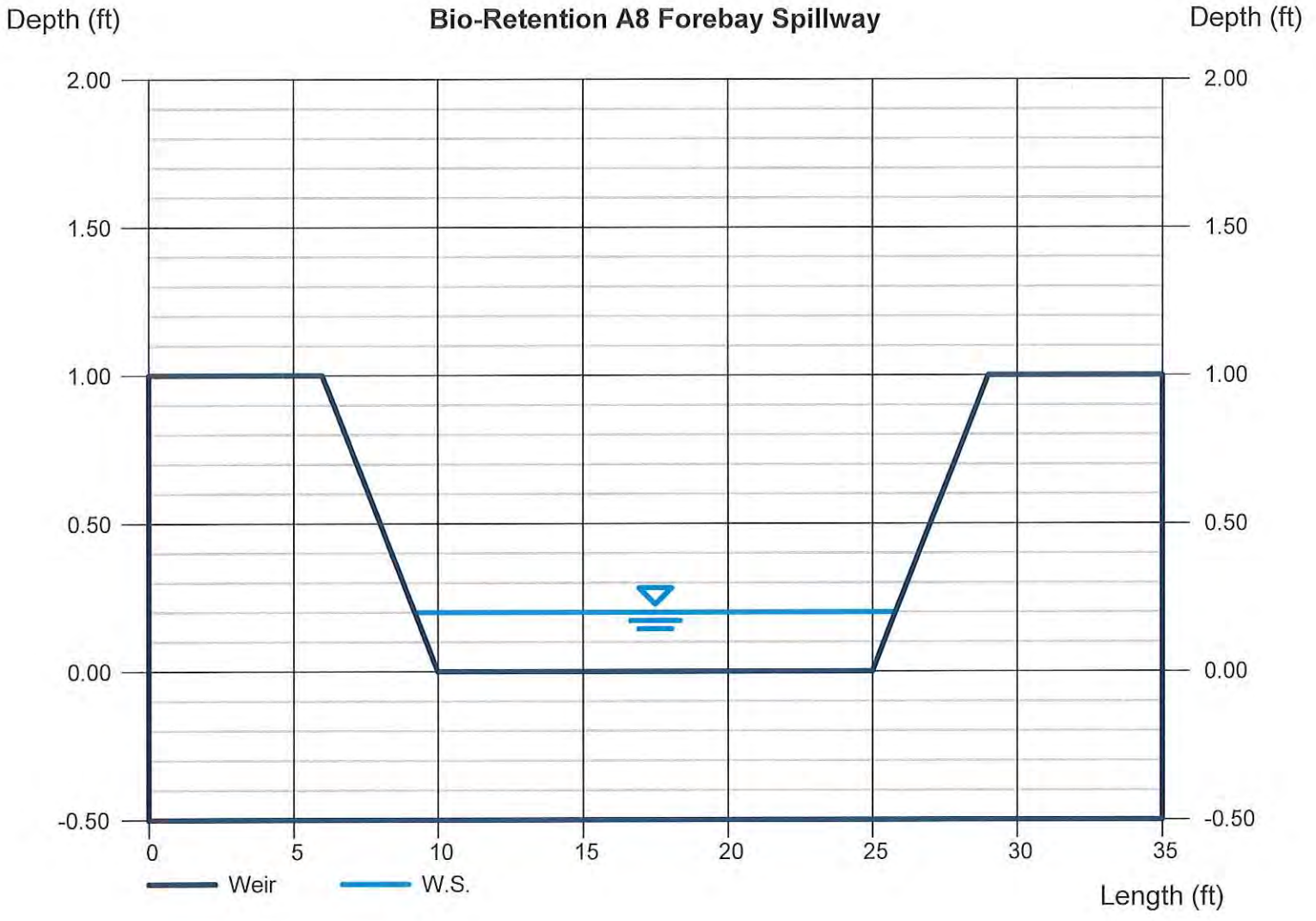
Crest	= Sharp
Bottom Length (ft)	= 15.00
Total Depth (ft)	= 1.00
Side Slope (z:1)	= 4.00

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 4.21

Highlighted

Depth (ft)	= 0.20
Q (cfs)	= 4.210
Area (sqft)	= 3.16
Velocity (ft/s)	= 1.33
Top Width (ft)	= 16.60



Weir Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jul 17 2018

Bio-Retention B2 Forebay Spillway

Trapezoidal Weir

Crest	= Sharp
Bottom Length (ft)	= 15.00
Total Depth (ft)	= 1.00
Side Slope (z:1)	= 4.00

