

December 7, 2023

PLSA 3743

City of San Diego  
Development Services Department  
1222 First Avenue, MS 301  
San Diego, CA 92101

**RE: HYDROLOGY LETTER FOR COVE HOUSE- 3<sup>RD</sup> CDP SUBMITTAL**

The purpose of this letter is to address the hydrology and water quality components of the proposed improvements associated with the above referenced property and proposed development.

**HYDROLOGY**

The subject property has two existing lots, where a lot tie agreement will combined The two lots into a total project area of 0.449 acres or 19,557 sf. This total property area includes a large chunk of ownership in fee that extends out beyond the cliffs and into the La Jolla Bay and Pacific Ocean. Currently, the property has an existing tennis court, miscellaneous hardscape and a large portion of the site in undeveloped land. The site is surrounded by an existing single-family residential home to the west and east, the rest of the existing tennis court to the east, public Torrey Pines Road to the south. Based on a study of the existing site topography, the project slopes from south to north across the property and drainage leaves the site via sheet flow methods on the surface to enter the adjacent public access easement that contains the road called Coast Walk. The property accepts runoff from a portion of the existing public street opening portion of Torrey Pines Road (see Page 7 of ROS 24382). Currently, all runoff from the subject properties overland flows northerly into Coast Walk where it is collected via street flow and directed to the existing storm drain inlet and 24" CMP on Coast Walk per Drawing No 19861-D. This 24" CMP then runs north to existing rip-rap, discharging directly to the Pacific Ocean (La Jolla Bay to be specific). Thus, the entirety of the downstream infrastructure appears to consist of hardened, engineered channels and will function to adequately intercept, contain, and convey flow from a 100-year storm event to the ultimate point of discharge in San Diego Bay.

The project will disturb only 0.23 acres or 10,190 SF of total disturbed area. For the purposes of the drainage study, we are only looking at 10,190 SF tributary to the proposed Biofiltration Basin. The remainder of the site remains undisturbed and continues to drain northerly as it does in the existing condition. The proposed onsite hardscape is 7,970 SF for the proposed single-family residence, widening of the Torrey Pines Road street opening, concrete driveways, walkways, and retaining walls. The proposed development does not require a permit under the Federal Clean Water Act (CWA) Sections 401 / 404 because as an urban infill the project does not impact wetlands or riparian areas. No onsite drainage patterns will be altered as a result of the proposed development, as drainage will continue to be routed from south the north through the

property to the adjacent Coast Walk. In both the existing and proposed conditions, peak runoff was calculated using the Rational Method Equation ( $Q = CiA$ ). A precipitation volume of 2.0 inches was used for the analysis in accordance with the 100-year, 6-hour storm event isopluvial map located in Figure B-2 of the San Diego Drainage Design Manual. Additionally, a 4.4 in/hr intensity was used based on an assumed time of concentration of 5.0 minutes for a site of this size according to Figure A.1 of the San Diego Drainage Design Manual.

As the existing condition consists of both undeveloped land and half of a tennis court, it was determined that the land use factors listed in Table A-1 of the Drainage Design Manual would not adequately represent the drainage conditions of the site. It was determined that the weighted runoff coefficient would best describe the project in both the existing and proposed conditions. A weighted runoff coefficient was calculated using Section 3.1.2 of the June 2013 County of San Diego Hydrology Manual, using 0.90 for impervious area and a C-value of 0.35 for Type D Soils per Table 3-1 describing Runoff Coefficients for Urban Areas.

In the existing condition, 31% (3,146 sf impervious) of the project area is an existing concrete tennis court. Using Section 3.1.2, these equates to a weighted runoff coefficient of 0.52 and a Peak Runoff Q100 of 0.54 cfs.

