HALEY & ALDRICH, INC.
6500 Rockside Rd.
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

October 14, 2026
File No. 0213269

SUBJECT: Periodic Run-On and Run-Off Control System Plan
Tucson Electric Power Company
Springerville Generating Station – Ash Landfill
Springerville, Arizona

Haley & Aldrich, Inc. (Haley & Aldrich) was retained by Tucson Electric Power Company (TEP) to develop this Periodic Run-On and Run-Off Control System Plan (Plan) for the coal combustion residuals (CCR) Ash Landfill (landfill or Unit) at the Springerville Generating Station to comply with the requirements of the U.S. Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, Title 40 Code of Federal regulations (CFR) Part 257, Subpart D (CCR Rule), effective October 19, 2015, including subsequent revisions specifically related to 40 CFR §257.81. The existing conditions of the Ash Landfill run-on and run-off control system were reviewed and associated stormwater modeling and analysis performed to meet the applicable requirements described in the sections below.

40 CFR §257.81(a): The owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill must design, construct, operate, and maintain:

40 CFR §257.81(a)(1): A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm;

The Ash Landfill is located south of an existing mesa. The western portion of the Ash Landfill contains exposed CCR material, while the inactive eastern portion has approximately 2 feet of soil cover. This report evaluates both the western active portion of the Ash Landfill and the eastern inactive portion. The existing conditions and drainage areas for the Unit are shown on **Figure 1**.

Run-on controls include exterior drainage channels that intercept runoff from areas outside the Ash Landfill. The areas west, south, east, and northeast of the landfill consist of existing grades sloping away from the landfill. Existing exterior drainage channels around the Ash Landfill perimeter prevent run-on from entering the landfill. An off-site drainage area of approximately 135 acres was identified to the northwest of the landfill. Run-on is diverted to exterior drainage ditches and conveyed west of the landfill.

Haley & Aldrich analyzed the existing stormwater run-on and run-off controls for the Ash Landfill for the 24-hour, 25-year storm event using HydroCAD 10.20-9a. The rainfall data were obtained from National Oceanic and Atmospheric Administration (NOAA) Atlas 14 for the nearest station to the site located in

St. Johns, Arizona. The rainfall for the 24-hour, 25-year design storm event is 2.32 inches. The Soil Conservation Service Type II rainfall distribution pattern was used to distribute the total rainfall over a 24-hour period. **Appendix A** includes the rainfall data used in the hydrologic model.

The drainage evaluation used available U.S. Geological Survey topographic data, available design drawings, and site observations to delineate contributing drainage areas and represent the run-on control features. During the design storm, the model indicates that the channels convey the design storm flow below bank-full depth. These results indicate that the evaluated run-on controls prevent flow into the landfill during the peak discharge from the 24-hour, 25-year storm. The HydroCAD results are included in **Appendix B**.

40 CFR §257.81(a)(2): A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

The Ash Landfill's run-off control system uses interior ditches and a retention pond to convey and manage stormwater. Surface runoff from the western active portion flows toward a retention pond west of the landfill along existing grades and through interior perimeter ditches. The retention pond has no outlet pipe because the stormwater is managed via evaporation. The eastern inactive portion of the landfill is hydraulically connected to the western active portion via the interior perimeter ditches. The inactive portion of the landfill includes inward-sloping benches and shallow sloping that slows stormwater flow and encourages evaporation. To add a layer of conservativism of the model, Haley & Aldrich assumed that all areas of the inactive portion of the landfill flow toward the western retention pond without evaporation losses.

The total drainage area to the western retention pond is approximately 455 acres. The time of concentration was calculated using sheet flow and shallow concentrated flow segments based on the available grades, surface conditions, and drainage paths. The retention pond operates as a dry basin; therefore, the analysis assumes the pond is dry at the start of the design storm. Retention pond storage was estimated using the AMTECH Associates October 2021 site drawing. The October 2021 pond storage remains applicable because pond grades and storage are unchanged, sediment accumulation has not reduced capacity, and berm, ditch, and spillway elevations remain consistent with the model. The figure from the 2021 AMTECH report is included in **Appendix C**.

The model did not account for evaporation and infiltration losses during the design storm. Excluding these losses increases the modeled volume retained in the pond and provides a conservative assessment of the pond's performance. The maximum modeled water surface elevation is 6,709.76 feet, leaving 1.24 feet of freeboard below the spillway. The results of the HydroCAD model are included in **Appendix B.** The results of the model indicate that the stormwater conveyance system for the Ash Landfill adequately manages the 24-hour, 25-year storm event.

40 CFR §257.81(b): Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirement under §257.3-3.

40 CFR §257.3-3(a): For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.

40 CFR §257.3-3(b): For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.

40 CFR §257.3-3(c): A facility or practice shall not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act, as amended.

Runoff from the active portion of the Ash Landfill is conveyed via drainage channel by design to the retention pond to the west. The retention pond has no outlet pipe, and retained stormwater is managed through evaporation. The model predicts that runoff from the evaluated drainage area is retained in the western retention pond without discharge during the 24-hour, 25-year design storm.

40 CFR §257.81(c)(1): Content of the plan. The owner or operator must prepare initial and periodic run-on and run-off control system plans for the CCR unit according to the timeframes specified in paragraphs (c)(3) and (4) of this section. These plans must document how the run-on and run-off control systems have been designed and constructed to meet the applicable requirements of this section. Each plan must be supported by appropriate engineering calculations. The owner or operator has completed the initial run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(3).

This document and attachments serve as the Periodic Run-on and Run-off Control System Plan and will be placed in the facility's operating record. Periodic Run-on and Run-off Control Plans will be prepared at five-year increments or whenever determined necessary if there is a change in conditions that would affect the Plan.

40 CFR §257.81(c)(2): Amendment of the plan. The owner or operator may amend the written run-on and run-off control system plan at any time provided the revised plan is placed in the facility's operating record as required by §257.105(g)(3). The owner or operator must amend the written run-on and run-off control system plan whenever there is a change in conditions that would substantially affect the written plan in effect.

The Plan will be amended if conditions change that substantially affect the written plan in effect. Amendments to the Plan will include written certification from a qualified professional engineer that amendments to the Plan meet CCR Rule requirements.

A record of amendments to the Plan is shown below with the latest version of the Plan noted on the first page. The version date is based on the date the document is finalized, which is different than the

completion/compliance date when the version is placed in the TEP Operating Record, with subsequent notifications and placement on the CCR website. The initial submittal was posted in the TEP Operating Record on October 17, 2016.

Version	Date	Description of Changes Made
1	October 17, 2016	Initial Submittal
2	October 14, 2021	Periodic Submittal
3	October 14, 2026	Periodic Submittal

40 CFR §257.81(c)(3): Timeframes for preparing the initial plan

> *(i) Existing CCR landfills. The owner or operator of the CCR unit must prepare an initial run-on and run-off control system plan no later than October 17, 2016*

The Initial Run-On and Run-Off Control System Plan was prepared within the specified time frame.

> *(ii) New CCR landfills and any lateral expansion of a CCR landfill. The owner or operator must prepare the initial run-on and run-off control system plan no later than the date of initial receipt of CCR in the CCR unit.*

Not applicable.

40 CFR §257.81(c)(4): Frequency of revising the plan. The owner or operator of a CCR unit must prepare periodic run-on and run-off control system plans required by paragraph (c)(1) of this section every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first subsequent plan. The owner or operator may complete any required plan prior to the required deadline provided the owner or operator places the completed plan into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing a subsequent plan is based on the date of completing the previous plan. For purposes of this paragraph (c)(4), the owner or operator has completed a periodic run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(3).

The owner or operator will prepare a Periodic Run-on and Run-off Control System Plan every five years during the CCR unit's active life in accordance with 40 CFR §257.81(c)(4) and will amend the Plan whenever a change in conditions would substantially affect the Plan in effect in accordance with 40 CFR §257.81(c)(2).

Attachments:

Professional Engineer Certification
Figure 1 – Drainage Area Map
Appendix A – NOAA Rainfall Data

Appendix B –HydroCAD Results
Appendix C – AMTECH Figure (2021)

Professional Engineer Certification

40 CFR §257.81(c)(5): The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the initial and periodic run-on and run-off control system plans meet the requirements of this section.

I certify that the above-referenced Periodic Run-On and Run-Off Control System Plan for TEP's Ash Landfill at the Springerville Generating Station meets the EPA's CCR Rule requirements of 40 CFR §257.81.

Signed: _____
Qualified Professional Engineer

Print Name: Steven F. Putrich
Arizona License No.: 60715
Title: Principal Consultant
Company: Haley & Aldrich, Inc.

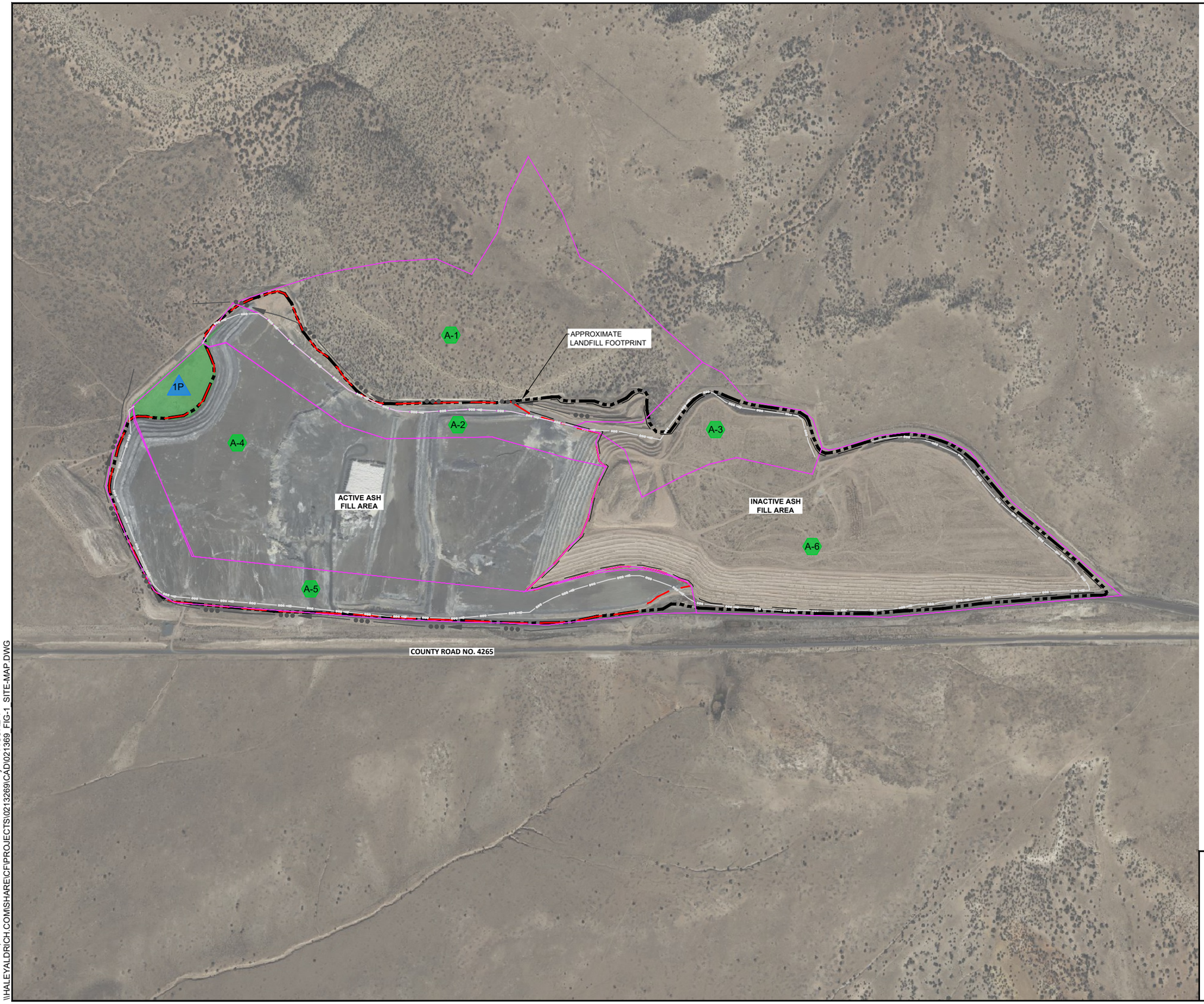
Professional Engineer's Seal and date:



Steven F. Putrich

Digitally signed by Steven F. Putrich
Date: 2026.10.14 14:24:22 -04'00'

FIGURE



LEGEND

- LANDFILL BOUNDARY
- EXTENTS OF ACTIVE ASH FILL AREA
- EXTENTS OF INACTIVE ASH FILL AREA
- RETENTION STRUCTURE
- INTERIOR DRAINAGE CHANNEL
- EXTERIOR DRAINAGE CHANNEL
- DRAINAGE AREA BOUNDARY
- 1P — HYDROCAD SUBCATCHMENT ID
- A-1 — HYDROCAD POND ID

NOTES

1. AERIAL PHOTOGRAPHY FROM MICROSOFT BING MAPS LATEST AVAILABLE.
2. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

N

0 1000 2000

SCALE IN FEET

HALEY ALDRICH

ASH LANDFILL - RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN
TUCSON ELECTRIC POWER
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

DRAINAGE AREA MAP

SCALE: AS SHOWN
OCTOBER 2026

FIGURE 1

BRUGGEMAN, ADRIENNE Printed: 10/13/2026 1:58 PM Layout: FIGURE 1
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\021369\CAD\021369_FIG-1_SITE-MAP.DWG

APPENDIX A
NOAA Rainfall Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Saint Johns, Arizona, USA*
Latitude: 34.3046°, Longitude: -109.233°
Elevation: 6873 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.202 (0.177-0.232)	0.259 (0.227-0.296)	0.342 (0.300-0.390)	0.407 (0.354-0.463)	0.496 (0.427-0.564)	0.567 (0.484-0.646)	0.642 (0.542-0.734)	0.721 (0.600-0.828)	0.827 (0.673-0.958)	0.913 (0.731-1.06)
10-min	0.308 (0.270-0.353)	0.395 (0.346-0.452)	0.521 (0.457-0.594)	0.619 (0.540-0.705)	0.755 (0.650-0.859)	0.864 (0.737-0.984)	0.978 (0.824-1.12)	1.10 (0.913-1.26)	1.26 (1.02-1.46)	1.39 (1.11-1.62)
15-min	0.382 (0.335-0.438)	0.489 (0.429-0.560)	0.646 (0.567-0.737)	0.767 (0.669-0.874)	0.937 (0.807-1.06)	1.07 (0.914-1.22)	1.21 (1.02-1.39)	1.36 (1.13-1.56)	1.56 (1.27-1.81)	1.72 (1.38-2.01)
30-min	0.515 (0.451-0.590)	0.659 (0.578-0.754)	0.871 (0.763-0.993)	1.03 (0.901-1.18)	1.26 (1.09-1.43)	1.44 (1.23-1.64)	1.63 (1.38-1.87)	1.83 (1.52-2.10)	2.10 (1.71-2.43)	2.32 (1.86-2.71)
60-min	0.637 (0.559-0.730)	0.816 (0.715-0.933)	1.08 (0.945-1.23)	1.28 (1.12-1.46)	1.56 (1.34-1.78)	1.78 (1.52-2.03)	2.02 (1.70-2.31)	2.27 (1.89-2.60)	2.60 (2.12-3.01)	2.87 (2.30-3.35)
2-hr	0.711 (0.622-0.816)	0.904 (0.791-1.04)	1.18 (1.03-1.35)	1.41 (1.22-1.61)	1.73 (1.49-1.97)	1.99 (1.69-2.27)	2.27 (1.91-2.60)	2.56 (2.12-2.94)	2.98 (2.42-3.45)	3.32 (2.64-3.86)
3-hr	0.755 (0.665-0.865)	0.952 (0.841-1.10)	1.23 (1.08-1.40)	1.46 (1.27-1.66)	1.78 (1.54-2.03)	2.04 (1.74-2.34)	2.33 (1.96-2.67)	2.64 (2.18-3.04)	3.08 (2.49-3.58)	3.44 (2.73-4.02)
6-hr	0.864 (0.766-0.984)	1.08 (0.960-1.24)	1.37 (1.21-1.56)	1.62 (1.42-1.84)	1.97 (1.71-2.24)	2.25 (1.94-2.56)	2.56 (2.18-2.93)	2.89 (2.41-3.32)	3.37 (2.74-3.90)	3.77 (3.01-4.40)
12-hr	0.995 (0.882-1.13)	1.24 (1.10-1.42)	1.55 (1.37-1.77)	1.81 (1.59-2.06)	2.17 (1.89-2.47)	2.46 (2.12-2.80)	2.76 (2.35-3.15)	3.08 (2.59-3.54)	3.55 (2.93-4.12)	3.94 (3.20-4.62)
24-hr	1.12 (1.04-1.22)	1.40 (1.30-1.52)	1.72 (1.59-1.86)	1.97 (1.83-2.14)	2.32 (2.14-2.51)	2.59 (2.38-2.81)	2.87 (2.62-3.18)	3.15 (2.86-3.58)	3.58 (3.18-4.17)	3.98 (3.41-4.66)
2-day	1.27 (1.18-1.36)	1.57 (1.46-1.69)	1.92 (1.79-2.06)	2.19 (2.04-2.35)	2.56 (2.38-2.75)	2.84 (2.64-3.05)	3.12 (2.88-3.36)	3.40 (3.12-3.66)	3.76 (3.44-4.21)	4.04 (3.67-4.71)
3-day	1.39 (1.29-1.50)	1.72 (1.60-1.86)	2.09 (1.95-2.25)	2.39 (2.23-2.57)	2.79 (2.59-2.99)	3.09 (2.86-3.32)	3.40 (3.13-3.65)	3.70 (3.39-3.99)	4.09 (3.72-4.50)	4.39 (3.97-4.94)
4-day	1.51 (1.40-1.64)	1.87 (1.74-2.02)	2.27 (2.11-2.44)	2.59 (2.41-2.79)	3.02 (2.80-3.24)	3.34 (3.09-3.59)	3.67 (3.38-3.95)	4.00 (3.66-4.32)	4.42 (4.01-4.80)	4.74 (4.28-5.16)
7-day	1.81 (1.69-1.96)	2.24 (2.08-2.41)	2.70 (2.52-2.91)	3.06 (2.86-3.29)	3.55 (3.30-3.81)	3.91 (3.63-4.20)	4.27 (3.95-4.60)	4.63 (4.26-4.98)	5.08 (4.64-5.49)	5.40 (4.91-5.87)
10-day	2.06 (1.93-2.22)	2.54 (2.38-2.74)	3.06 (2.87-3.29)	3.48 (3.26-3.72)	4.02 (3.76-4.30)	4.43 (4.13-4.74)	4.84 (4.50-5.18)	5.24 (4.85-5.62)	5.75 (5.28-6.19)	6.12 (5.59-6.61)
20-day	2.80 (2.60-3.00)	3.44 (3.21-3.70)	4.14 (3.86-4.44)	4.68 (4.37-5.00)	5.38 (5.01-5.75)	5.90 (5.48-6.30)	6.41 (5.93-6.85)	6.90 (6.36-7.39)	7.51 (6.88-8.08)	7.95 (7.25-8.57)
30-day	3.42 (3.20-3.64)	4.21 (3.94-4.50)	5.02 (4.71-5.35)	5.63 (5.29-6.00)	6.41 (6.01-6.81)	6.96 (6.52-7.39)	7.48 (7.00-7.95)	7.97 (7.44-8.48)	8.57 (7.96-9.14)	8.98 (8.32-9.60)
45-day	4.29 (4.02-4.57)	5.28 (4.95-5.64)	6.27 (5.89-6.68)	7.00 (6.58-7.43)	7.89 (7.41-8.35)	8.49 (7.98-8.99)	9.05 (8.51-9.58)	9.55 (8.97-10.1)	10.1 (9.49-10.7)	10.4 (9.82-11.1)
60-day	4.96 (4.66-5.27)	6.10 (5.74-6.50)	7.23 (6.82-7.68)	8.06 (7.59-8.54)	9.06 (8.53-9.59)	9.74 (9.17-10.3)	10.4 (9.75-11.0)	10.9 (10.3-11.6)	11.5 (10.8-12.2)	11.9 (11.2-12.6)

