City of Escondido
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

SAFARI HIGHLANDS RANCH
RECORD ID NUMBERS: SUB15-0019
w.o. 2374-17

West Zoo Rd.
San Diego, CA

ASSESSOR'S PARCEL NUMBER(S):
240-270-33, 241-060-03, 242-010-02, 36, 37 & 38

ENGINEER OF WORK:

Raymond L Martin

RAYMOND L. MARTIN, R.C.E. #48670

PREPARED FOR:

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PDP SWQMP PREPARED BY:

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DATE OF SWQMP:
APRIL 11, 2019

PLANS PREPARED BY:
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SWQMP APPROVED BY:

APPROVAL DATE:

ESCONDIDO
City of Choice

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ACRONYMS

ACP	Alternative Compliance Project
APN	Assessor's Parcel Number
BMP	Best Management Practice
DMA	Drainage Management Area
EOW	Engineer of Work
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWDM	Storm Water Design Manual
SWQMP	Storm Water Quality Management Plan
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

PDP SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: Safari Highlands Ranch
Permit Application Number: SUB15-0019

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Escondido Storm Water Design Manual, which is a design manual for compliance with the City of Escondido Municipal Code (Chapter 22, Article 2) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management.

I have read and understand that the City of Escondido has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by City staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

Raymond L Martin

Engineer of Work's Signature, PE Number & Expiration Date

Raymond L. Martin
Print Name

Hunsaker & Associates – San Diego, Inc.
Company

4/11/2019
Date

Engineer's Seal:

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SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Preliminary Design / Planning / CEQA

Submittal Number	Date	Summary of Changes
1	9/14/2016	Initial Submittal
2	4/24/2017	Address Comments
3	10/15/2018	Address Comments
4	4/5/2018	Address Comments

Final Design

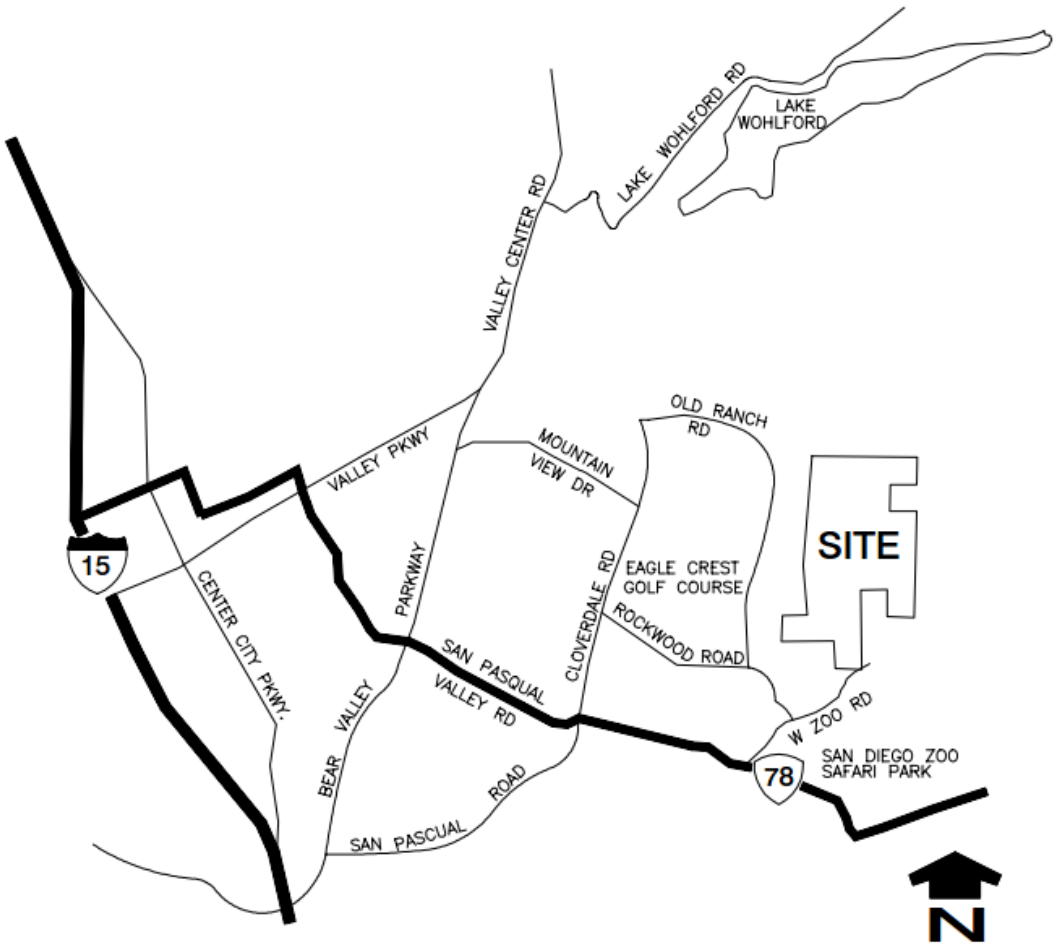
Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

Plan Changes

Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

PROJECT VICINITY MAP

Project Name: Safari Highlands Ranch
Record ID: SUB15-0019



VICINITY MAP

NOT TO SCALE

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 1: Project type determination (Standard or Priority Development Project) (Form I-2a)

Project Summary Information	
Project Name	Safari Highlands Ranch
Project Address	West of I-15, North of Hwy 78 off of W Zoo Rd.
Assessor's Parcel Number(s)	240-270-33, 241-060-03, 242-010-02, 35, 36, & 38
Permit Application Number	SUB515-0019
Project Watershed (Hydrologic Unit)	Select One: ☐ Carlsbad 904 ☒ San Dieguito 905
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	1099 Acres (47854958 Square Feet)
Area to be disturbed by the project (Project Area)	366 Acres (15942488.9 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	221.5 Acres (9651912 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	144.4 Acres (6290577 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	

Confirmation of Priority Development Project Determination
The project is (select one): ☒ New Development ☐ Redevelopment[1]
The total proposed newly created or replaced impervious area is: 9651912 ft^2

[1] Redevelopment is defined as: The creation and/or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include routine maintenance activities, such as trenching and resurfacing associated with utility work; pavement grinding; resurfacing existing roadways; new sidewalks construction; pedestrian ramps; or bike lanes on existing roads; and routine replacement of damaged pavement, such as pothole repair.