In the proposed condition, 78% of the proposed project (7,970 sf impervious, +4,824 difference) is made of impervious surfaces which includes roofs, overhands, concrete patios, driveways, and miscellaneous hardscape. This equated to a weighted runoff coefficient of 0.78 and a Peak Q100 of 0.81 cfs. This 0.81 cfs is greater than the existing flows coming from the site. The stormwater design for the site included a 239 SF biofiltration basin that conforms to the standards of the conjunctive use handout as described in Section 8.1.6 of the City of San Diego Drainage Design Manual (January 2017). This site is HMP exempt so only pollutant control water and flood control detention design water are included in the analysis. Using HydroCAD analysis for the biofiltration basin and the freeboard above the overflow riser, we input the inflow hydrograph (included in the attachments) for the 0.81 cfs unmitigated 100-year flow. Based on the basin configuration and available freeboard, the HydroCAD analysis for detention results in an outflow of 0.47 cfs, which falls below the existing Q100 of 0.54 cfs. See HydroCAD analysis provided at the end of this letter.

Therefore, the project decreases the runoff volume from the existing site and thus lowers the outlet Q100 down to Coast Walk and ultimately the existing storm drain infrastructure that conveys site runoff directly to the Pacific Ocean. This will help prevent erosion adjacent to Coast Walk as the discharge flow has been piped to a hardened channel (Coast Walk and existing public stormdrain) and has resulted in a lower Q100 leaving the site due to detention above the riser in the biofiltration basin.

PEAK DRAINAGE FLOW COMPARISON			
CONDITION	DRAINAGE AREA (ACRES)	Q <sub>100</sub> (CFS)	C
Existing	0.23	0.54	0.52
Proposed (Unmitigated)	0.23	0.81	0.78
Proposed (MITIGATED)	0.23	0.47	0.78

### **WATER QUALITY**

The proposed project is classified as a priority development project for storm water purposes in accordance with the Regional Water Quality Control Board Municipal Separate Storm Sewer System (MS4) Permit and is subject to permanent storm water requirements. As such, water quality and Permanent Stormwater BMP features have been implemented to the maximum extent practicable. Impervious areas have been minimized as practical and a biofiltration planter BMP area has been implemented in accordance with the City of San Diego's requirements for priority projects for stormwater treatment. The project is HMP Exempt. See SWQMP for Cove House CDP, Dated December 2023 for further information on water quality treatment for this priority project.

### **CONCLUSION**

Based on the discussion in this letter, it is the professional opinion of Pasco, Laret, Suiter and Associates, Inc. that the proposed drainage system on the corresponding site plan will function to adequately intercept, contain, treat and convey flow from a 100-year storm to the appropriate point of discharge. Additionally, a permanent BMP biofiltration basin has been provided in accordance with the City of San Diego storm water standards manual for a priority project. No existing site drainage patterns have been altered, and water will continue to discharge as it does in the existing condition – from south to north towards Coast Walk. Eventually, water leaving the site downstream enters the adjacent stormdrain infrastructure per Drawing 19861-D, where it runs west in underground stormdrain, before discharging directly to the Pacific Ocean.

Please call if you have any questions.

Sincerely,

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Justin Suiter, PE  
President