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 2.47

Highlighted

Depth (ft)	= 0.14
Q (cfs)	= 2.470
Area (sqft)	= 2.18
Velocity (ft/s)	= 1.13
Top Width (ft)	= 16.12

Weir Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jul 17 2018

Bio-Retention B3 Forebay Spillway

Trapezoidal Weir

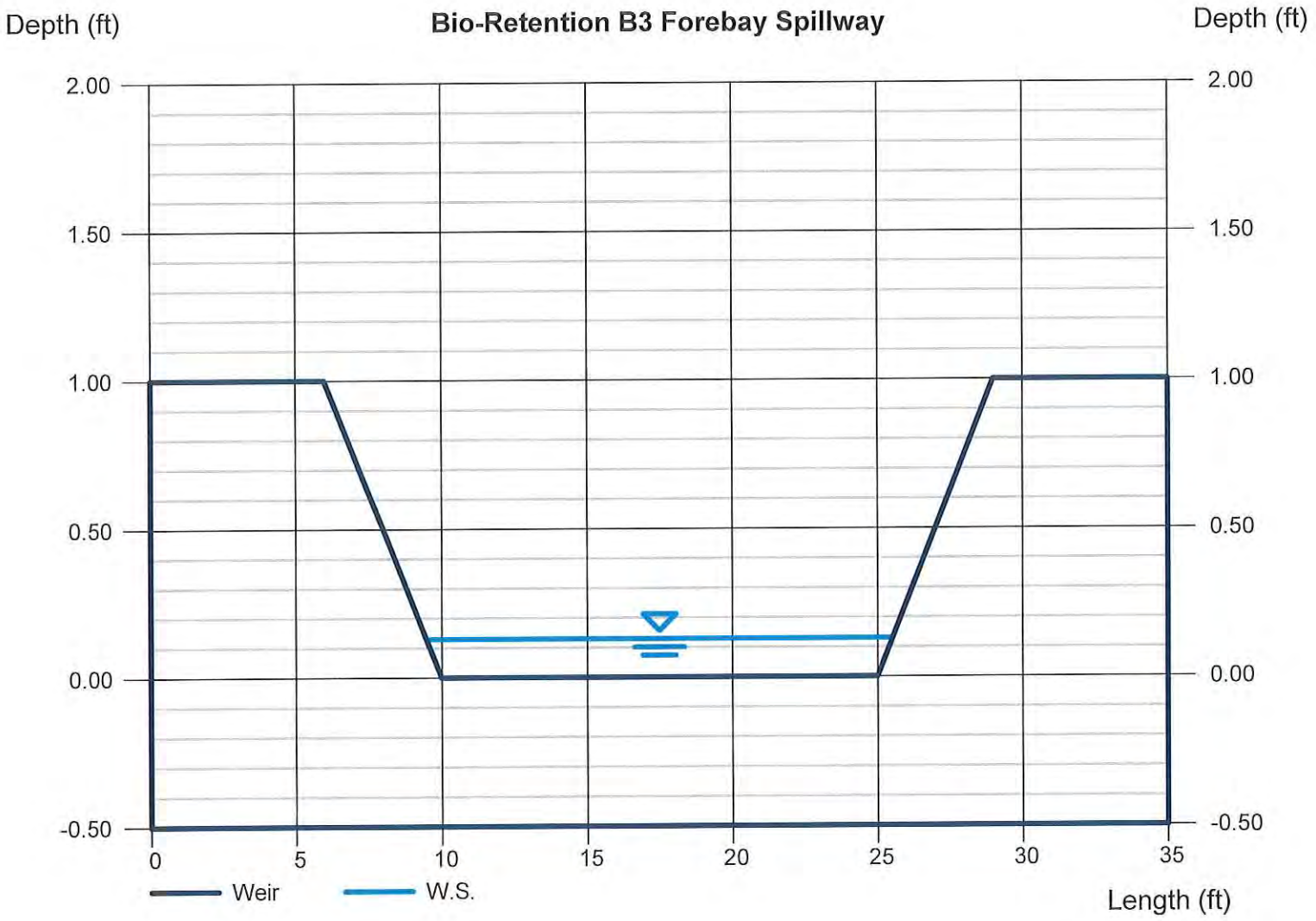
Crest	= Sharp
Bottom Length (ft)	= 15.00
Total Depth (ft)	= 1.00
Side Slope (z:1)	= 4.00

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 2.22

Highlighted

Depth (ft)	= 0.13
Q (cfs)	= 2.220
Area (sqft)	= 2.02
Velocity (ft/s)	= 1.10
Top Width (ft)	= 16.04