Solar energy farms that are not also one of the categories listed in Step 2b of Table 1-1. City staff must also determine that appropriate BMPs are provided to mitigate for downstream impacts due to significant changes to the existing hydrology

Is the project in any of the following categories, (a) through (f)?			
Yes ☒	No ☐	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☐	No ☒	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☒	No ☐	(c)	New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ☐	No ☒	(d)	New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). *Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees.*
Yes ☐	No ☒	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

Yes ☐	No ☒	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (iii) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (iv) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes ☒	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See Storm Water Design Manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above?

☐ No – the project is not a Priority Development Project (Standard Project).

☒ Yes – the project is a Priority Development Project (PDP).

Further guidance may be found in Chapter 1 and Table 1-2 of the Storm Water Design Manual.

The following is for **redevelopment PDPs only**:

The area of existing (pre-project) impervious area at the project site is: _____ ft^2 (A)
The total proposed newly created or replaced impervious area is _____ ft^2 (B)
Percent impervious surface created or replaced (B/A)*100: _____%
The percent impervious surface created or replaced is (select one based on the above calculation):

☐ less than or equal to fifty percent (50%) – **only newly created or replaced impervious areas are considered a PDP and subject to stormwater requirements**

OR

☐ greater than fifty percent (50%) – **the entire project site is considered a PDP and subject to stormwater requirements**

Step 1.1: Storm Water Quality Management Plan requirements

Step	Answer	Progression
Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, complete Step 1 Project Type Determination Checklist on Pages 1 and 2, and see PDP exemption information below. For further guidance, see Section 1.4 of the Storm Water Design Manual *in its entirety*.	☐ Standard Project	Standard Project requirements apply, including Standard Project SWQMP. **Complete Form I-1.**
	☒ PDP ☐ PDP with ACP	Standard and PDP requirements apply, including PDP SWQMP. **Complete Form I-1.** If participating in offsite alternative compliance, **complete Step 6.3 and an ACP SWQMP.**
	☐ PDP Exemption	**Go to Step 1.2 below.**

Step 1.2: Exemption to PDP definitions

Is the project exempt from PDP definitions based on either of the following:	If so:
☐ Projects that are only new or retrofit paved sidewalks, bicycle lanes, or trails that meet the following criteria: (i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR (ii) Designed and constructed to be hydraulically disconnected from paved streets or roads [i.e., runoff from the new improvement does not drain directly onto paved streets or roads]; OR (iii) Designed and constructed with permeable pavements or surfaces in accordance with County of San Diego Green Streets Infrastructure;	Standard Project requirements apply, AND any additional requirements specific to the type of project. City concurrence with the exemption is required. *Provide discussion and list any additional requirements below in this form.*
☐ Projects that are only retrofitting or redeveloping existing paved alleys, streets or roads that are designed and constructed in accordance with the City of Escondido Guidance on Green Infrastructure.	**Complete Green Streets PDP Exempt SWQMP.**
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:	

Step 2: Construction Storm Water BMPs

Construction storm water BMPs shall be shown on the Grading Plan and (if applicable) included in the Storm Water Pollution Prevention Plan (SWPPP).

N/A

Step 3: City of Escondido PDP SWQMP Site Information Checklist (Form I-2a)

Step 3.1: Description of Existing Site Condition

Current Status of the Site (select all that apply):
☐Existing development
☐Previously graded but not built out
☐Demolition completed without new construction
☐Agricultural or other non-impervious use
☒Vacant, undeveloped/natural

Description / Additional Information:

Existing Land Cover Includes (select all that apply and provide each area on site):
☒Vegetative Cover 1098.6 Acres (47854958 Square Feet)
☐Non-Vegetated Pervious Areas _____ Acres (_____ Square Feet)
☒Impervious Areas 0.4 Acres (18510 Square Feet)

Description / Additional Information:
Impervious area is a section of paved Zoo Road that crosses the southern boundary of the site, all else is pervious

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):
☐NRCS Type A
☐NRCS Type B
☐NRCS Type C
☒NRCS Type D

Approximate Depth to Groundwater (GW) (or N/A for no infiltration BMPs):
☐GW Depth < 5 feet
☐5 feet < GW Depth < 10 feet
☐10 feet < GW Depth < 20 feet
☒GW Depth > 20 feet
Groundwater not encountered

Existing Natural Hydrologic Features (select all that apply):
☐Watercourses
☐Seeps
☐Springs
☒Wetlands
☐None
☐Other

Description / Additional Information:
Ephemeral streams onsite

Step 3.2: Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

(1) Whether existing drainage conveyance is natural or urban;
(2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
(3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
(4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

The project site currently consists of approximately 1,100 acres of mostly undeveloped natural open space, a portion of Zoo Road crossing the site at the lower south end of the project site. Topographically, the site consists of rugged, steeply sloping, hillside terrain with occasional, somewhat level valleys. Elevations across the overall property vary from approximately 400 feet in the southwest corner to a high of almost 1,800 feet in the northeast portion of the site.

There are no existing storm drain features onsite. A ridgeline that spans from approximately 3,800 feet offsite from the eastern project boundary that runs through the project site separates the site into two drainage areas, to be referred to as **Drainage Area A** (the north) and **Drainage Area B** (the south). The two drainage areas flow across the site in a northeast to southwest direction.

Drainage Area A, consists of approximately 412 acres in the northern portion of the site. The summit of the drainage area is located just north of the project boundary at an elevation of 1,765 feet. From there, runoff is conveyed southwesterly through a series of natural valleys that converge and eventually cross the western project boundary approximately 3,000 feet south of the northern boundary. Runoff continues from there southwesterly across undeveloped terrain and in natural valleys directly east of Rosewood Lane (a residential cul-de-sac within the Eagle Crest Golf Course/ Rancho San Pasqual development).

Drainage Area B, spans approximately 1,925 acres. Runoff from this offsite area is conveyed southwesterly through a series of natural valleys and discharges at the southern end of the project site, flowing towards Rancho Vista Monte.

Step 3.3: Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

Single family residential area with accompanying roads, sidewalks, water quality basins, and open space

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Buidlings, roadways, sidewalks, recreational area, parking, and a fire station (to have its own SWQMP)

List/describe proposed pervious features of the project (e.g., landscape areas):

Landscape areas, natural trails, and open space

Does the project include grading and changes to site topography?

☒Yes

☐No

Description / Additional Information:

Grading for public and private streets, 550 residential lots, fire station, recreational area, and water quality basins

Insert acreage or square feet for the different land cover types in the table below:

Change in Land Cover Type Summary			
Land Cover Type	Existing (acres or ft^2)	Proposed (acres or ft^2)	Percent Change
Vegetation	1098.6	956	13%
Pervious (non-vegetated)	0	0	0%
Impervious	0.4	221.5	-13%

Step 3.4: Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒Yes

☐No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns:

Urban runoff will be collected in storm drain inlets from street surfaces and routed towards multi-purpose basins and treated for storm water quality, flow control for hydromodification, and flood attenuation to maintain existing peak flow rates during the 100-year storm event.