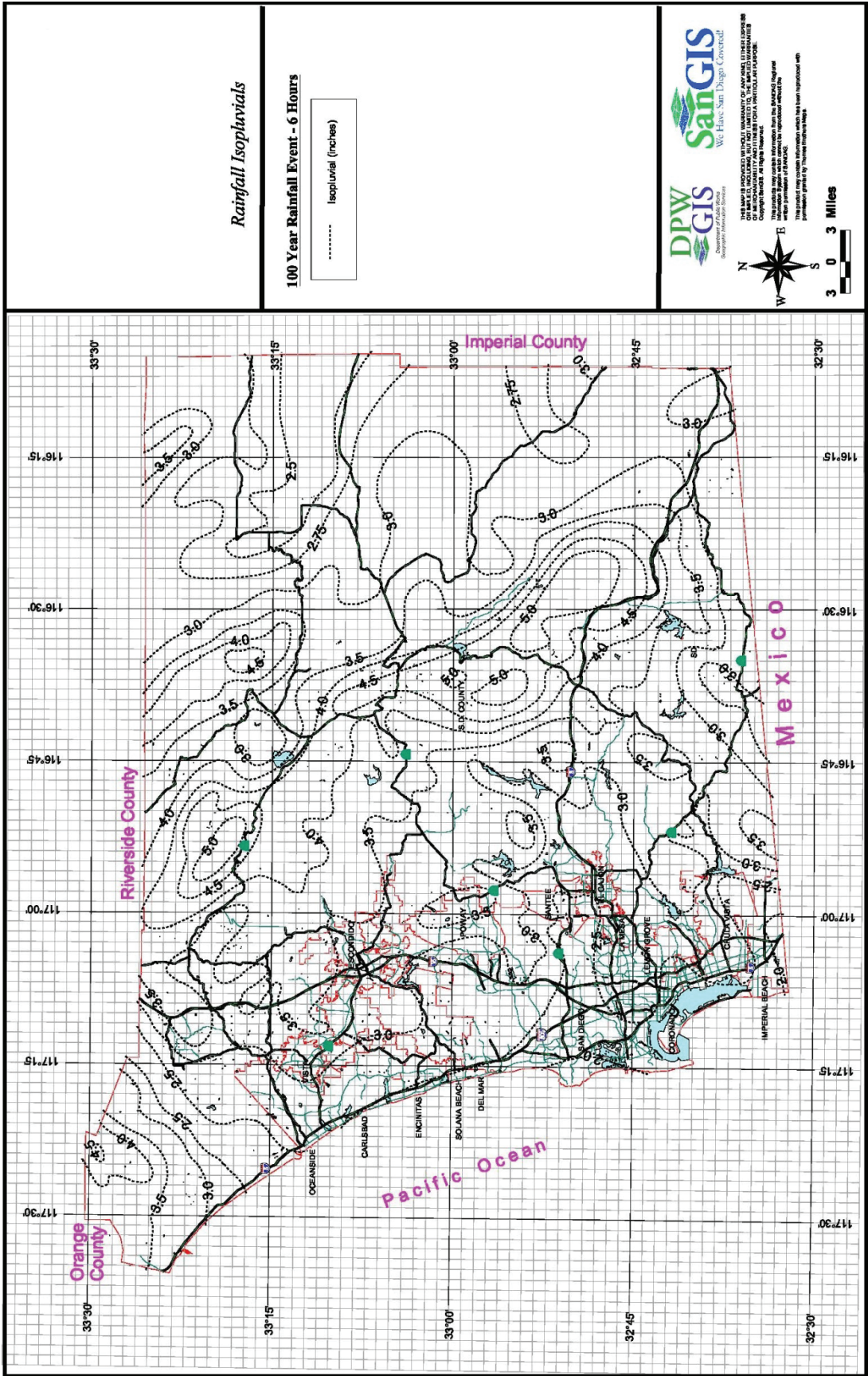


Figure B-2. 100-Year 6-Hour Isoplethials.



Soil Map—San Diego County Area, California



MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California  
Survey Area Data: Version 16, Sep 13, 2021

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

Date(s) aerial images were photographed: Mar 24, 2022—Apr 29, 2022

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ur	Urban land	0.3	100.0%
<b>Totals for Area of Interest</b>		<b>0.3</b>	<b>100.0%</b>