Weir Report

Bio-Retention B4 Forebay Spillway

Trapezoidal Weir

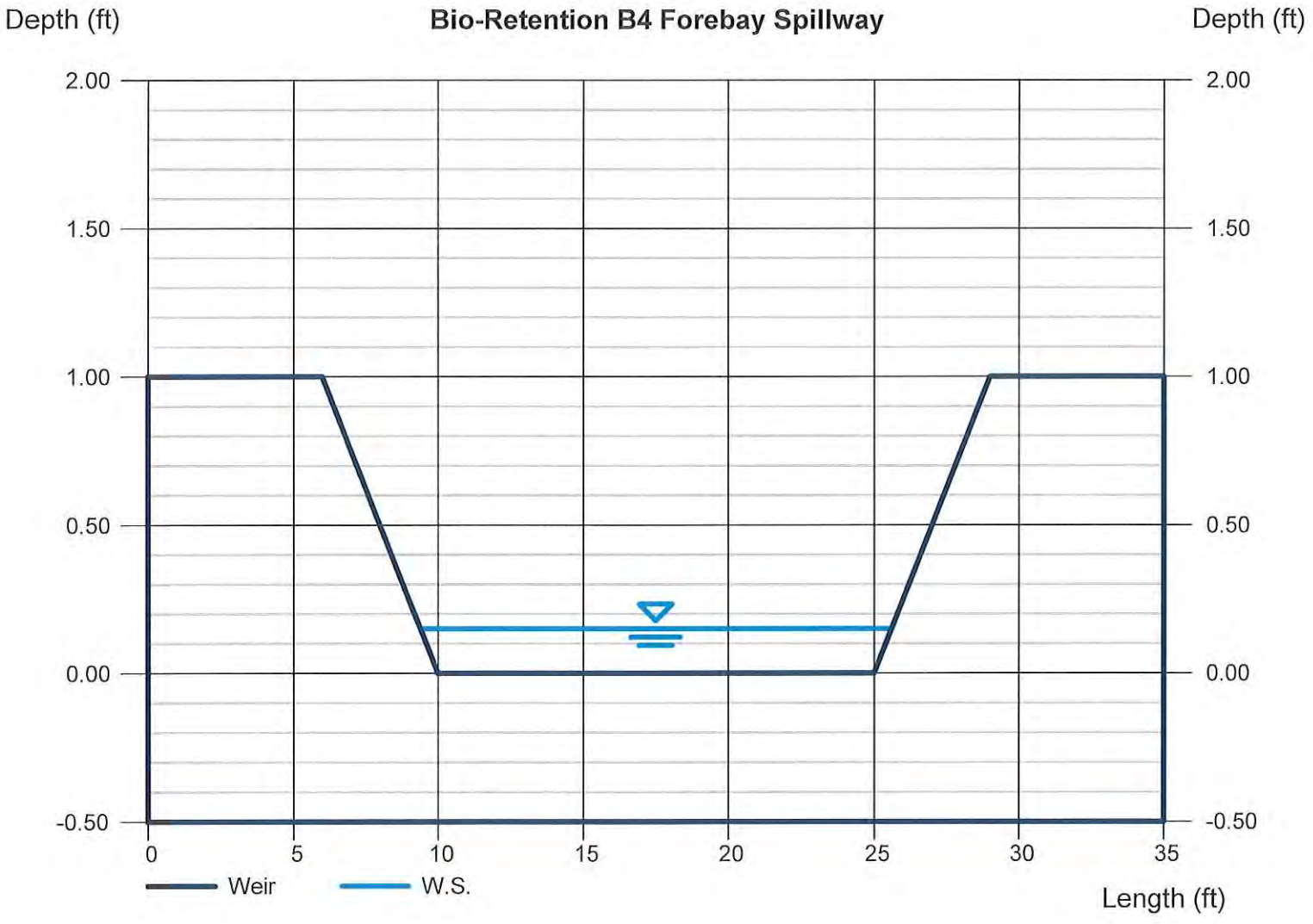
Crest	= Sharp
Bottom Length (ft)	= 15.00
Total Depth (ft)	= 1.00
Side Slope (z:1)	= 4.00

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 2.63

Highlighted

Depth (ft)	= 0.15
Q (cfs)	= 2.630
Area (sqft)	= 2.34
Velocity (ft/s)	= 1.12
Top Width (ft)	= 16.20



Weir Report

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Bio-Retention B7 Forebay Spillway

Trapezoidal Weir

Crest	= Sharp
Bottom Length (ft)	= 25.00
Total Depth (ft)	= 2.00
Side Slope (z:1)	= 4.00