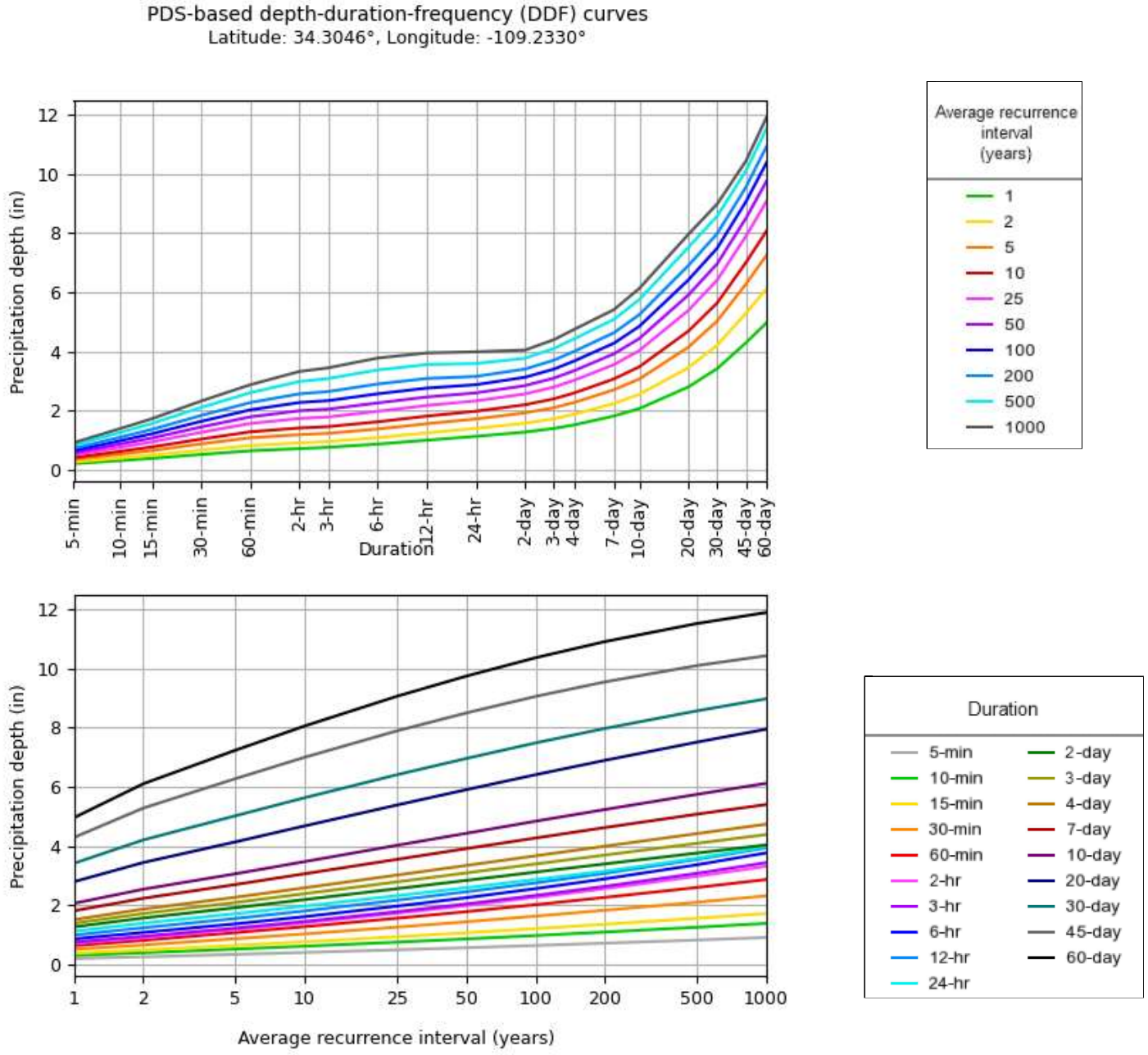
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



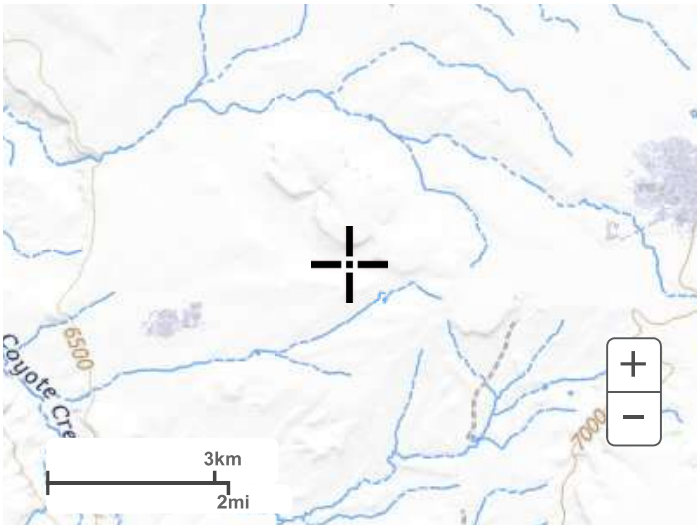
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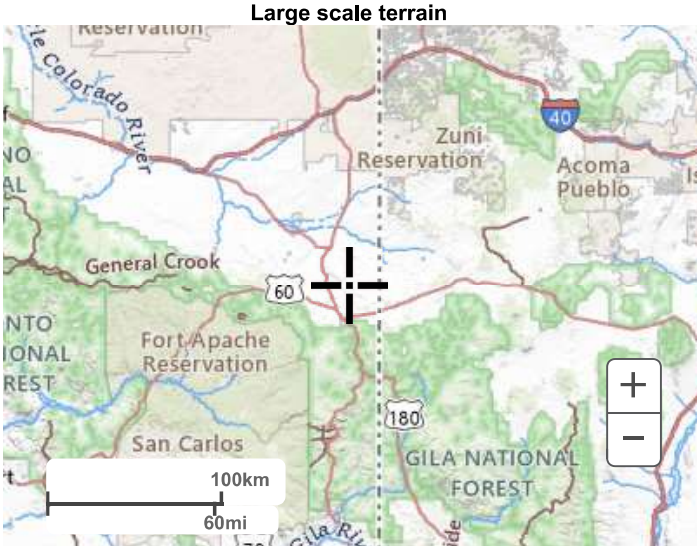
Back to Top

Maps & aerials

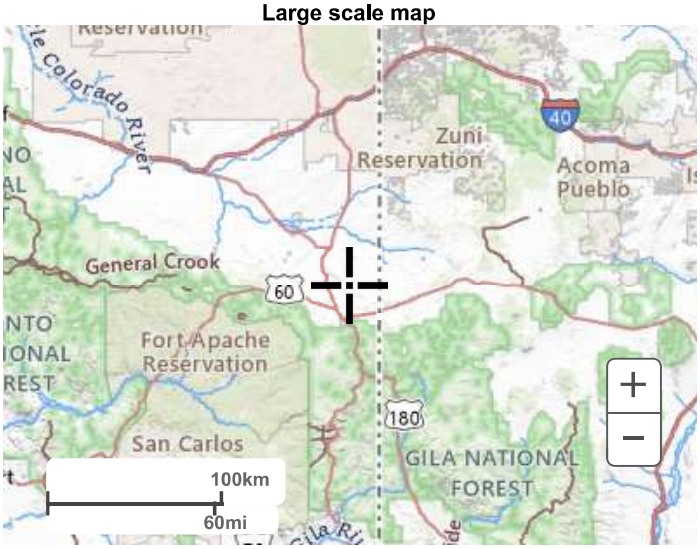
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

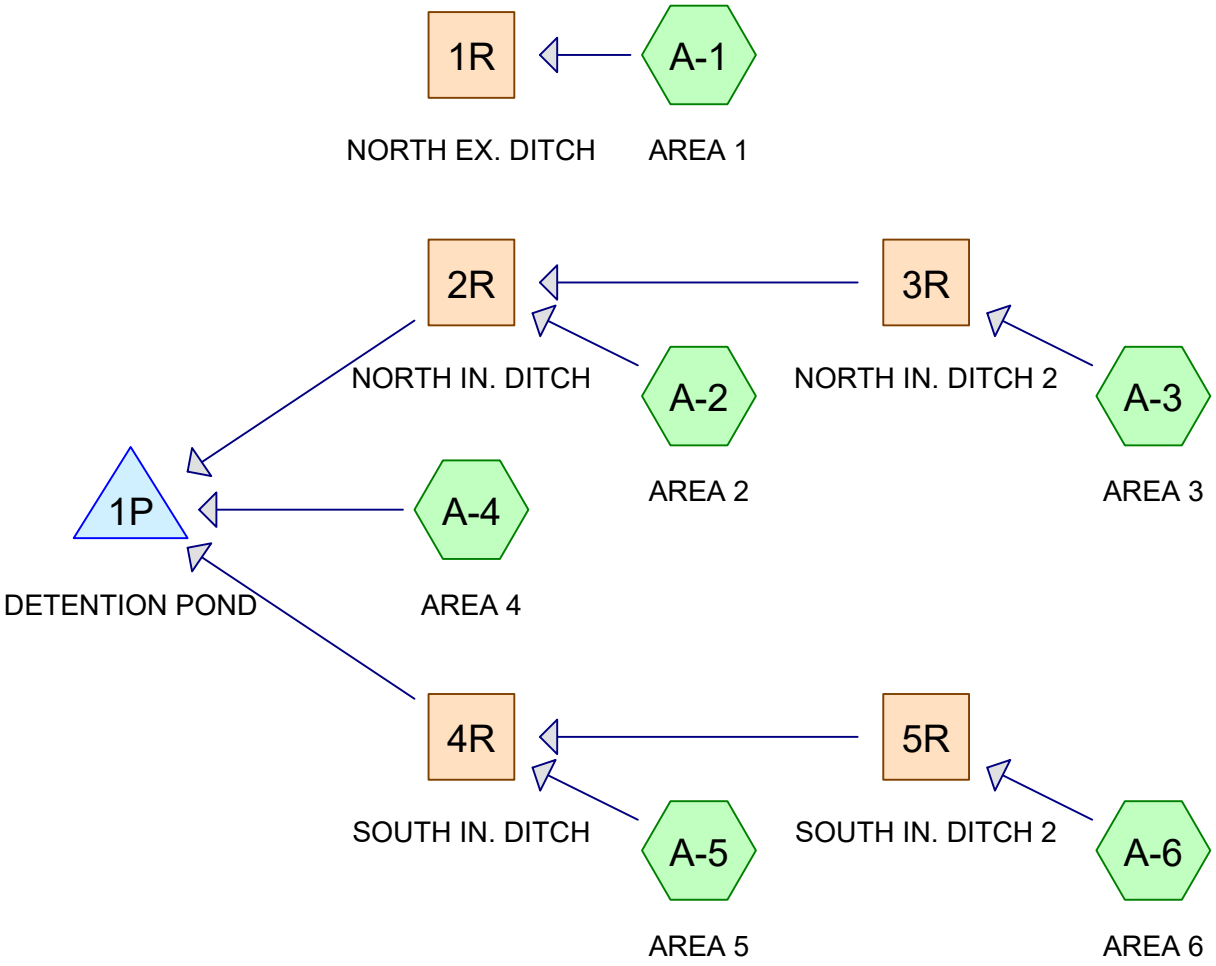


Back to Top

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

Disclaimer

APPENDIX B
HydroCAD Results



Subcat Reach Pond Link

Routing Diagram for 0213269_TEP_Landfill-Run-onRun-off
Prepared by Haley & Aldrich, Inc, Printed 10/13/2026
HydroCAD® 10.20-9a s/n 03902 © 2026 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
256.181	80	Ash (A-2, A-4, A-5)
100.140	77	Desert shrub range, Poor, HSG B (A-1, A-3, A-6)
234.247	88	Desert shrub range, Poor, HSG D (A-1, A-3, A-4, A-6)
590.568	**83**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
100.140	HSG B	A-1, A-3, A-6
0.000	HSG C	
234.247	HSG D	A-1, A-3, A-4, A-6
256.181	Other	A-2, A-4, A-5
590.568		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	256.181	256.181	Ash	A-2, A-4, A-5
0.000	100.140	0.000	234.247	0.000	334.387	Desert shrub range, Poor	A-1, A-3, A-4, A-6
0.000	**100.140**	**0.000**	**234.247**	**256.181**	**590.568**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A-1: AREA 1 Runoff Area=134.755 ac 0.00% Impervious Runoff Depth=1.16"
Flow Length=2,300' Tc=12.3 min CN=87 Runoff=221.65 cfs 13.049 af