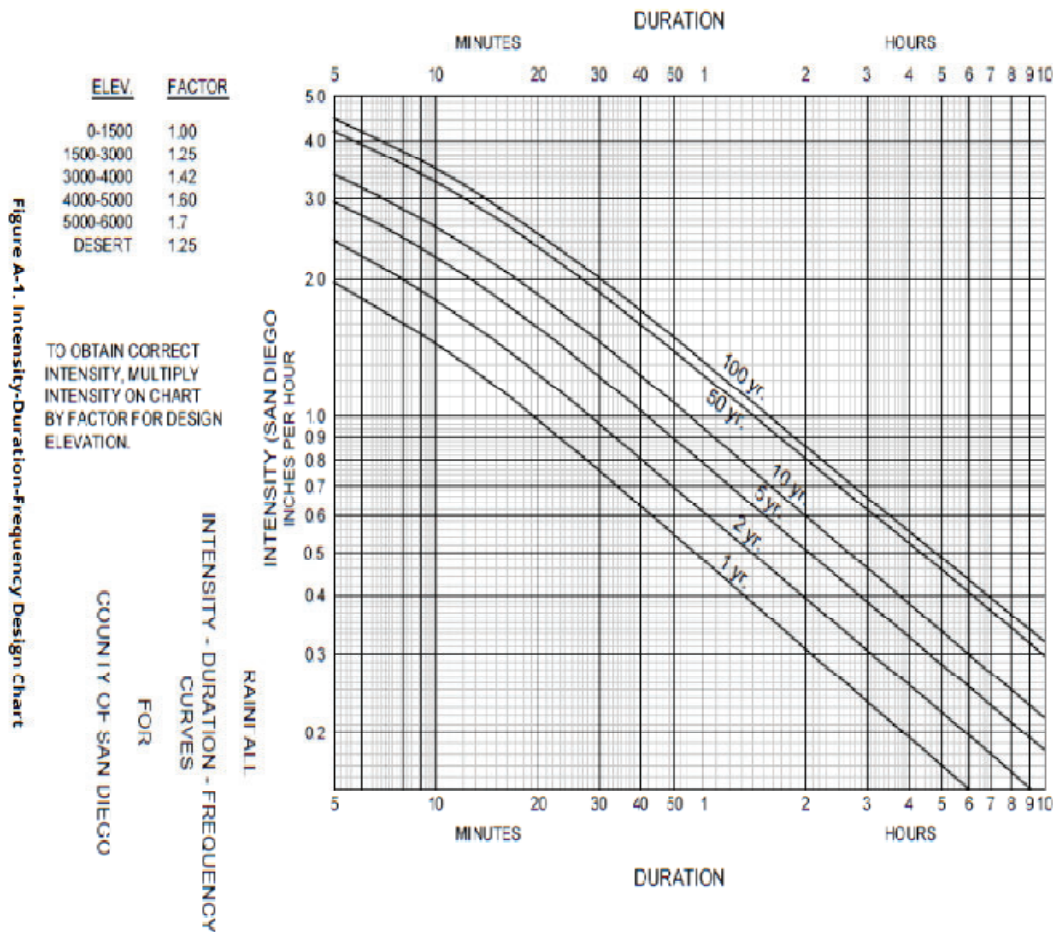


100 YR ON-SITE PRE-PROJECT HYDROLOGY									
Drainage Area	Area Description	Total Area (Ac)	Total Area (sq-ft)	Total Impervious Area (Sq-Ft)	% Impervious	% Pervious	Weighted Runoff Coefficient	Peak Runoff Q: (CFS)	Peak Runoff Volume: (cu-ft)
EX-1	Existing Site	0.23	10190	3146	31%	69%	0.52	0.54	883

100 YR ON-SITE POST-PROJECT HYDROLOGY									
BMP Location	Basin Description	Total Area (Ac)	Total Area (sq-ft)	Total Impervious Area (Sq-Ft)	% Impervious	% Pervious	Weighted Runoff Coefficient	Peak Runoff Q: (CFS)	Peak Runoff Volume: (cu-ft)
DMA-1	Proposed Site	0.23	10190.00	7970.00	78%	22%	0.78	0.81	1325
Totals:		0.23	10190	7970	78%	22%	0.78	0.81	1325

100 Yr Storm at 5 Min TC	
Intensity:	4.40 in/hr
Precip:	2.00 in

Runoff Coefficient	
Impervious	0.90
Landscape	0.35

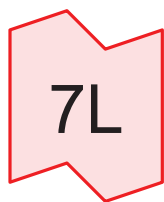


## APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD



RUN DATE 12/6/2023  
HYDROGRAPH FILE NAME Text1  
TIME OF CONCENTRATION 5 MIN.  
6 HOUR RAINFALL 2 INCHES  
BASIN AREA 0.23 ACRES  
RUNOFF COEFFICIENT 0.78  
PEAK DISCHARGE 0.83 CFS

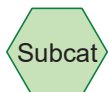
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Inflow to BMP-2



BMP-2 Alt6



**Routing Diagram for 3743**

Prepared by {enter your company name here}, Printed 12/7/2023  
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3743

Type II 24-hr Rainfall=2.00"