Natural and sloped areas containing no imperious areas are collected in separate storm drains and discharged through rip rap energy dissipates to avoid comingling of drainage and allow passing through any course sediment generated in the areas.

When roads cross major drainage channels, culvert undercrossing are provided to maintain existing drainage patterns.

For offsite improvements; to the south, Rockwood Road (Zoo Road) is to be widened and will implement green streets to address water quality, and to the north, the fire truck access will have a roadside swale. Both calculations and detail will be provided in final engineering.

A separate SWQMP report is prepared to submit to the City of San Deigo for Zoo Road widening within City of San Deigo.

Step 3.5: Potential Pollutant Source Areas

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply).

☒On-site storm drain inlets
☐Interior floor drains and elevator shaft sump pumps
☐Interior parking garages
☐Need for future indoor & structural pest control
☐Landscape/Outdoor Pesticide Use
☒Pools, spas, ponds, decorative fountains, and other water features
☐Food service
☐Refuse areas
☐Industrial processes
☐Outdoor storage of equipment or materials
☐Vehicle and Equipment Cleaning
☐Vehicle/Equipment Repair and Maintenance
☐Fuel Dispensing Areas
☐Loading Docks
☐Fire Sprinkler Test Water
☐Miscellaneous Drain or Wash Water
☒Plazas, sidewalks, and parking lots
☐Other (provide description)

Description / Additional Information:

Step 3.6: Identification and Narrative of Receiving Water and Pollutants of Concern

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):
The flow path is generally in a southwesterly direction, the north and south tributary eventually converging south of Rockwood Rd. flowing through Cloverdale Creek to Lake Hodges and then to the Pacific Ocean within San Dieguito River and San Dieguito Lagoon.

List any 303(d) impaired water bodies[2] within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant
San Dieguito Lagoon	Total Coliform	Unknown
Cloverdale Creek	Phosphorus, Total Dissolved Solids	Unknown
San Dieguito River	Enterococcus, Fecal Coliform, Nitrogen, Phosphorus, Total Dissolved Solids	Unknown

Identification of Project Site Pollutants*

*Identification of project site pollutants below is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs. Note the project must also participate in an alternative compliance program (unless prior lawful approval to meet earlier PDP requirements is demonstrated).

Identify pollutants expected from the project site based on all proposed use(s) of the site (see Storm Water Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	N/A	N/A	N/A
Nutrients	N/A	N/A	N/A
Heavy Metals	N/A	N/A	N/A
Organic Compounds	N/A	N/A	N/A
Trash & Debris	N/A	N/A	N/A
Oxygen Demanding Substances	N/A	N/A	N/A
Oil & Grease	N/A	N/A	N/A
Bacteria & Viruses	N/A	N/A	N/A
Pesticides	N/A	N/A	N/A

NOTE: Project implements Biofiltration BMPs. Identifying pollutants for the project site is not required.

[2] The current list of Section 303(d) impaired water bodies can be found at http://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired

Step 3.7: Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the Storm Water Design Manual)?

☒Yes, hydromodification management requirements for flow control and preservation of critical coarse sediment yield areas are applicable.

☐No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA[3] for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

[3]The Watershed Management Area Analysis (WMAA) is an optional element for inclusion in the Water Quality Improvement Plans (WQIPs) described in the 2013 MS4 Permit [Provision B.3.b.(4)]. It is available online at the Project Clean Water website: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=248

Step 3.7.1: Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☒ Yes

☐ No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the manual been performed?

☒ 6.2.1 Verification of GLUs (classification that provides an estimate of sediment yield based on geology, hillslope, and land cover) Onsite

☒ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☒ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☐ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite.

☒ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Onsite geology consisted of mostly Coarse Bedrock (CB) material within the grading limits per Geotechnical Analysis and vegetation was mostly "Diegan Coastal Sage Scrub" and "Southern Mixed Chaparral"

GLUs on site were classified as "CB-SCRUB/SHRUB-4" per Appendix H, Table H.1-3 of City of Escondido Storm Water Design Manual.

Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit. There are 2 points of compliances (POC 1 & 2 on the HMP Map). POC1 is located in the northern area of the project receiving discharge from DMA A, B, C, D, & F'. POC2 receives discharge from DMA E, F, G, H, I,& J
Has a geomorphic assessment been performed for the receiving channel(s)? ☒No, the low flow threshold is 0.1Q2 (default low flow threshold) ☐Yes, the result is the low flow threshold is 0.1Q2 ☐Yes, the result is the low flow threshold is 0.3Q2 ☐Yes, the result is the low flow threshold is 0.5Q2 *If a geomorphic assessment has been performed, provide title, date, and preparer:* *Discussion / Additional Information: (optional)*

Step 3.8: Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.

Step 4: Source Control BMP Checklist (Form I-2b)

Source Control BMPs

All development projects must implement source control BMPs 4.2.1 through 4.2.6 where applicable and feasible. See Chapter 4.2 and Appendix E of the City Storm Water Design Manual for information to implement source control BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project.

Answer each category below pursuant to the following:

- "Yes" means the project will implement the source control BMP as described in Chapter 4.2 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification must be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☒Yes	☐No	☐N/A
☒ Direct irrigation water away from impervious surfaces □ Direct vehicle wash water away from impervious surfaces □ Other: _____ *Discussion / justification if SC-1 not implemented:*			
SC-2 Storm Drain Stenciling or Signage	☒Yes	☐No	☐N/A
☒ Stencil or stamp storm drains with anti-dumping message □ Post signs prohibiting illegal dumping □ Other *Discussion / justification if SC-2 not implemented:*			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐Yes	☐No	☒N/A
□ Store materials inside a covered enclosure □ Direct runoff from downspouts and roofs away from storage areas □ Other *Discussion / justification if SC-3 not implemented:* No outdoor materials storage area proposed			

SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐Yes	☐No	☒N/A
□ Locate work area away from storm drains or catch basins □ Work over impermeable surfaces where spills and pollutants can be captured and removed *Discussion / justification if SC-4 not implemented:* No work areas proposed			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒Yes	☐No	☐N/A
☒ Locate trash containers in a roofed, walled enclosure □ Locate trash containers away from storm drains *Discussion / justification if SC-5 not implemented:*			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below):			
☒ A. On-site storm drain inlets	☒Yes	☐No	☐N/A
☐ B. Interior floor drains and elevator shaft sump pumps	☐Yes	☐No	☒N/A
☐ C. Interior parking garages	☐Yes	☐No	☒N/A
☐ D. Need for future indoor & structural pest control	☐Yes	☐No	☒N/A
☐ E. Landscape/outdoor pesticide use	☐Yes	☐No	☒N/A
☒ F. Pools, spas, ponds, fountains, and other water features	☒Yes	☐No	☐N/A
☐ G. Food service	☐Yes	☐No	☒N/A
☐ H. Refuse areas	☐Yes	☐No	☒N/A
☐ I. Industrial processes	☐Yes	☐No	☒N/A
☐ J. Outdoor storage of equipment or materials	☐Yes	☐No	☒N/A
☐ K. Vehicle and equipment cleaning	☐Yes	☐No	☒N/A
☐ L. Vehicle/equipment repair and maintenance	☐Yes	☐No	☒N/A
☐ M. Fuel dispensing areas	☐Yes	☐No	☒N/A
☐ N. Loading docks	☐Yes	☐No	☒N/A
☐ O. Fire sprinkler test water	☐Yes	☐No	☒N/A
☐ P. Miscellaneous drain or wash water	☐Yes	☐No	☒N/A
☒ Q. Plazas, sidewalks, and parking lots	☒Yes	☐No	☐N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Note: Show all source control measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

If These Sources Will Be on the Project Site …	… Then Your SWQMP Shall Consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
☒ **A.** Onsite storm drain inlets ☐ Not Applicable	☒ Locations of inlets.	☒ Mark all inlets with the words "No Dumping! Flows to Bay" or similar.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide storm water pollution prevention information to new site owners, lessees, or operators. ☐ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. ☐ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
❑ **B.** Interior floor drains and elevator shaft sump pumps ☒ Not Applicable		❑ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	❑ Inspect and maintain drains to prevent blockages and overflow.
❑ **C.** Interior parking garages ☒ Not Applicable		❑ State that parking garage floor drains will be plumbed to the sanitary sewer.	❑ Inspect and maintain drains to prevent blockages and overflow.
❑ **D1.** Need for future indoor & structural pest control ☒ Not Applicable		❑ Note building design features that discourage entry of pests.	❑ Provide Integrated Pest Management information to owners, lessees, and operators.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
❑ **D2.** Landscape/ Outdoor Pesticide Use ☒ Not Applicable	❑ Show locations of existing trees or areas of shrubs and ground cover to be undisturbed and retained. ❑ Show self-retaining landscape areas, if any. ❑ Show storm water treatment facilities.	State that final landscape plans will accomplish all of the following. ❑ Preserve existing drought tolerant trees, shrubs, and ground cover to the maximum extent possible. ❑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. ❑ Where landscaped areas are used to retain or detain storm water, specify plants that are tolerant of periodic saturated soil conditions. ❑ Consider using pest-resistant plants, especially adjacent to hardscape. ❑ To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	❑ Maintain landscaping using minimum or no pesticides. ❑ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. ❑ Provide IPM information to new owners, lessees and operators.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
☒ **E.** Pools, spas, ponds, decorative fountains, and other water features. ❑ Not Applicable	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	❑ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.
❑ **F.** Food service ☒ Not Applicable	❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to ensure that the largest items can be accommodated.	

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
☐ **G.** Refuse areas ☒ Not Applicable	☐ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☐ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run- on and show locations of berms to prevent runoff from the area. Also show how the designated area will be protected from wind dispersal. ☐ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☐ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☐ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☐ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on- site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site ...	... Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative Table and Narrative**
❑ **H.** Industrial processes. ☒ Not Applicable	❑ Show process area.	❑ If industrial processes are to be located onsite, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.) ☒ Not Applicable	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or runoff from area and protected from wind dispersal. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release Prevention Program ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
☐ **J.** Vehicle and Equipment Cleaning ☒ Not Applicable	☐ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited onsite and hoses are provided with an automatic shut- off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	☐ If a car wash area is not provided, describe measures taken to discourage onsite car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ☐ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. ☐ Car dealerships and similar may rinse cars with water only. ☐ See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
❑ **K.** Vehicle/Equipment Repair and Maintenance ☒ Not Applicable	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to protect from rainfall, run-on runoff, and wind dispersal. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the report, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
❑ **L.** Fuel Dispensing Areas ☒ Not Applicable	❑ Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are (1) graded at the minimum slope necessary to prevent ponding; and (2) separated from the rest of the site by a grade break that prevents run-on of storm water to the MEP. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area1.] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

1. The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
M. Loading Docks ☒ Not Applicable	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct storm water away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
❑ **N.** Fire Sprinkler Test Water ☒ Not Applicable		❑ Provide a means to drain fire sprinkler test water to the sanitary sewer.	❑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.
O. Miscellaneous Drain or Wash Water ❑ Boiler drain lines ❑ Condensate drain lines ❑ Rooftop equipment ❑ Drainage sumps ❑ Roofing, gutters, and trim ☒ Not Applicable		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ❑ Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps onsite shall feature a sediment sump to reduce the quantity of sediment in pumped water. ❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on Drawings**	3 **Permanent Controls—List in Table and Narrative**	4 **Operational BMPs—Include in Table and Narrative**
☒ **P.** Plazas, sidewalks, and parking lots. ☐ Not Applicable			☒ Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

Step 5: Site Design BMP Checklist (Form I-2c)

Site Design BMPs

All development projects must implement site design BMPs SD-A through SD-H where applicable and feasible. See Chapter 4.3 and Appendix E of the City Storm Water Design Manual for information to implement site design BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project.

Answer each category below pursuant to the following:

- "Yes" means the project will implement the site design BMP as described in Chapter 4.3 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification must be provided.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒Yes	☐No	☐N/A
☒ Maintain existing drainage patterns *Discussion / justification if SD-1 not implemented:*			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☒Yes	☐No	☐N/A
☒ Preserve trees (see Zoning Code Art. 55 Grading & Erosion Control; Art. 62 Landscape Regulations) ☒ Avoid sensitive areas such as wetlands and waterways *Discussion / justification if SD-2 not implemented:*			
SD-3 Minimize Impervious Area	☒Yes	☐No	☐N/A
☒ Install parking and driving aisles to minimum width required to meet standards *Discussion / justification if SD-3 not implemented:*			
SD-4 Minimize Soil Compaction	☒Yes	☐No	☐N/A
☒ Avoid compaction in planned landscaped spaces □ Till and amend soil for improved infiltration capacity *Discussion / justification if SD-4 not implemented:*			