Subcatchment A-2: AREA 2 Runoff Area=31.156 ac 0.00% Impervious Runoff Depth=0.77"
Flow Length=1,129' Tc=19.4 min CN=80 Runoff=25.74 cfs 1.991 af

Subcatchment A-3: AREA 3 Runoff Area=1,499,362 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=780' Tc=18.4 min CN=87 Runoff=46.48 cfs 3.333 af

Subcatchment A-4: AREA 4 Runoff Area=164.879 ac 0.00% Impervious Runoff Depth=0.77"
Flow Length=3,800' Tc=61.8 min CN=80 Runoff=60.90 cfs 10.535 af

Subcatchment A-5: AREA 5 Runoff Area=67.822 ac 0.00% Impervious Runoff Depth=0.77"
Flow Length=1,239' Tc=12.4 min CN=80 Runoff=71.27 cfs 4.334 af

Subcatchment A-6: AREA 6 Runoff Area=6,862,257 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=3,490' Tc=170.0 min CN=82 Runoff=31.40 cfs 11.395 af

Reach 1R: NORTH EX. DITCH Avg. Flow Depth=0.95' Max Vel=11.39 fps Inflow=221.65 cfs 13.049 af
n=0.022 L=3,899.0' S=0.0377 '/' Capacity=2,731.06 cfs Outflow=193.30 cfs 13.049 af

Reach 2R: NORTH IN. DITCH Avg. Flow Depth=0.39' Max Vel=7.26 fps Inflow=51.20 cfs 5.324 af
n=0.022 L=4,276.0' S=0.0442 '/' Capacity=4,642.25 cfs Outflow=46.22 cfs 5.324 af

Reach 3R: NORTH IN. DITCH 2 Avg. Flow Depth=0.47' Max Vel=5.02 fps Inflow=46.48 cfs 3.333 af
n=0.022 L=2,845.3' S=0.0172 '/' Capacity=2,897.68 cfs Outflow=38.19 cfs 3.333 af

Reach 4R: SOUTH IN. DITCH Avg. Flow Depth=0.45' Max Vel=5.44 fps Inflow=71.28 cfs 15.729 af
n=0.022 L=5,682.9' S=0.0209 '/' Capacity=3,195.25 cfs Outflow=40.09 cfs 15.729 af

Reach 5R: SOUTH IN. DITCH 2 Avg. Flow Depth=0.41' Max Vel=4.22 fps Inflow=31.40 cfs 11.395 af
n=0.022 L=8,579.2' S=0.0150 '/' Capacity=3,469.22 cfs Outflow=29.31 cfs 11.395 af

Pond 1P: DETENTION POND Peak Elev=6,709.76' Storage=1,375,965 cf Inflow=139.83 cfs 31.588 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 590.568 ac Runoff Volume = 44.637 af Average Runoff Depth = 0.91"
100.00% Pervious = 590.568 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment A-1: AREA 1

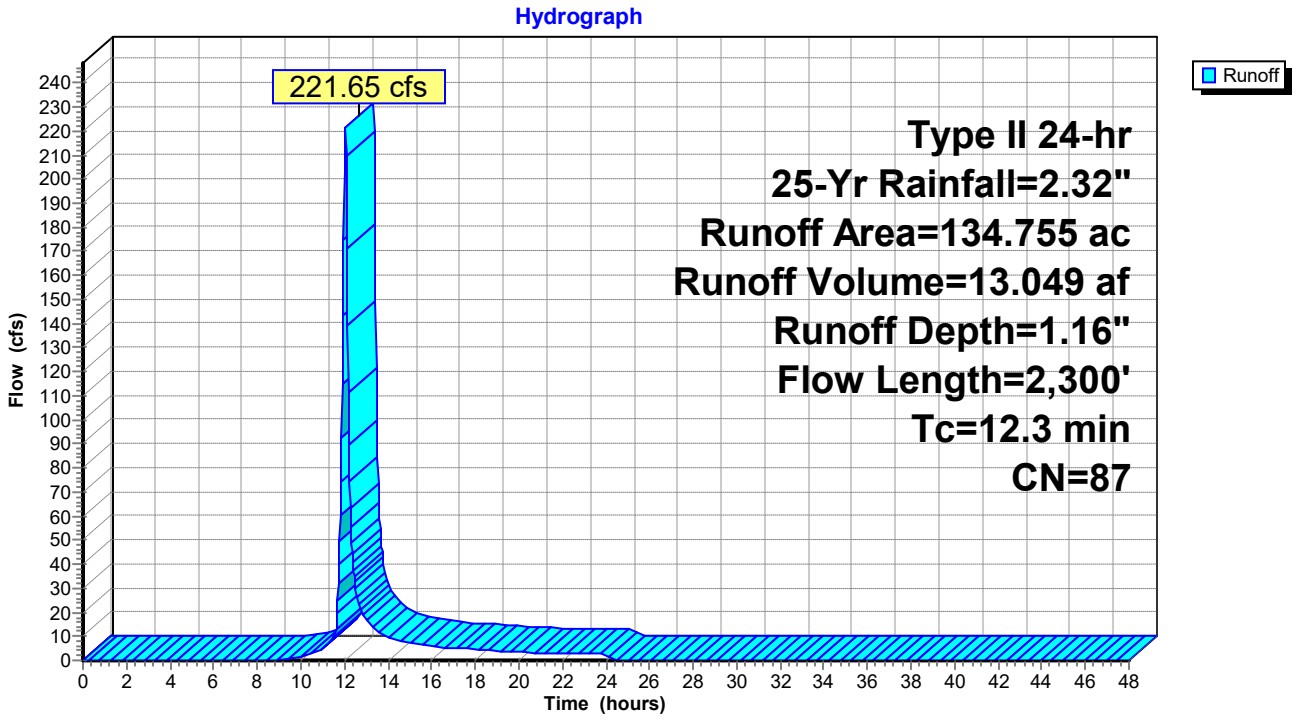
Runoff = 221.65 cfs @ 12.04 hrs, Volume= 13.049 af, Depth= 1.16"
Routed to Reach 1R : NORTH EX. DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

Area (ac)	CN	Description
12.069	77	Desert shrub range, Poor, HSG B
5.757	77	Desert shrub range, Poor, HSG B
116.929	88	Desert shrub range, Poor, HSG D
134.755	87	Weighted Average
134.755		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.6900	2.32		**Sheet Flow,** n= 0.020 P2= 1.40"
11.6	2,200	0.1000	3.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.3	2,300	Total			

Subcatchment A-1: AREA 1



Summary for Subcatchment A-2: AREA 2

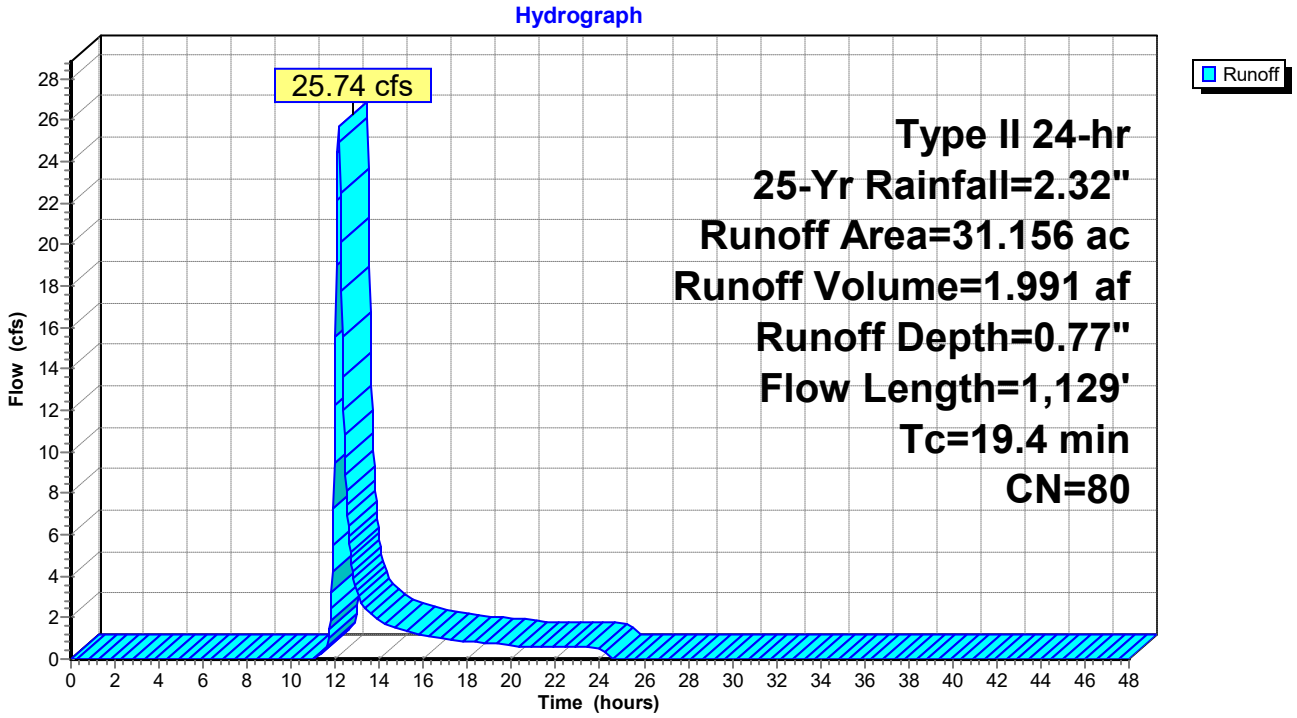
Runoff = 25.74 cfs @ 12.13 hrs, Volume= 1.991 af, Depth= 0.77"
Routed to Reach 2R : NORTH IN. DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

	Area (ac)	CN	Description
*	31.156	80	Ash
	31.156		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.0200	0.56		**Sheet Flow,** n= 0.020 P2= 1.40"
16.4	1,029	0.0110	1.05		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
19.4	1,129	Total			