Prepared by {enter your company name here}

Printed 12/7/2023

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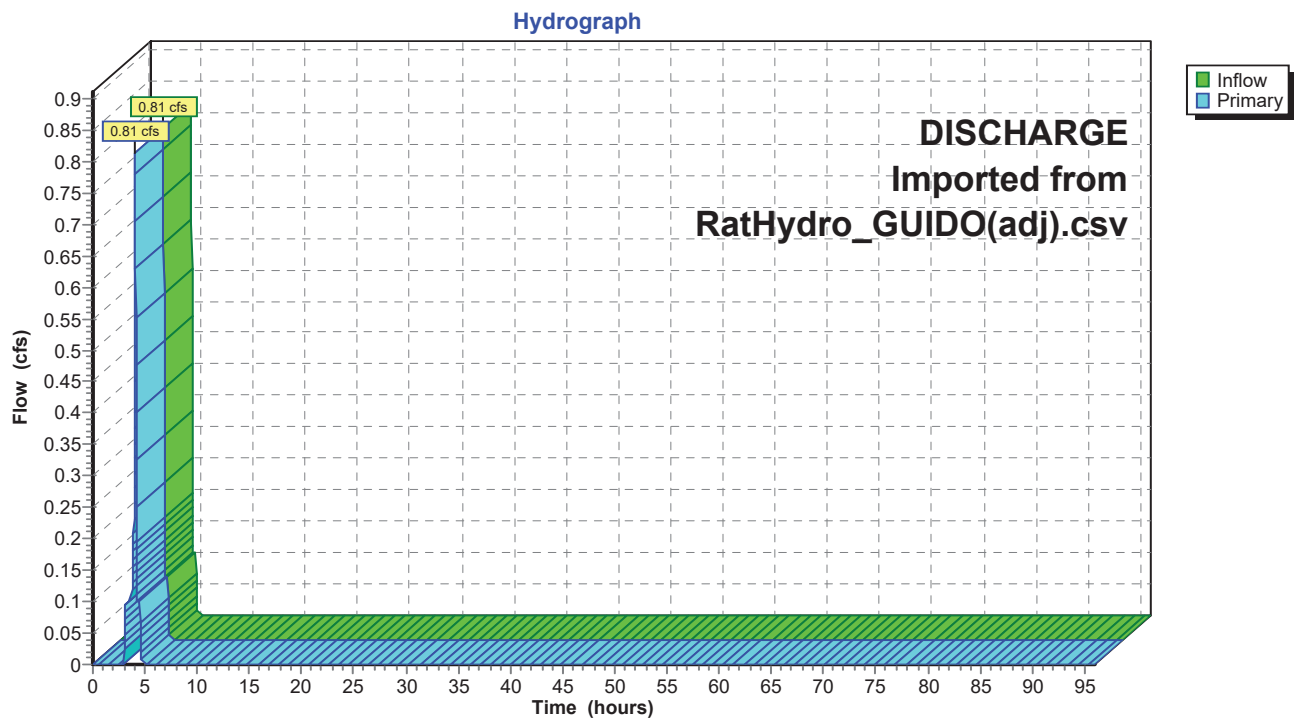
### Summary for Link 7L: Inflow to BMP-2

Inflow = 0.81 cfs @ 4.08 hrs, Volume= 0.022 af  
Primary = 0.81 cfs @ 4.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

DISCHARGE Imported from RatHydro\_GUIDO(adj).csv

### Link 7L: Inflow to BMP-2



**Summary for Pond 6P: BMP-2 Alt6**

Inflow = 0.81 cfs @ 4.08 hrs, Volume= 0.022 af  
 Outflow = 0.47 cfs @ 4.13 hrs, Volume= 0.022 af, Atten= 42%, Lag= 3.1 min  
 Primary = 0.47 cfs @ 4.13 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs  
 Peak Elev= 82.09' @ 4.13 hrs Surf.Area= 445 sf Storage= 354 cf

Plug-Flow detention time= 22.7 min calculated for 0.022 af (100% of inflow)  
 Center-of-Mass det. time= 22.7 min ( 258.0 - 235.3 )

Volume	Invert	Avail.Storage	Storage Description			
#1	78.08'	390 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
78.08	239	0.0	0	0	239	
79.33	239	0.4	1	1	308	
81.33	239	20.0	96	97	417	
82.00	419	100.0	218	314	602	
82.17	468	100.0	75	390	653	