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 41.83

Highlighted

Depth (ft)	= 0.63
Q (cfs)	= 41.83
Area (sqft)	= 17.34
Velocity (ft/s)	= 2.41
Top Width (ft)	= 30.04

LEGOLAND NEW YORK
Town of Goshen, New York
Channel Protection Volume Orifice Sizing

Total CPv = Channel Protection Volume (1-Year runoff volume from PondPack model)

Qo = Average Outflow discharge, CPv/24 hr*60 min* 60 sec

h = head at orifice centerline, ft

C = Orifice Coefficient = 0.6

g = 32.2, ft^/s

A = Qo/C*sqrt(2*g*h)

Area	Practice	Total CPv (Ac.-FT)	Total CPv (CF)	Qo (CFS)	1-Year Peak Water Surface El.	Orifice Invert	Orifice Diameter (in)	Average Flowrate (CFS)
A2	Bio A2	0.627	27,312	0.58	433.45	432.50	5	0.57
A2b		0.521	22,695					
A3	UG A3	0.893	38,899	0.45	503.87	503.40	5.75	0.42
A4	UG A4	1.314	57,238	0.66	506.34	505.34	5.25	0.64
A5	UG A5	1.866	81,283	0.94	555.84	554.27	5.5	0.92
A6	UG A6	1.742	75,882	0.88	583.08	581.70	5.5	0.85
A7	UG A7	0.568	24,742	0.29	573.11	571.31	2.75	0.26
A8	Bio A8	0.347	15,115	0.17	560.46	559.50	2.5	0.15
A9	Bio A9*	1.063	46,304	0.54	487.05	485.50	4	0.49
B2	Bio B2	0.214	9,322	0.11	448.25	447.50	2.25	0.11
B3	Bio B3	0.217	9,453	0.11	458.21	457.50	2.25	0.10
B4	Bio B4	0.241	10,498	0.12	489.58	488.00	1.9	0.12
B6	Bio B6	0.905	39,422	0.46	543.25	541.50	3.7	0.45
B7	Pond B7*	3.487	151,894	1.76	464.04	462.00	7	1.70
B9	Bio B9	1.125	49,005	0.57	497.05	493.50	3.25	0.51
B10	UG B10	0.823	35,850	0.41	465.83	463.50	3.25	0.41
Total			694,913					

* Flow from Watershed A9 splits between Bio A9 and Bio/Pond B7. CPv volume based on 1-year storm volume reaching each stormwater area.

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JOB LEGOLAND NY

SHEET NO. _____ OF _____

CALCULATED BY ESR DATE 2/12/18

CHECKED BY _____ DATE _____

SCALE _____

Flow Diffuser Sizing

$$Q_d = \frac{h^{2/3} w}{\left[\left(\frac{L}{D}\right) + 2.5 + L^2\right]^{.5}}$$

$L = 5'$, min $3'$

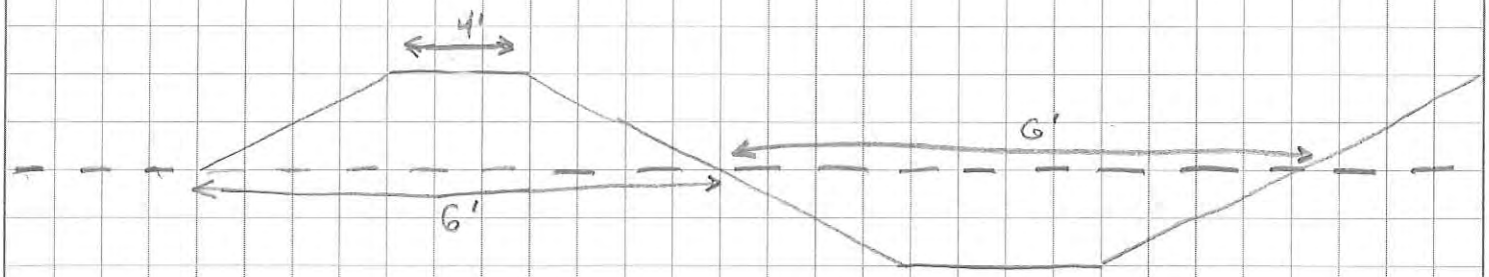
$D = .5'$

$h = 1.5'$

$Q_{25} = 18.26$ CFS (from pipe sizing)

$$18.3 = \frac{1.5^{2/3} w}{\left[\left(\frac{5}{.5}\right) + 2.5 + 5^2\right]^{.5}}$$