Subcatchment A-2: AREA 2



Summary for Subcatchment A-3: AREA 3

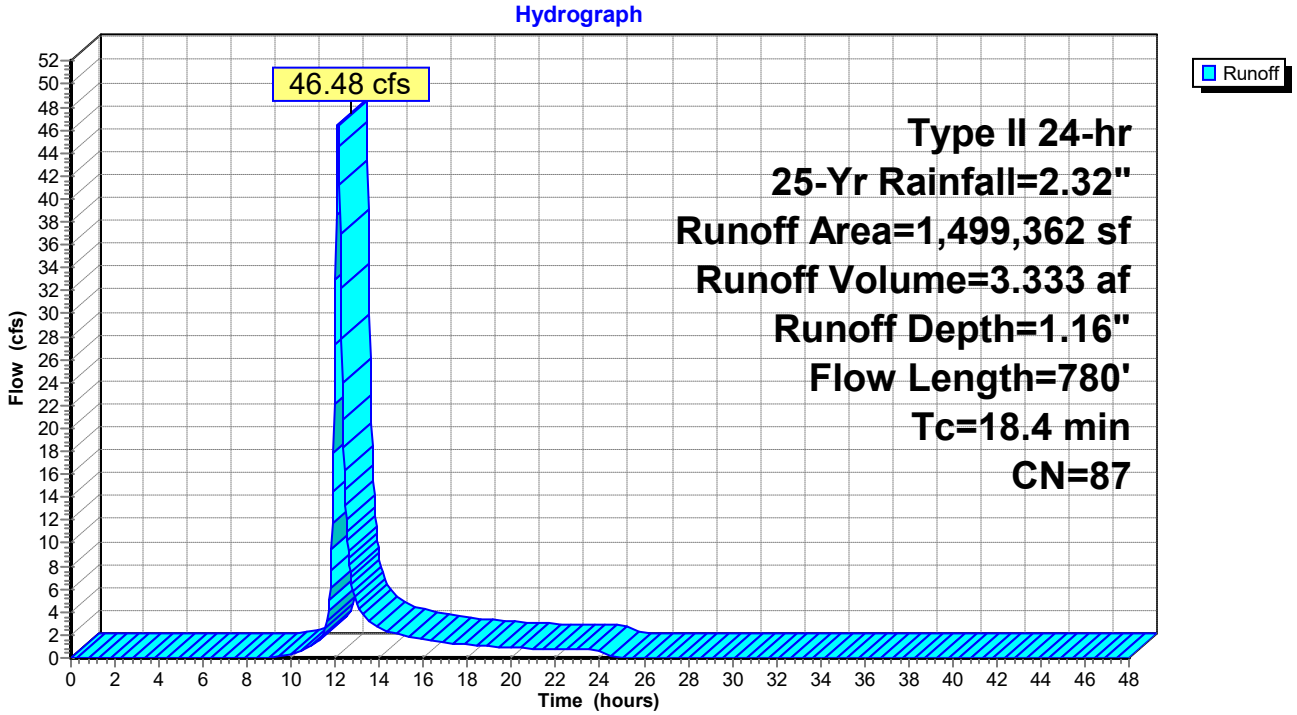
Runoff = 46.48 cfs @ 12.11 hrs, Volume= 3.333 af, Depth= 1.16"
Routed to Reach 3R : NORTH IN. DITCH 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

Area (sf)	CN	Description
100,333	77	Desert shrub range, Poor, HSG B
1,399,029	88	Desert shrub range, Poor, HSG D
1,499,362	87	Weighted Average
1,499,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.0100	0.43		**Sheet Flow,** n= 0.020 P2= 1.40"
14.1	600	0.0050	0.71		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.4	80	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.4	780	Total			

Subcatchment A-3: AREA 3



Summary for Subcatchment A-4: AREA 4

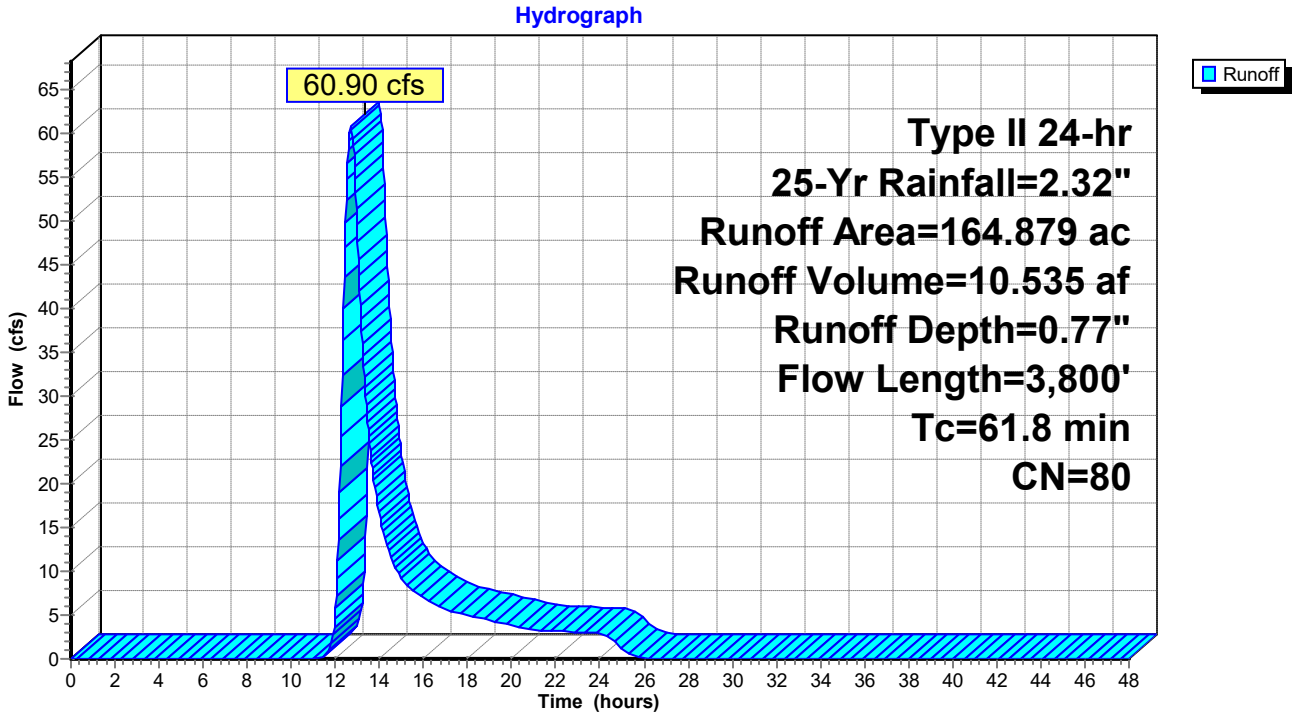
Runoff = 60.90 cfs @ 12.70 hrs, Volume= 10.535 af, Depth= 0.77"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

	Area (ac)	CN	Description
*	157.203	80	Ash
	7.676	88	Desert shrub range, Poor, HSG D
	164.879	80	Weighted Average
	164.879		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.0200	0.56		**Sheet Flow,** n= 0.020 P2= 1.40"
58.8	3,700	0.0110	1.05		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
61.8	3,800	Total			

Subcatchment A-4: AREA 4



Summary for Subcatchment A-5: AREA 5

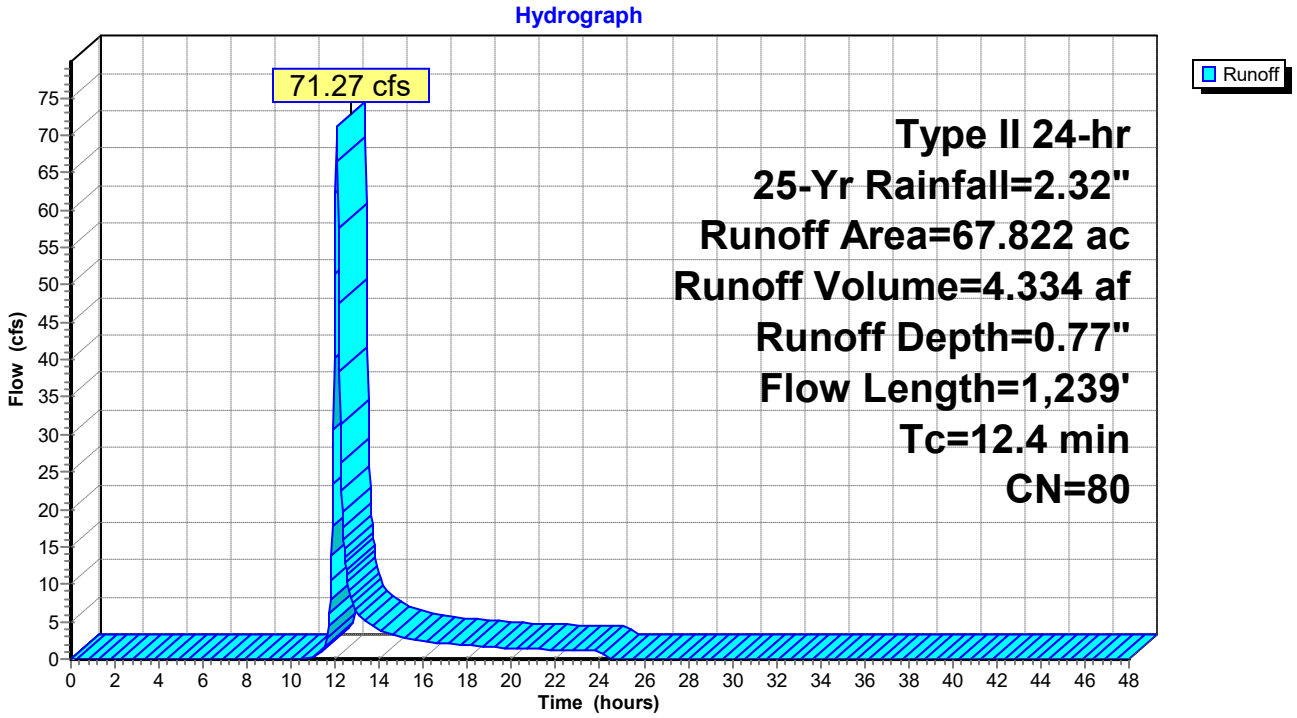
Runoff = 71.27 cfs @ 12.05 hrs, Volume= 4.334 af, Depth= 0.77"
Routed to Reach 4R : SOUTH IN. DITCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

	Area (ac)	CN	Description
*	67.822	80	Ash
	67.822		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.1000	1.07		**Sheet Flow,** n= 0.020 P2= 1.40"
10.8	1,139	0.0310	1.76		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	1,239	Total			