Device	Routing	Invert	Outlet Devices
#1	Primary	78.08'	<b>6.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 78.08' / 77.50' S= 0.0232 ' S= 0.0232 ' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Primary	78.33'	<b>1.5" Vert. Orifice</b> C= 0.600
#3	Device 1	82.00'	<b>12.0" x 12.0" Horiz. Grate</b> C= 0.600 in 18.0" x 18.0" Grate (44% open area) Limited to weir flow at low heads

**Primary OutFlow** Max=0.47 cfs @ 4.13 hrs HW=82.09' (Free Discharge)

1=Culvert (Passes 0.35 cfs of 1.79 cfs potential flow)

3=Grate (Weir Controls 0.35 cfs @ 0.98 fps)

2=Orifice (Orifice Controls 0.11 cfs @ 9.26 fps)



3743

Prepared by {enter your company name here}

HydroCAD® 10.00-24 s/n 12412 © 2018 HydroCAD Software Solutions LLC

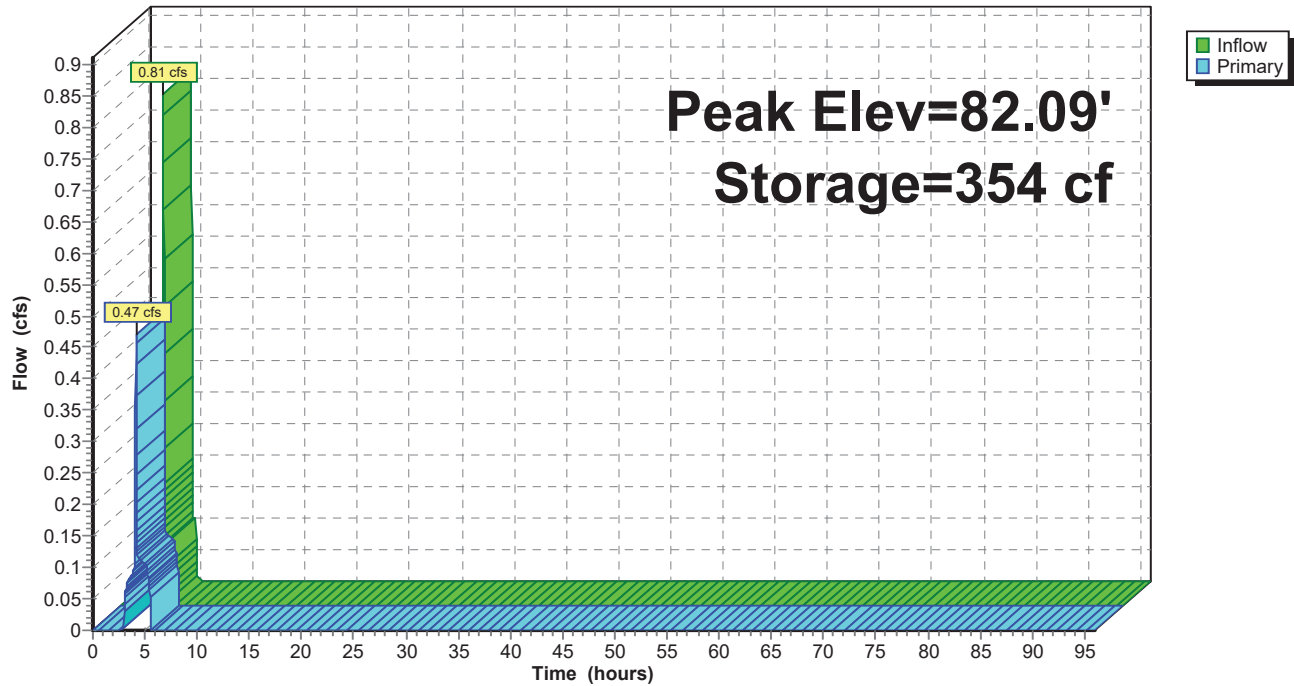
Type II 24-hr Rainfall=2.00"

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### Pond 6P: BMP-2 Alt6

#### Hydrograph



# National Flood Hazard Layer FIRMette



117°16'17"W 32°51'9"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**



**OTHER AREAS OF FLOOD HAZARD**



**OTHER AREAS**



**GENERAL STRUCTURES**



**OTHER FEATURES**



**MAP PANELS**



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/22/2022 at 2:17 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.