$w = 85.5$



APPENDIX D

PIPE SIZING

Culvert Report

Culvert 1

Invert Elev Dn (ft)	=	547.00
Pipe Length (ft)	=	119.00
Slope (%)	=	9.66
Invert Elev Up (ft)	=	558.50
Rise (in)	=	36.0
Shape	=	Box
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.030
Culvert Type	=	Flared Wingwalls
Culvert Entrance	=	30D to 75D wingwall flares
Coeff. K,M,c,Y,k	=	0.026, 1, 0.0347, 0.81, 0.4

Embankment

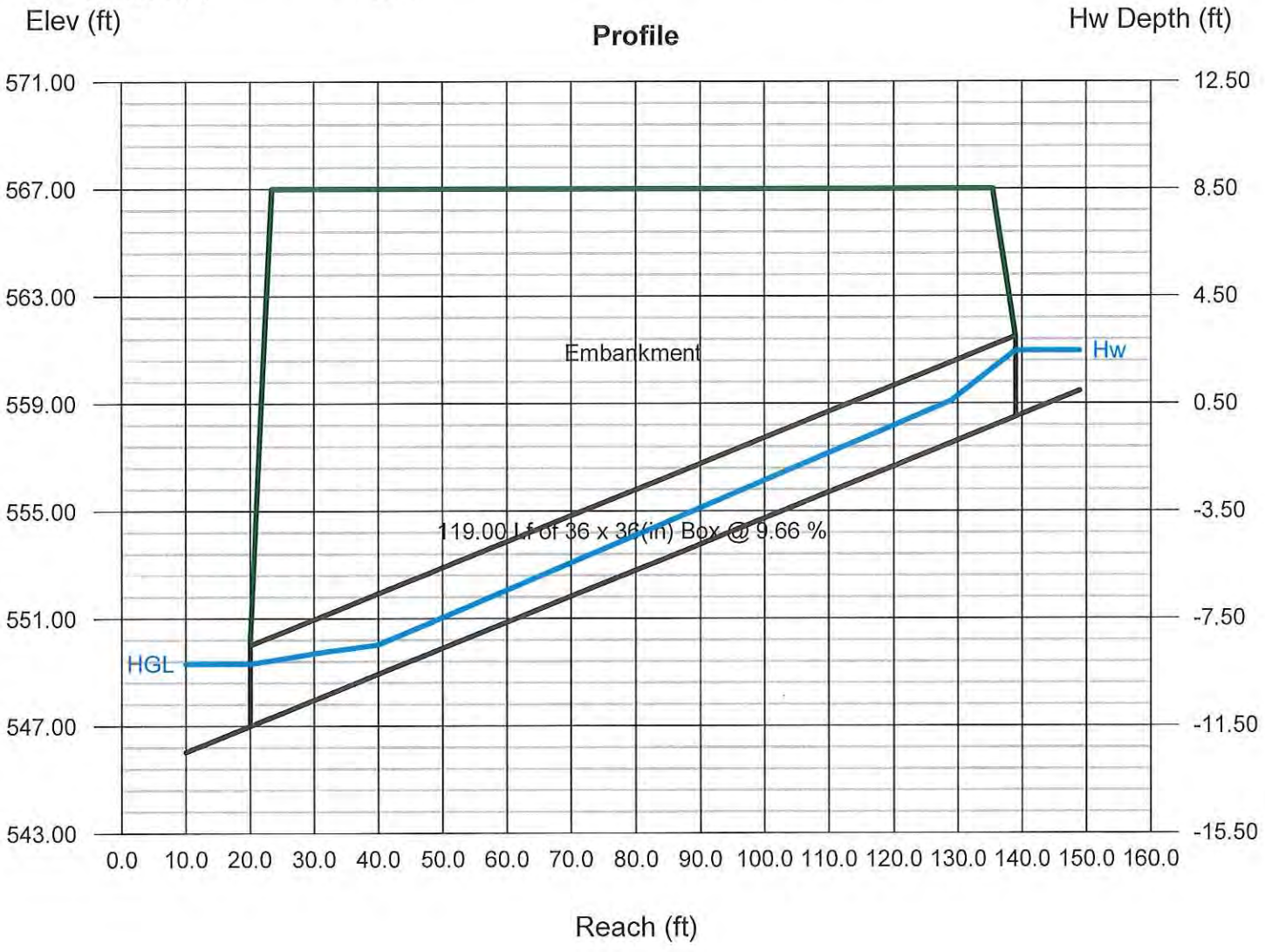
Top Elevation (ft)	=	567.00
Top Width (ft)	=	112.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	25.00
Qmax (cfs)	=	35.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	35.00
Qpipe (cfs)	=	35.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	5.05
Veloc Up (ft/s)	=	7.22
HGL Dn (ft)	=	549.31
HGL Up (ft)	=	560.12
Hw Elev (ft)	=	560.96
Hw/D (ft)	=	0.82
Flow Regime	=	Inlet Control