Subcatchment A-5: AREA 5



Summary for Subcatchment A-6: AREA 6

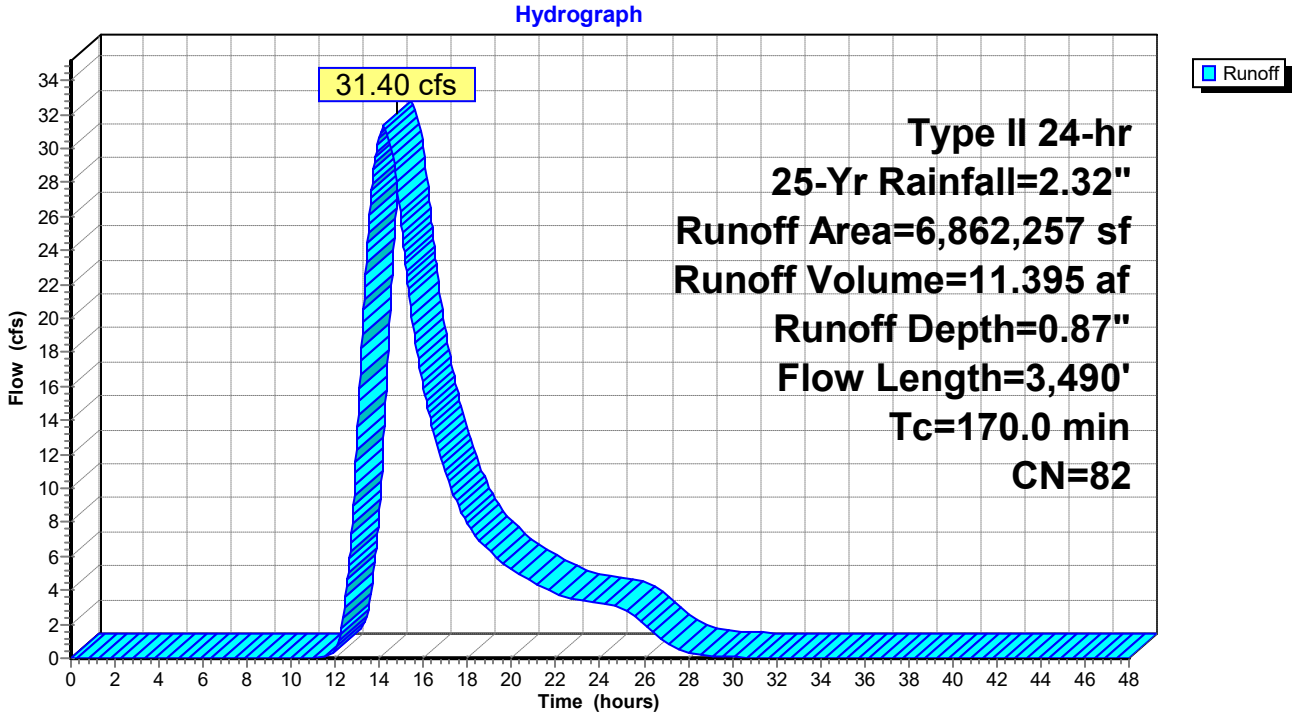
Runoff = 31.40 cfs @ 14.17 hrs, Volume= 11.395 af, Depth= 0.87"
Routed to Reach 5R : SOUTH IN. DITCH 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-Yr Rainfall=2.32"

Area (sf)	CN	Description
3,448,662	77	Desert shrub range, Poor, HSG B
36,617	77	Desert shrub range, Poor, HSG B
3,376,978	88	Desert shrub range, Poor, HSG D
6,862,257	82	Weighted Average
6,862,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0010	0.17		**Sheet Flow,** n= 0.020 P2= 1.40"
158.1	3,000	0.0010	0.32		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	390	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
170.0	3,490	Total			

Subcatchment A-6: AREA 6



Summary for Reach 1R: NORTH EX. DITCH

Inflow Area = 134.755 ac, 0.00% Impervious, Inflow Depth = 1.16" for 25-Yr event
Inflow = 221.65 cfs @ 12.04 hrs, Volume= 13.049 af
Outflow = 193.30 cfs @ 12.19 hrs, Volume= 13.049 af, Atten= 13%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Max. Velocity= 11.39 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 24.1 min

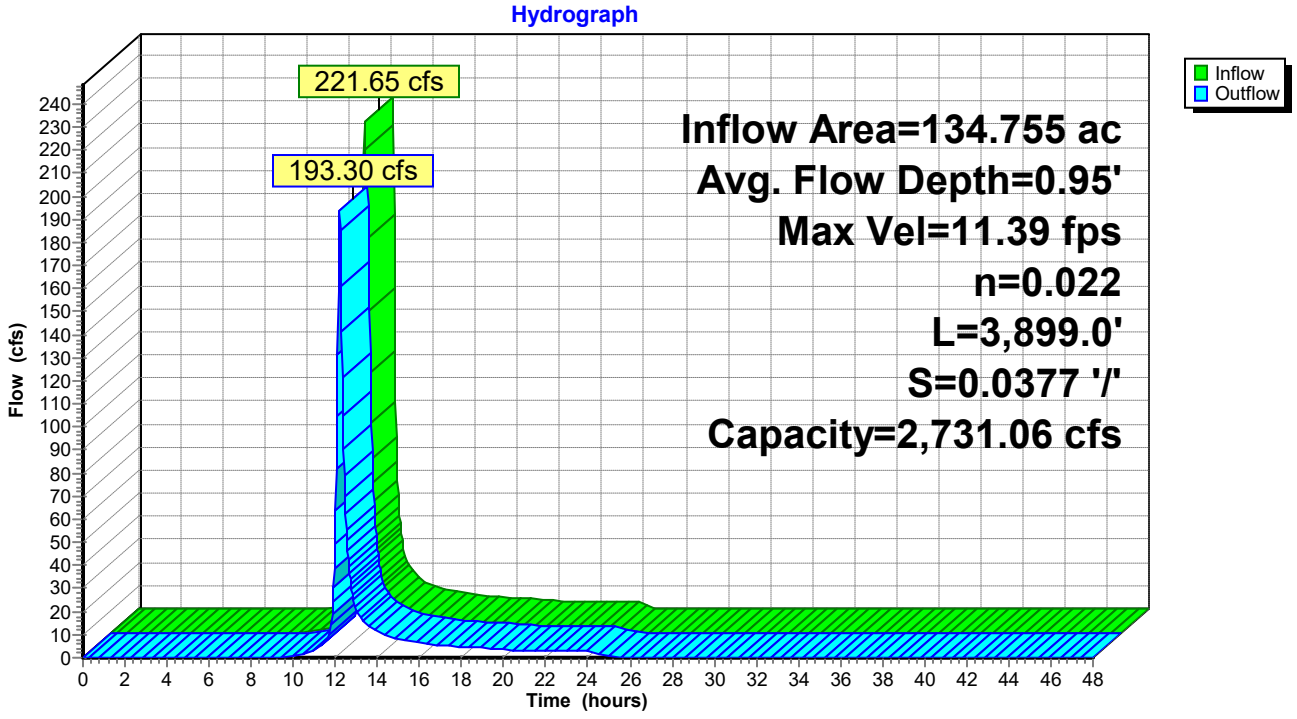
Peak Storage= 66,470 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.95' , Surface Width= 20.73'
Bank-Full Depth= 4.00' Flow Area= 108.0 sf, Capacity= 2,731.06 cfs

15.00' x 4.00' deep channel, n= 0.022
Side Slope Z-value= 3.0 '/' Top Width= 39.00'
Length= 3,899.0' Slope= 0.0377 '/'
Inlet Invert= 6,856.80', Outlet Invert= 6,710.00'



‡

Reach 1R: NORTH EX. DITCH



Summary for Reach 2R: NORTH IN. DITCH

Inflow Area = 65.577 ac, 0.00% Impervious, Inflow Depth = 0.97" for 25-Yr event
Inflow = 51.20 cfs @ 12.32 hrs, Volume= 5.324 af
Outflow = 46.22 cfs @ 12.58 hrs, Volume= 5.324 af, Atten= 10%, Lag= 15.5 min
Routed to Pond 1P : DETENTION POND

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Max. Velocity= 7.26 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 2.36 fps, Avg. Travel Time= 30.2 min

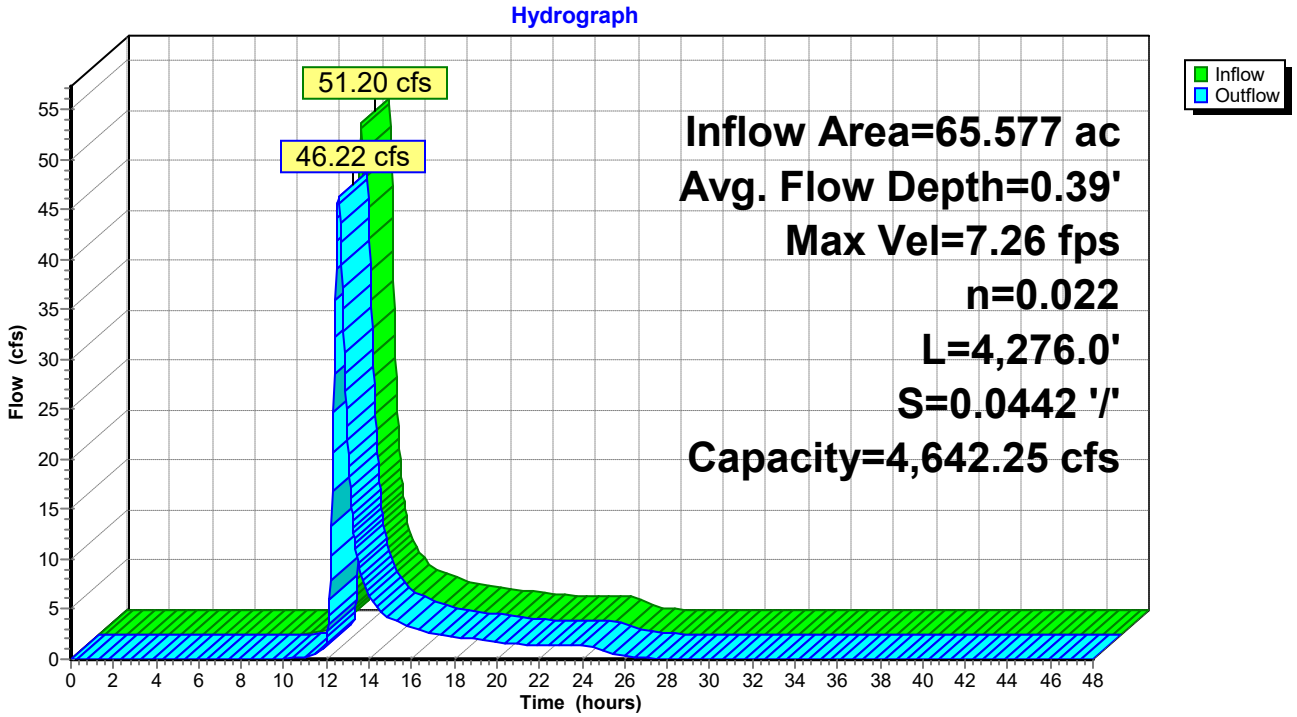
Peak Storage= 27,292 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 17.37'
Bank-Full Depth= 5.00' Flow Area= 150.0 sf, Capacity= 4,642.25 cfs

15.00' x 5.00' deep channel, n= 0.022
Side Slope Z-value= 3.0 '/' Top Width= 45.00'
Length= 4,276.0' Slope= 0.0442 '/'
Inlet Invert= 6,900.00', Outlet Invert= 6,711.00'



‡

Reach 2R: NORTH IN. DITCH



Summary for Reach 3R: NORTH IN. DITCH 2

Inflow Area = 34.421 ac, 0.00% Impervious, Inflow Depth = 1.16" for 25-Yr event
Inflow = 46.48 cfs @ 12.11 hrs, Volume= 3.333 af
Outflow = 38.19 cfs @ 12.36 hrs, Volume= 3.333 af, Atten= 18%, Lag= 14.9 min
Routed to Reach 2R : NORTH IN. DITCH

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Max. Velocity= 5.02 fps, Min. Travel Time= 9.5 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 32.3 min