SD-5 Impervious Area Dispersion	☒Yes	☐No	☐N/A
☒ Drain rooftops, roads or sidewalks into adjacent landscape areas □ Drain impervious surfaces through pervious areas *Discussion / justification if SD-5 not implemented:*			
SD-6 Runoff Collection	☒Yes	☐No	☐N/A
☒ use small collection strategies located at, or close to the source □ use permeable material for projects with low traffic areas and appropriate soil conditions *Discussion / justification if SD-5 not implemented:*			
SD-7 Landscaping with native or drought tolerant species	☒Yes	☐No	☐N/A
Discussion / justification if SD-5 not implemented:			
SD-8 Harvest and using precipitation	☐Yes	☒No	☐N/A
Discussion / justification if SD-5 not implemented: Not feasible. See form I-4			

Note: Show all site design measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

Step 6: PDP Structural BMPs (Form I-3)

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the Storm Water Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the Storm Water Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by the City at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 8.2.3.2 of the Storm Water Design Manual). PDP structural BMPs must be maintained into perpetuity, and the City must confirm the maintenance (see Section 7 of the Storm Water Design Manual).

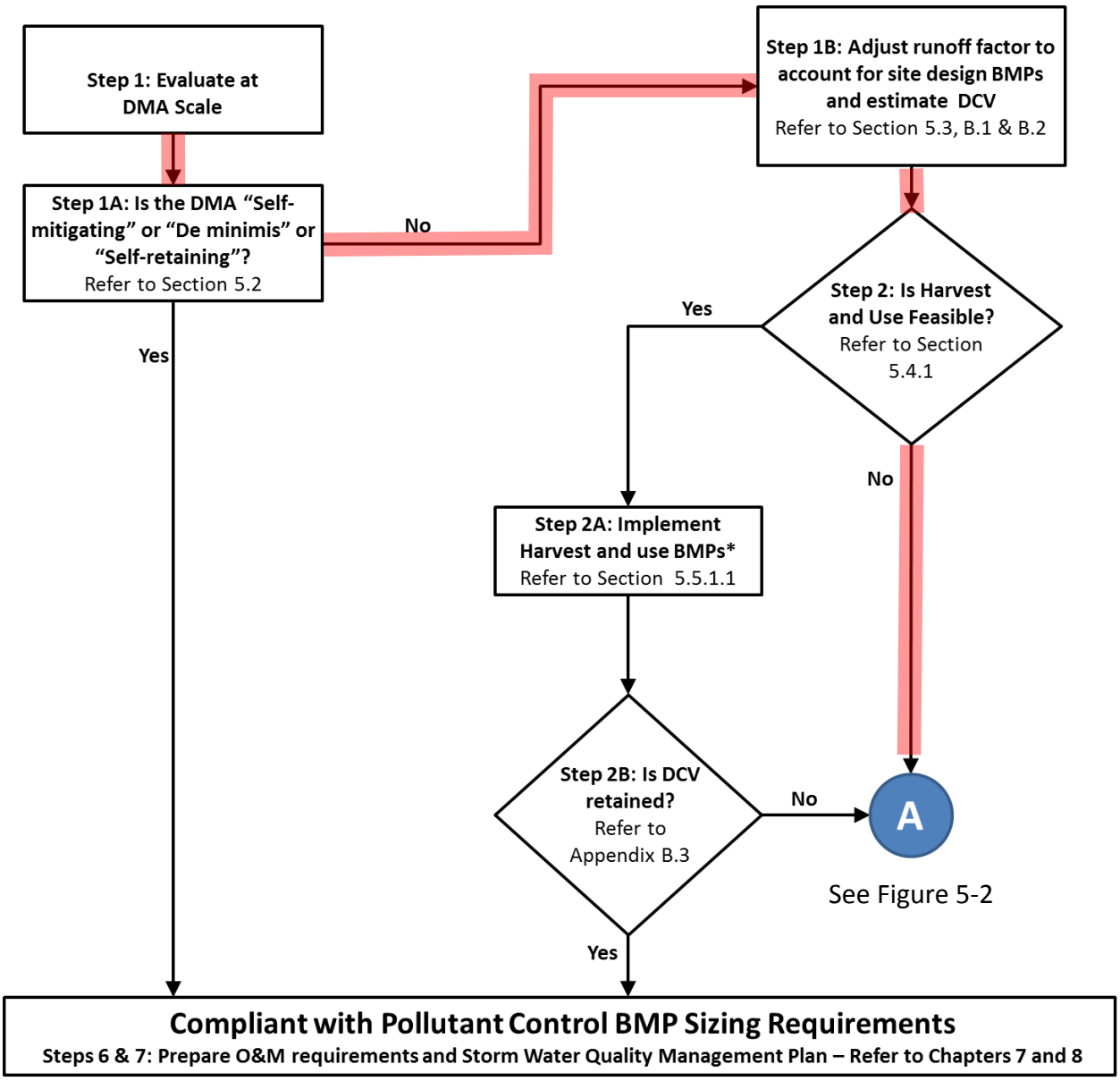
Use this section to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (Step 6.2) for each structural BMP within the project (copy the BMP summary information sheet [Step 6.2] as many times as needed to provide summary information for each individual structural BMP).

Step 6.1: Description of structural BMP strategy

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the Storm Water D*esign Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. At the end of this discussion provide a summary of all the structural BMPs within the project including the type and number.*