Q			Veloc		Depth	
Total	Pipe	Over	Dn	Up	Dn	Up
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(in)	(in)
25.00	25.00	0.00	3.88	6.45	25.75	15.51
26.00	26.00	0.00	4.01	6.53	25.96	15.92
27.00	27.00	0.00	4.13	6.62	26.16	16.32
28.00	28.00	0.00	4.25	6.70	26.36	16.72
29.00	29.00	0.00	4.37	6.78	26.56	17.12
30.00	30.00	0.00	4.49	6.85	26.75	17.51
31.00	31.00	0.00	4.60	6.93	26.95	17.89
32.00	32.00	0.00	4.72	7.00	27.14	18.28
33.00	33.00	0.00	4.83	7.08	27.33	18.66
34.00	34.00	0.00	4.94	7.15	27.51	19.03
35.00	35.00	0.00	5.05	7.22	27.70	19.40

HGL			
Dn	Up	Hw	Hw/D
(ft)	(ft)	(ft)	
549.15	559.79	560.42	0.64
549.16	559.83	560.48	0.66
549.18	559.86	560.53	0.68
549.20	559.89	560.59	0.70
549.21	559.93	560.64	0.71
549.23	559.96	560.69	0.73
549.25	559.99	560.75	0.75
549.26	560.02	560.80	0.77
549.28	560.05	560.85	0.78
549.29	560.09	560.91	0.80
549.31	560.12	560.96	0.82

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Feb 16 2018

Culvert 2

Invert Elev Dn (ft)	= 530.50
Pipe Length (ft)	= 96.00
Slope (%)	= 2.34
Invert Elev Up (ft)	= 532.75
Rise (in)	= 36.0
Shape	= Box
Span (in)	= 36.0
No. Barrels	= 1
n-Value	= 0.030
Culvert Type	= Flared Wingwalls
Culvert Entrance	= 30D to 75D wingwall flares
Coeff. K,M,c,Y,k	= 0.026, 1, 0.0347, 0.81, 0.4

Embankment

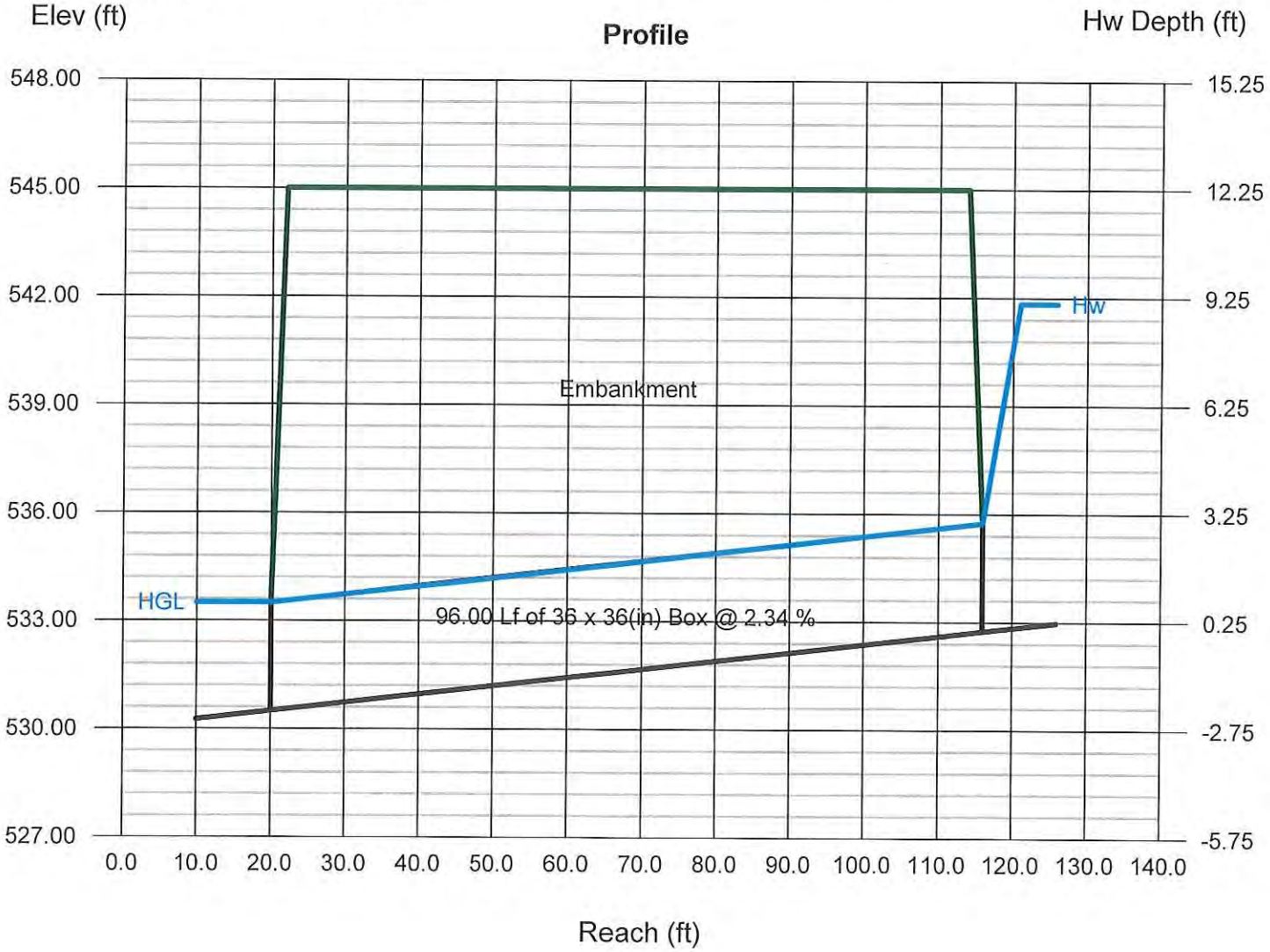
Top Elevation (ft)	= 545.00
Top Width (ft)	= 92.00
Crest Width (ft)	= 10.00