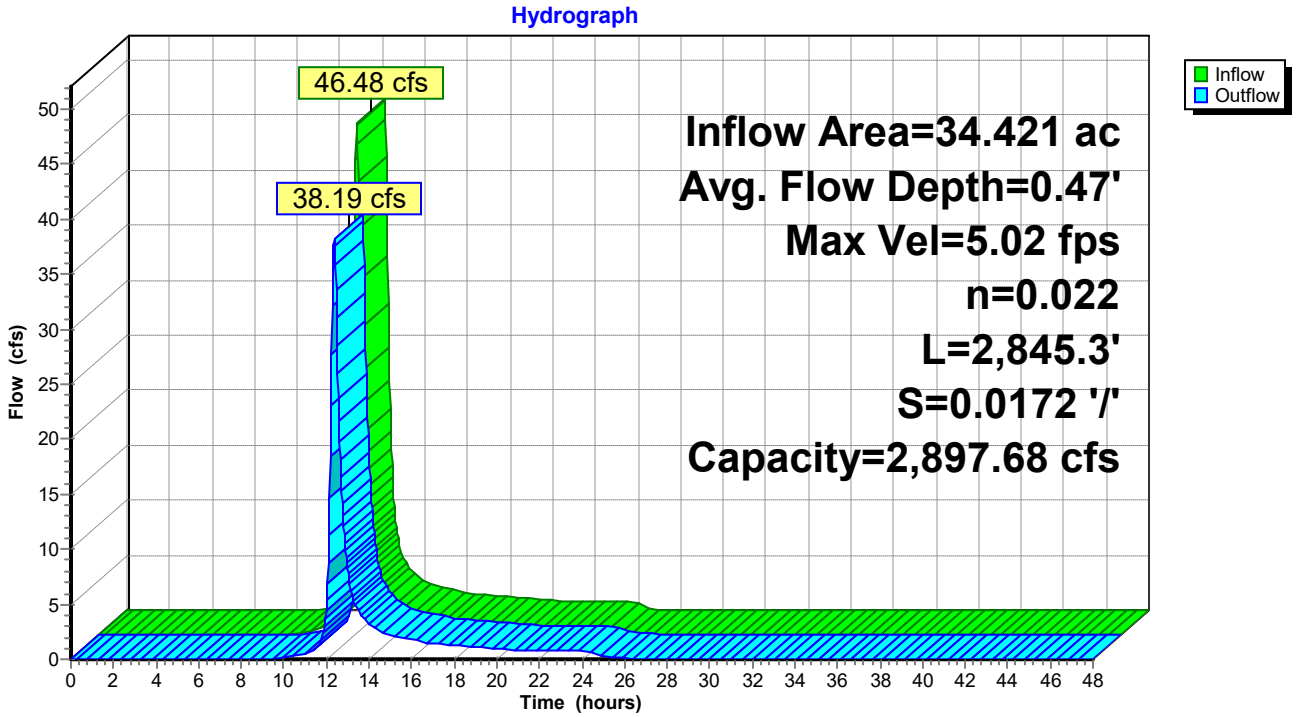
Peak Storage= 21,717 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 17.79'
Bank-Full Depth= 5.00' Flow Area= 150.0 sf, Capacity= 2,897.68 cfs

15.00' x 5.00' deep channel, n= 0.022
Side Slope Z-value= 3.0 '/' Top Width= 45.00'
Length= 2,845.3' Slope= 0.0172 '/'
Inlet Invert= 6,950.00', Outlet Invert= 6,901.00'



‡

Reach 3R: NORTH IN. DITCH 2



Summary for Reach 4R: SOUTH IN. DITCH

Inflow Area = 225.358 ac, 0.00% Impervious, Inflow Depth = 0.84" for 25-Yr event
Inflow = 71.28 cfs @ 12.05 hrs, Volume= 15.729 af
Outflow = 40.09 cfs @ 12.47 hrs, Volume= 15.729 af, Atten= 44%, Lag= 24.9 min
Routed to Pond 1P : DETENTION POND

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Max. Velocity= 5.44 fps, Min. Travel Time= 17.4 min
Avg. Velocity = 2.14 fps, Avg. Travel Time= 44.4 min

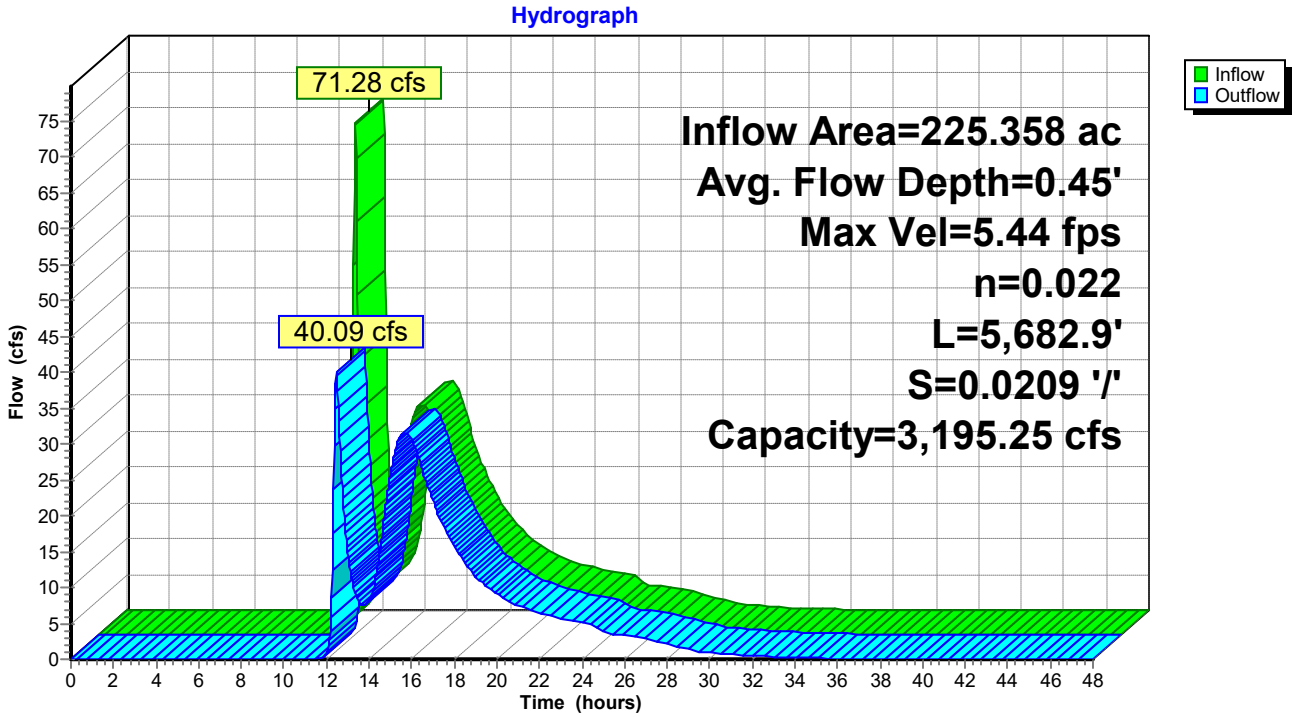
Peak Storage= 42,086 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.45' , Surface Width= 17.72'
Bank-Full Depth= 5.00' Flow Area= 150.0 sf, Capacity= 3,195.25 cfs

15.00' x 5.00' deep channel, n= 0.022
Side Slope Z-value= 3.0 '/' Top Width= 45.00'
Length= 5,682.9' Slope= 0.0209 '/'
Inlet Invert= 6,830.00', Outlet Invert= 6,711.00'



‡

Reach 4R: SOUTH IN. DITCH



Summary for Reach 5R: SOUTH IN. DITCH 2

Inflow Area = 157.536 ac, 0.00% Impervious, Inflow Depth = 0.87" for 25-Yr event
Inflow = 31.40 cfs @ 14.17 hrs, Volume= 11.395 af
Outflow = 29.31 cfs @ 15.19 hrs, Volume= 11.395 af, Atten= 7%, Lag= 61.5 min
Routed to Reach 4R : SOUTH IN. DITCH

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.22 fps, Min. Travel Time= 33.9 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 84.8 min

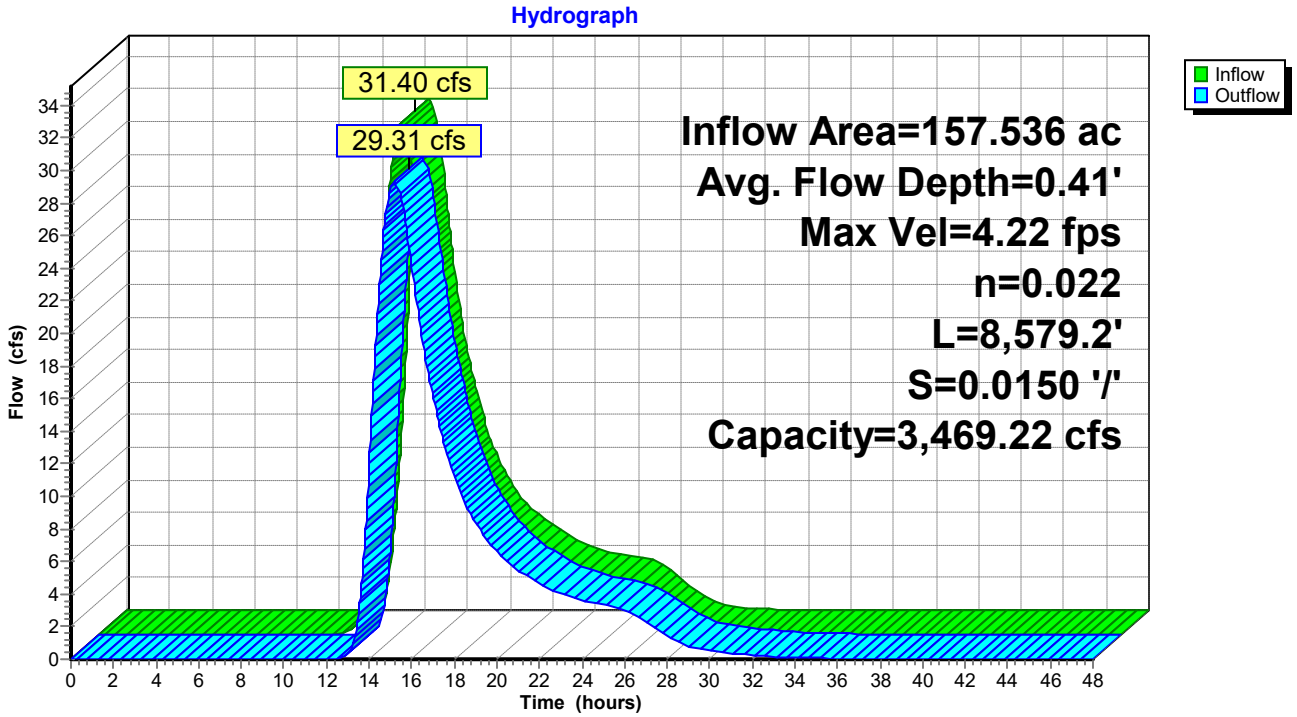
Peak Storage= 59,637 cf @ 14.63 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 19.08'
Bank-Full Depth= 5.00' Flow Area= 200.0 sf, Capacity= 3,469.22 cfs