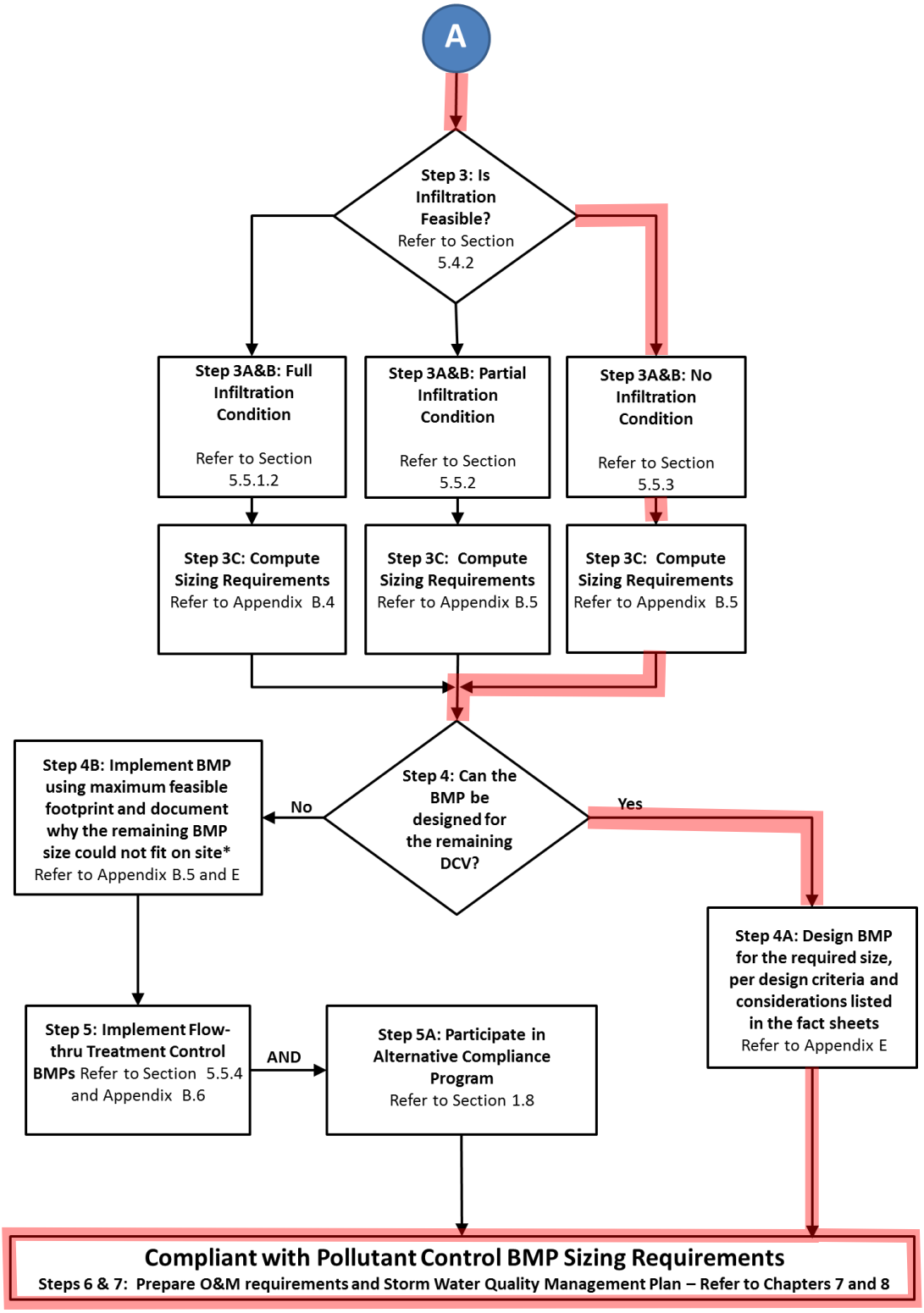
See flow chart from Escondido Storm Water Design Manual (next page)

(Continue on following page as necessary.)



* Step 2C: Project applicant has an option to also conduct feasibility analysis for infiltration and if infiltration is fully or partially feasible has an option to choose between infiltration and harvest and use BMPs. But if infiltration is not feasible and harvest and use is feasible, project applicant must implement harvest and use BMPs

FIGURE 5-1. Storm Water Pollutant Control BMP Selection Flow Chart



* Project approval at the discretion of [City Engineer]

FIGURE 5-2. Storm Water Pollutant Control BMP Selection Flow Chart

Step 6.2: Structural BMP Checklist

(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BF-A – BF-J	
Construction Plan Sheet No. To be provided during final engineering	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☐Pollutant control only ☐Hydromodification control only ☒Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Third party inspector TBD
Who will be the final owner of this BMP?	☒HOA ☐Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☒HOA ☐Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

Offsite Alternative Compliance Participation Form

THIS FORM IS NOT APPLICABLE AT THIS TIME: An Alternative Compliance Program is under consideration by the City of Escondido.	
PDP INFORMATION	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
What are your PDP Pollutant Control Debits? *See Attachment 1 of the PDP SWQMP	
What are your PDP HMP Debits? (if applicable) *See Attachment 2 of the PDP SWQMP	
ACP Information	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
Project Owner/Address	
What are your ACP Pollutant Control Credits? *See Attachment 1 of the ACP SWQMP	
What are your ACP HMP Debits? (if applicable) *See Attachment 2 of the ACP SWQMP	
Is your ACP in the same watershed as your PDP? ☐Yes ☐No	Will your ACP project be completed prior to the completion of the PDP? ☐Yes ☐No
Does your ACP account for all Deficits generated by the PDP? ☐Yes ☐No (PDP and/or ACP must be redesigned to account for all deficits generated by the PDP.)	What is the difference between your PDP debits and ACP Credits? *(ACP Credits -Total PDP Debits = Total Earned Credits) _____

ATTACHMENT 1

BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	Storm Water Pollutant Control Worksheet Calculations -Worksheet B.2-1 (Required) -Worksheet B.3-1 (Form I-4) (optional) -Worksheet B.4-1 (if applicable) -Worksheet B.5-1 (if applicable) -Worksheet B.5-2 (if applicable) -Worksheet B.5-3 (if applicable) -Worksheet B.6-1 (if applicable) -Summary Worksheet (optional)	☒Included
Attachment 1b	Form I-5, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-5.	☒Included ☐Not included because the entire project will use harvest and use BMPs
Attachment 1c	Form I-6, Factor of Safety and Design Infiltration Rate Worksheet (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-6.	☒Included ☐Not included because the entire project will use harvest and use BMPs
Attachment 1d	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	☒Included
Attachment 1e	Individual Structural BMP DMA Mapbook (Required) -Place each map on 8.5”x11” paper. -Show at a minimum the DMA, Structural BMP, and any existing hydrologic features within the DMA.	☒Included

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SAFARI HIGHLANDS BIOFILTRATION
BMP DMA CALCULATIONS

	Imp. RF	Pervious RF	% Imp	DMA A	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA B	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA C	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	3.39	0.15	1.69	1.69	1.69	9.60	0.47	4.80	4.80	4.80	6.93	0.36	3.47	3.47	3.47
ROAD	0.90	0.10	95	10.10	0.79	9.60	0.51	8.69	4.77	0.40	4.53	0.24	4.10	5.49	0.49	5.22	0.27	4.72
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	5.74	0.05	0.00	5.74	0.57	13.09	0.13	0.00	13.09	1.31	14.24	0.15	0.00	14.24	1.42
				19.2	1.00	11.29	7.94	10.95	27.5	1.00	9.33	18.13	10.21	26.7	1.00	8.68	17.98	9.61
				837537.12			Weighted C =	0.57	1196083.30			Weighted C =	0.37	1161445.08			Weighted C =	0.36