Calculations

Qmin (cfs)	= 90.00
Qmax (cfs)	= 125.00
Tailwater Elev (ft)	= (dc+D)/2

Highlighted

Qtotal (cfs)	= 125.00
Qpipe (cfs)	= 125.00
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 13.89
Veloc Up (ft/s)	= 13.89
HGL Dn (ft)	= 533.50
HGL Up (ft)	= 535.75
Hw Elev (ft)	= 541.84
Hw/D (ft)	= 3.03
Flow Regime	= Inlet Control



Q			Veloc		Depth	
Total	Pipe	Over	Dn	Up	Dn	Up
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(in)	(in)
90.00	90.00	0.00	10.00	10.00	36.00	36.00
95.00	95.00	0.00	10.56	10.56	36.00	36.00
100.00	100.00	0.00	11.11	11.11	36.00	36.00
105.00	105.00	0.00	11.67	11.67	36.00	36.00
110.00	110.00	0.00	12.22	12.22	36.00	36.00
115.00	115.00	0.00	12.78	12.78	36.00	36.00
120.00	120.00	0.00	13.33	13.33	36.00	36.00
125.00	125.00	0.00	13.89	13.89	36.00	36.00

HGL			
Dn	Up	Hw	Hw/D
(ft)	(ft)	(ft)	
533.50	535.75	538.61	1.95
533.50	535.75	539.01	2.09
533.50	535.75	539.43	2.23
533.50	535.75	539.87	2.37
533.50	535.75	540.33	2.53
533.50	535.75	540.81	2.69
533.50	535.75	541.31	2.85
533.50	535.75	541.84	3.03

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Feb 16 2018

Culvert 3

Invert Elev Dn (ft)	= 475.75
Pipe Length (ft)	= 126.00
Slope (%)	= 7.74
Invert Elev Up (ft)	= 485.50
Rise (in)	= 36.0
Shape	= Box
Span (in)	= 48.0
No. Barrels	= 1
n-Value	= 0.030
Culvert Type	= Flared Wingwalls
Culvert Entrance	= 30D to 75D wingwall flares
Coeff. K,M,c,Y,k	= 0.026, 1, 0.0347, 0.81, 0.4