15.00' x 5.00' deep channel, n= 0.022
Side Slope Z-value= 5.0 '/' Top Width= 65.00'
Length= 8,579.2' Slope= 0.0150 '/'
Inlet Invert= 6,960.00', Outlet Invert= 6,831.00'



‡

Reach 5R: SOUTH IN. DITCH 2



Summary for Pond 1P: DETENTION POND

Inflow Area = 455.813 ac, 0.00% Impervious, Inflow Depth = 0.83" for 25-Yr event
Inflow = 139.83 cfs @ 12.56 hrs, Volume= 31.588 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 6,709.76' @ 48.00 hrs Surf.Area= 352,939 sf Storage= 1,375,965 cf

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

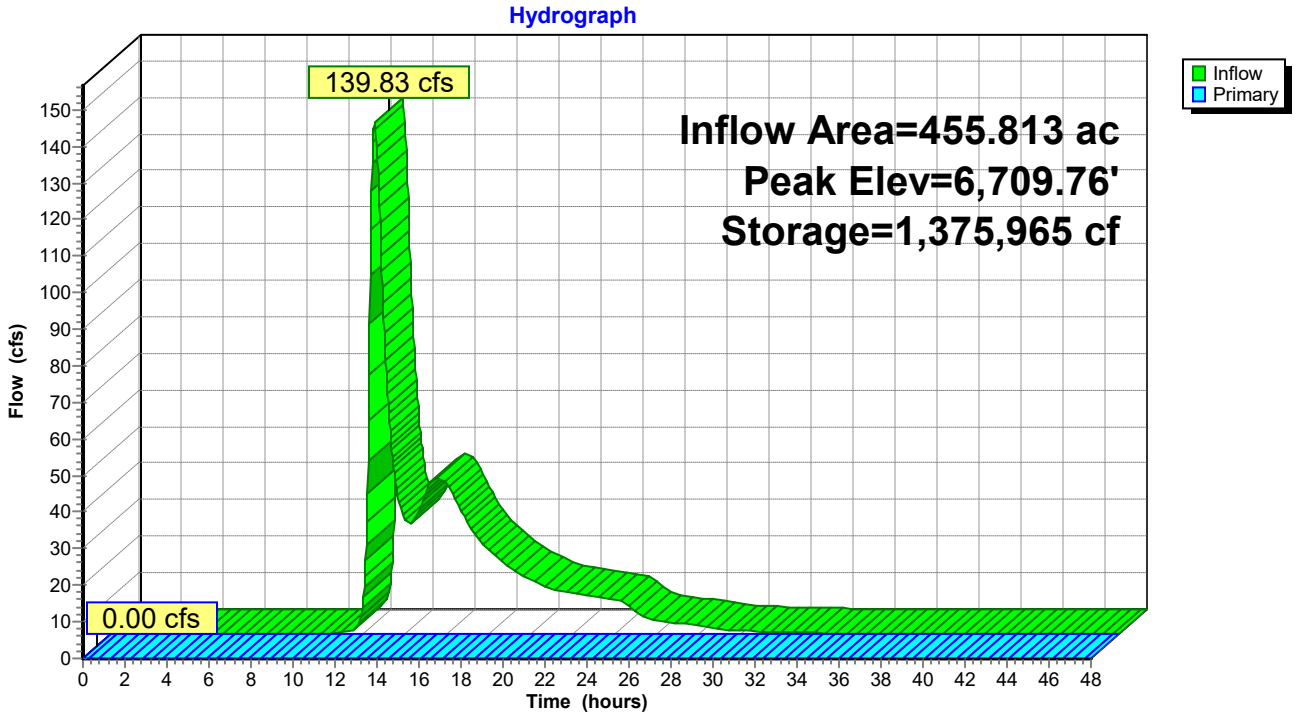
Volume	Invert	Avail.Storage	Storage Description
#1	6,704.00'	2,577,860 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6,704.00	37,998	0	0
6,705.00	92,823	65,411	65,411
6,706.00	220,750	156,787	222,197
6,707.00	278,588	249,669	471,866
6,708.00	319,923	299,256	771,122
6,709.00	352,617	336,270	1,107,392
6,710.00	353,040	352,829	1,460,220
6,711.00	363,755	358,398	1,818,618
6,712.00	376,157	369,956	2,188,574
6,713.00	402,416	389,287	2,577,860

Device	Routing	Invert	Outlet Devices
#1	Primary	6,711.00'	**110.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

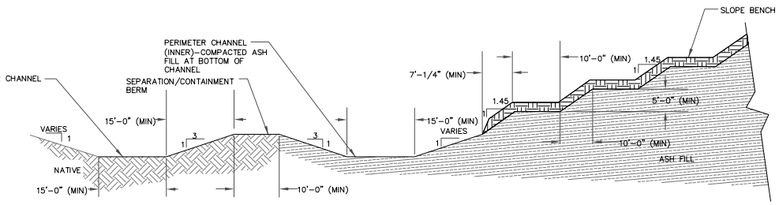
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=6,704.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: DETENTION POND



APPENDIX C
AMTECH Figure (2021)

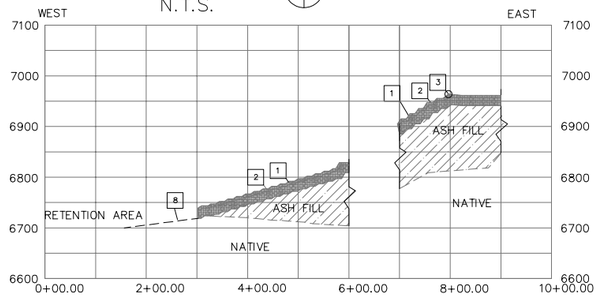




DRAINAGE CHANNELS AND SIDE SLOPE CONFIGURATION

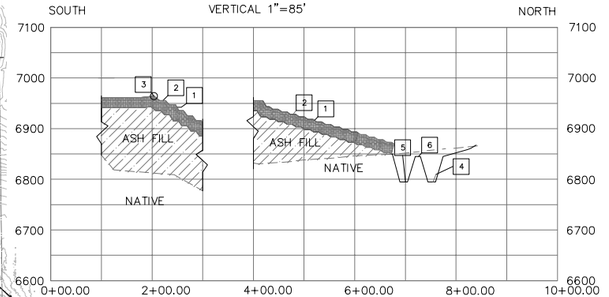
DETAIL 1 (1 - 1)

N.T.S.



CROSS SECTION A–A

SCALE IN FEET
HORIZONTAL 1"=850'
VERTICAL 1"=85'



CROSS SECTION B–B

SCALE IN FEET
HORIZONTAL 1"=850'
VERTICAL 1"=85'

CALLOUT DEFINITIONS:

1. EXISTING INNER DRAINAGE CHANNEL
2. CLOSED ASH DISPOSAL AREA
3. EXISTING EARTHEN BERM
4. EXISTING RETENTION AREA
5. EXISTING OUTER DRAINAGE CHANNEL
6. EXISTING SEPARATION BERM
7. EXISTING ASH HAUL ROAD
8. EXISTING SPILLWAY
9. CLOSED ASH DISPOSAL AREA/NOT SUBJECT TO CCR'S
10. ACTIVE ASH DISPOSAL AREA/SUBJECT TO CCR'S
11. EXISTING NORTHEAST SINK
12. EXISTING PROPERTY LINE

CONST. NOTES:

1. THE OWNER SHALL CONST. ASH FILL SIDE SLOPES AT 1.45 HORIZONTAL TO 1 VERTICAL (1.45H:1V) BETWEEN BENCHES.
2. EVERY FIVE (5) FEET IN ELEVATION THE OWNER SHALL CONST. BENCHES ON THE ASH FILL. GRADE BENCHES WITH NO SLOPE IN EITHER DIRECTION AND CONST. TO A MINIMUM WIDTH OF TEN (10) FEET.
3. THE OWNER SHALL CONST. AND MAINTAIN AN EARTHEN BERM AROUND THE PERIMETER OF THE UPPER DECK SECTION OF THE ASH DISPOSAL AREA 2 FEET (FT) IN OVERALL HEIGHT TO CONTAIN THE STORMWATER FALLING DIRECTLY ON THE UPPER DECK AREA.
4. THE OWNER SHALL MAINTAIN CHANNEL FLOW LINES TO BE FREE OF DEBRIS AND TO MAINTAIN 2.0% GRADE.
5. THE OWNER SHALL CONST. INNER PERIMETER CHANNEL ADEQUATE TO CONVEY STORM WATER FROM A 25–YEAR/24–HOUR STORM EVENT PARALLEL WITH OUTER DRAINAGE CHANNEL AS SHOW ON THE DRAWING AS THE ASH FILL PROGRESSES WESTERLY. GRADE FLOW LINE AT A MINIMUM 2.0 PERCENT AND DAYLIGHT TO EXISTING RETENTION AREA.
6. THE OWNER SHALL MAINTAIN SEPARATION BERMS BETWEEN INNER AND OUTER CHANNELS.
7. NOT USED
8. THE OWNER SHALL REMOVE SEDIMENTATION WITHIN THE EXISTING RETENTION AREA AS NEEDED TO MAINTAIN ADEQUATE STORAGE CAPACITY DURING A 25–YEAR/24–HOUR STORM EVENT PER DRAINAGE DESIGN CALCULATIONS.
9. THE OWNER SHALL MAINTAIN AND OR REPAIR EARTHEN BERM AS NEEDED TO MAINTAIN THE STRUCTURAL INTEGRITY.

LEGEND:

- 6710 — EXIST. CONTOUR ELEVATIONS
- EXIST. SECTION LINE
- EXIST. PROPERTY LINE
- EXIST. DRAINAGE AND PERIMETER CHANNEL FLOW LINE DERECTION
- EXIST. ROADWAY/HAUL ROADS
- EXIST. WATER SUPPLY PIPE LINE
- XX — XX — EXIST. FENCE LINE
- EXIST. CULVERT DRAINAGE PIPES
- EXIST. WATER FILL STATION
- A–A A–A CROSS SECTION

N

0 850 1700
SCALE FEET

AMTECH Associates, L.L.C.
8666 E San Alberto Drive, Scottsdale, Arizona 85258
Office: (480) 705-6494 Fax: (480) 362-6133

REV	ISSUE	DWG	DES	CHK	APP

DWN. BMK CHK. TMJ
DES. BMK APPR. SSA
ISSUE DATE OCTOBER 2021
PROJECT NO. 1062.03

TUCSON ELECTRIC POWER COMPANY
SPRINGERVILLE GENERATING STATION
ASH DISPOSAL LANDFILL
PROJECT NO: 1062.03
RUN-ON / RUN-OFF CONTROL PLAN

DRAWING:
1 OF 1