	Imp. RF	Pervious RF	% Imp	DMA D	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA E	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA G	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	9.13	0.48	4.57	4.57	4.57	20.39	0.56	10.20	10.20	10.20	4.95	0.60	2.48	2.48	2.48
ROAD	0.90	0.10	95	3.78	0.34	3.59	0.19	3.25	7.41	0.35	7.04	0.37	6.37	1.53	0.32	1.45	0.08	1.31
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	16.55	0.17	0.00	16.55	1.65	14.86	0.08	0.00	14.86	1.49	3.54	0.09	0.00	3.54	0.35
				29.5	1.00	8.16	21.30	9.47	42.7	1.00	17.24	25.42	18.06	10.0	1.00	3.93	6.09	4.14
				1283412.03			Weighted C =	0.32				Weighted C =	0.42				Weighted C =	0.41

	Imp. RF	Pervious RF	% Imp	DMA H	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA I	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA J	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	19.01	0.37	9.50	9.50	9.50	7.07	0.49	3.54	3.54	3.54	22.50	0.48	11.25	11.25	11.25
ROAD	0.90	0.10	95	15.33	0.52	14.56	0.77	13.18	2.99	0.35	2.84	0.15	2.58	9.00	0.33	8.55	0.45	7.74
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	28.52	0.11	0.00	28.52	2.85	11.48	0.16	0.00	11.48	1.15	46.32	0.20	0.00	46.32	4.63
				62.9	1.00	24.07	38.79	25.54	21.5	1.00	6.38	15.17	7.26	77.8	1.00	19.80	58.02	23.62
							Weighted C =	0.41				Weighted C =	0.34				Weighted C =	0.30

	Imp. RF	Pervious RF	% Imp	DMA K	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA F	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA O-L	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	70	0.00	0.00	0.00	0.00	0.00	4.86	0.53	3.40	1.46	3.21	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROAD	0.90	0.10	95	5.57	0.93	5.29	0.28	4.79	2.53	0.36	2.40	0.13	2.17	1.42	0.96	1.35	0.07	1.22
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	3.41	0.07	0.00	3.41	0.34	6.91	0.11	0.00	6.91	0.69	0.45	0.04	0.00	0.45	0.05
				9.0	1.00	5.29	3.69	5.13	14.3	1.00	5.80	8.49	6.07	1.9	1.00	1.35	0.52	1.27
							Weighted C =	0.57				Weighted C =	0.42				Weighted C =	0.68

SAFARI HIGHLANDS BIOFILTRATION
BMP DMA CALCULATIONS

	Imp. RF	Pervious RF	% Imp	DMA O-M	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA O-N	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA O-O	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROAD	0.90	0.10	95	3.72	0.97	3.53	0.19	3.20	2.92	0.68	2.77	0.15	2.51	1.20	1.00	1.14	0.06	1.03
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	0.93	0.03	0.00	0.93	0.09	12.06	0.32	0.00	12.06	1.21	0.00	0.00	0.00	0.00	0.00
				4.6	1.00	3.53	1.11	3.29	15.0	1.00	2.77	12.21	3.72	1.2	1.00	1.14	0.06	1.03
							Weighted C =	0.71				Weighted C =	0.25				Weighted C =	0.86

	Imp. RF	Pervious RF	% Imp	DMA O-P	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA O-Q	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA O-R	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC		AC		AC	AC		AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROAD	0.90	0.10	95	0.53	1.00	0.51	0.03	0.46	0.26	1.00	0.25	0.01	0.23	0.24	1.00	0.23	0.01	0.21
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.5	1.00	0.51	0.03	0.46	0.3	1.00	0.25	0.01	0.23	0.2	1.00	0.23	0.01	0.21
							Weighted C =	0.86				Weighted C =	0.86				Weighted C =	0.86

	Imp. RF	Pervious RF	% Imp	DMA O-S	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				AC		AC	AC	
BASIN	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL	0.90	0.10	87	0.00	0.00	0.00	0.00	0.00
MULTIUSE/COMMERCIAL	0.90	0.10	85	0.00	0.00	0.00	0.00	0.00
PARK	0.90	0.10	10	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL	0.90	0.10	50	0.00	0.00	0.00	0.00	0.00
ROAD	0.90	0.10	95	0.41	1.00	0.39	0.02	0.36
SCHOOL	0.90	0.10	80	0.00	0.00	0.00	0.00	0.00
SLOPES	0.90	0.10	0	0.00	0.00	0.00	0.00	0.00
				0.4	1.00	0.39	0.02	0.36
							Weighted C =	0.86

SAFARI HIGHLANDS
DCV CALCULATION

DMA A: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	19.2	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.57	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	29,028	cubic-feet

DMA B: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	27.5	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.37	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	27,061	cubic-feet

DMA C: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	26.7	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.36	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	25,471	cubic-feet

DMA D: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	29.5	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.32	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	25,107	cubic-feet

SAFARI HIGHLANDS
DCV CALCULATION

DMA E: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	42.7	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.42	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	47,849	cubic-feet

DMA G: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	10.0	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.41	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	10,975	cubic-feet

DMA H: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	62.9	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.41	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	67,681	cubic-feet

DMA I: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	21.5	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.34	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	19,235	cubic-feet

SAFARI HIGHLANDS
DCV CALCULATION

DMA J: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	77.8	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.30	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	62,586	cubic-feet

DMA K: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	9.0	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.57	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	13,587	cubic-feet

DMA F: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	14.3	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.42	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	16,089	cubic-feet

DMA O-L: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	1.9	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.68	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	3,363	cubic-feet

SAFARI HIGHLANDS
DCV CALCULATION

DMA O-M: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	4.6	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.71	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	8,722	cubic-feet

DMA O-N: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	15.0	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.25	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	9,851	cubic-feet

DMA O-O: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	1.2	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.86	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	2,736	cubic-feet

DMA O-P: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	0.5	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.86	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	1,217	cubic-feet

SAFARI HIGHLANDS
DCV CALCULATION

DMA O-Q: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	0.3	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.86	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	601	cubic-feet

DMA O-R: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	0.2	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.86	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	544	cubic-feet

DMA Q-S: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	0.4	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.86	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	942	cubic-feet