Embankment

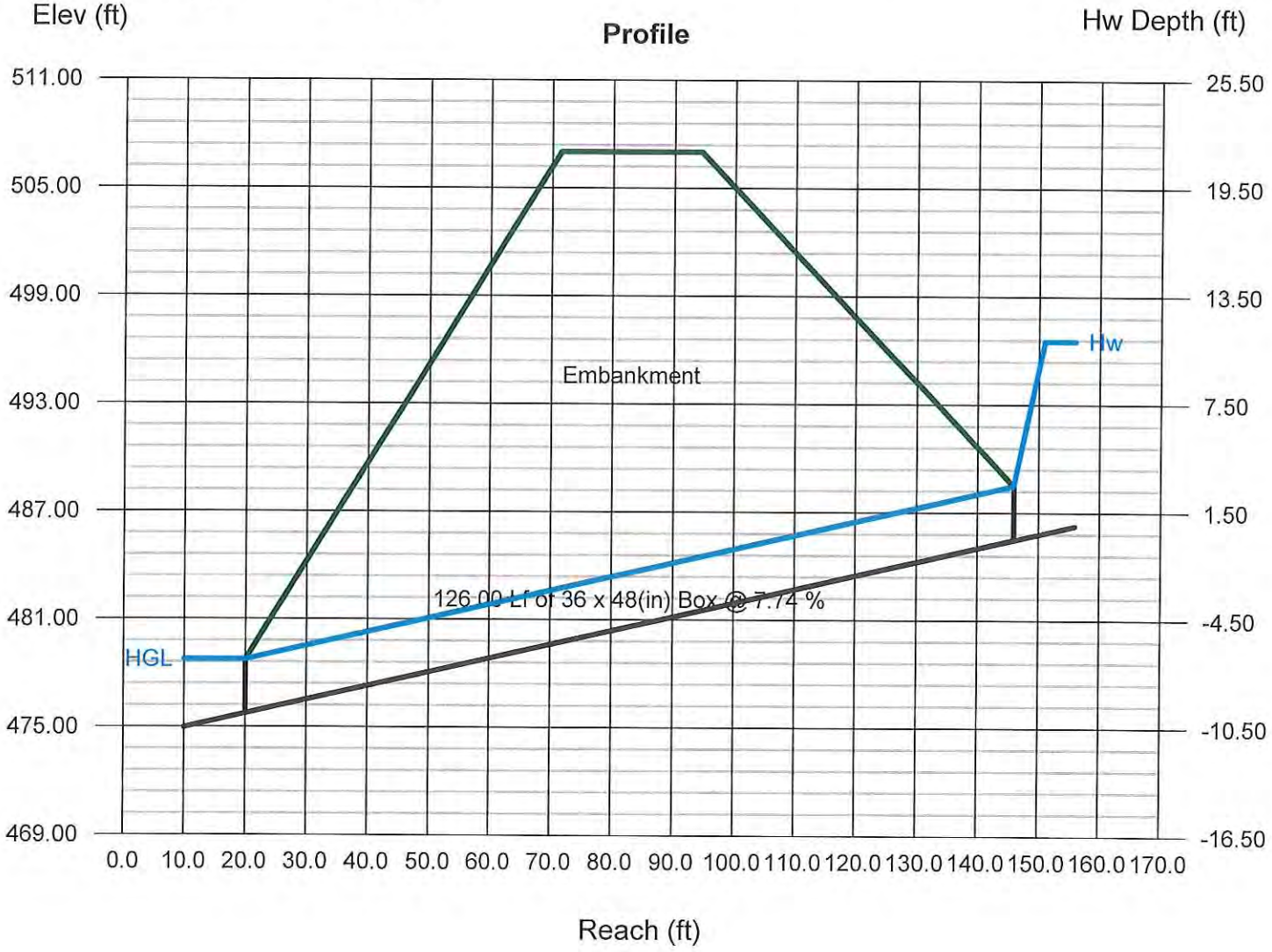
Top Elevation (ft)	= 507.00
Top Width (ft)	= 23.00
Crest Width (ft)	= 10.00

Calculations

Qmin (cfs)	= 140.00
Qmax (cfs)	= 190.00
Tailwater Elev (ft)	= (dc+D)/2

Highlighted

Qtotal (cfs)	= 190.00
Qpipe (cfs)	= 190.00
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 15.83
Veloc Up (ft/s)	= 15.83
HGL Dn (ft)	= 478.75
HGL Up (ft)	= 488.50
Hw Elev (ft)	= 496.51
Hw/D (ft)	= 3.67
Flow Regime	= Inlet Control



Q			Veloc		Depth	
Total	Pipe	Over	Dn	Up	Dn	Up
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(in)	(in)
140.00	140.00	0.00	11.67	11.67	36.00	36.00
150.00	150.00	0.00	12.50	12.50	36.00	36.00
160.00	160.00	0.00	13.33	13.33	36.00	36.00
170.00	170.00	0.00	14.17	14.17	36.00	36.00
180.00	180.00	0.00	15.00	15.00	36.00	36.00
190.00	190.00	0.00	15.83	15.83	36.00	36.00

HGL			
Dn	Up	Hw	Hw/D
(ft)	(ft)	(ft)	
478.75	488.50	492.54	2.35
478.75	488.50	493.24	2.58
478.75	488.50	493.98	2.83
478.75	488.50	494.78	3.09
478.75	488.50	495.62	3.37
478.75	488.50	496.51	3.67