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN A: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	29,028	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	16,300	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	2,445.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	26,582.8	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	39,874.2	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	10,777	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	19,937.1	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	16,614	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	837,537	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.57	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	14,315	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	14,315	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN B: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	27061	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	17,800	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	2,670.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	24,390.5	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	0.5	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	8.9	inches
19	Total Depth Treated (Line 17 + Line 18)	38.9	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	36,585.8	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	11,286	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	18,292.9	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	24,665	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	1,196,083	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.37	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	13,345	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	13,345	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN C: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	25,471	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	15,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	2,250.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	23,221.1	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	34,831.6	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	9,414	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	17,415.8	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	14,513	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	1,161,445	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.36	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	12,561	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	12,561	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN LOT D: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	25,107	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	14,800	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	2,220.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	22,887.3	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	34,330.9	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	9,279	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	17,165.4	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	14,305	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	1,283,412	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.32	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	12,382	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	12,382	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN E: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	47,849	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	25,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	3,750.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	44,099.3	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	66,148.9	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	17,878	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	33,074.5	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	27,562	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	1,858,339	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.42	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	23,597	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	23,597	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN F: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	16,089	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	8,600	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	1,290.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	14,798.6	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	22,197.9	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	5,999	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	11,098.9	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	9,249	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	622,636	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.42	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	7,934	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	7,934	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN G: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	10,975	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	6,900	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	1,035.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	9,940.4	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	14,910.6	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	4,030	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	7,455.3	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	6,213	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	436,254	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.41	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	5,413	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	5,413	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN I: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	19,235	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	11,322	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	1,698.3	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	17,536.6	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	26,304.8	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	7,109	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	13,152.4	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	10,960	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	938,596	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.34	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	9,486	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	9,486	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

	BASIN J: Simple Sizing Method for Biofiltration BMPs	Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	62,586	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	31,600	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	4,740.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	57,846.5	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	86,769.7	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	23,451	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	43,384.8	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	36,154	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	3,389,786	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.30	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	30,865	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	30,865	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

	BASIN K: Simple Sizing Method for Biofiltration BMPs	Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	13,587	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	7,672	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	1,150.8	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	12,436.3	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	18,654.4	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	5,042	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	9,327.2	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	7,773	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	391,033	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.57	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	6,700	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	6,700	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

	BASIN O-L: Simple Sizing Method for Biofiltration BMPs	Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	3,363	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	2,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	300.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	3,062.8	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	9.7	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	58.2	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	72.6	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	4,594.2	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	759	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	2,297.1	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	1,914	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	81,704	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.68	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	1,658	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	1,658	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-M: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	8,722	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	5,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	750.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	7,971.6	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	11,957.4	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	3,232	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	5,978.7	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	4,982	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	202,420	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.71	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	4,301	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	4,301	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-N: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	9,851	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	5,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	750.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	9,101.2	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	13,651.8	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	3,690	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	6,825.9	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	5,688	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	652,642	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.25	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	4,858	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	4,858	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-O: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	2,736	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	2,000	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	300.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	2,436.0	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	3,654.0	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	988	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	1,827.0	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	1,523	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	52,297	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.86	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	1,349	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	1,349	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-P: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	1,217	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	1,200	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	180.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	1,036.9	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	1,555.3	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	420	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	777.7	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	648	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	23,260	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.86	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	600	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	600	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-Q: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	601	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	900	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	135.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	466.5	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	699.7	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	189	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	349.9	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	292	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	11,497	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.86	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	297	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	297	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

BASIN O-R: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	544	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	900	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	135.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	409.1	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	613.6	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	166	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	306.8	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	256	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	10,400	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.86	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	268	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	268	sq-ft

Attachment 1A

BIOFILTRATION BMP SIZING CALCULATION

	BASIN O-S: Simple Sizing Method for Biofiltration BMPs	Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	942	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.0	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.0	inches
7	Assumed surface area of the biofiltration BMP	1,200	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	180.0	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	761.9	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6.0	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.0	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the agreagate is not over the entire bottom surface area	12.0	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.0	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6.0	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.0	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	14.4	inches
19	Total Depth Treated (Line 17 + Line 18)	44.4	inches
Option 1 - Biofilter 1.5 times the DCV			
20	Required biofiltered volume (1.5 x Line 10)	1,142.9	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	309	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	571.4	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	476	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	18,004	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.86	unitless
26	Minimum BMP Footprint (Line 24 x Line 25 x 0.03)	465	sq-ft
27	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 26)	465	sq-ft

Harvest and Use Feasibility Checklist	Form I-4

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

☐ Toilet and urinal flushing

☒ Landscape irrigation

☐ Other: _____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

General landscape: Moderate Plant water use: 1470GAL/AC*224AC=329280gal->44018 cubic feet

3. Calculate the DCV using worksheet B-2.1.

DCV = 404839 (cubic feet)

0.25DCV= 101210 (cubic feet)

3a. Is the 36 hour demand greater than or equal to the DCV?	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV?	3c. Is the 36 hour demand less than 0.25DCV?
☐ Yes / ☒ No ⇨ ⇩	☐ Yes / ☐ No ⇨ ⇩	☒ Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Categorization of Infiltration Feasibility Condition	Form I-5

Part 1 - Full Infiltration Feasibility Screening Criteria

Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis: Based on review of USDA soil survey maps, the vast majority of the property is classified as Hydrologic Soil Group D, which are not conducive to infiltration BMP's. We have included the soil map from the USDA website and the soil descriptions for the 2 soil types that cover the vast majority of the property. The estimated infiltration rates are expected to be less than 0.5 inches per hour within the underlying formational materials. The loose and porous surficial soils will be removed and replaced as compacted fill placed above formational materials. It has been our experience that compacted fill does not meet the minimum 0.5 inches per hour threshold. In addition, infiltration BMP's founded in compacted fill are not recommended to due to high potential for lateral water migration, potential for hydro-consolidation and settlement, and distress to surrounding structures and improvements.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis: Due to the steep hillside terrain, slopes over 25% exist on-site, and we expect that fill slopes will be constructed throughout the development. Infiltration BMP's are not recommended within compacted fill or adjacent to fill slopes. Infiltration BMP's could cause slope instability and failures. Infiltration BMP's could result in daylight water seepage that could adversely impact downgradient and adjacent properties.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Form I-5			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Groundwater is not expected to occur within 10 feet from any proposed infiltration BMP, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible. Based on review of the www.water.ca.gov website, groundwater is expected at elevations ranging between 350 and 357 feet above MSL. The lowest elevation onsite is greater than approx. 900 feet above MSL. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Researching downstream water rights or evaluating water balance issues to stream flows is beyond the scope of the geotechnical consultant. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		No Full Infiltration

Form I-5

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis: The proposed basins will either be founded in Hydrologic Soil Group D soils or compacted fill compacted to 90% of the maximum dry density. Infiltration BMP's in compacted fill are not recommended due to the shrink/swell characteristics of the fill soils and high potential for lateral water migration to adversely impact proposed structures and improvements, as well as utilities and roadways. Infiltration BMP's could result in daylight water seepage that may adversely impact down gradient and adjacent properties.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis: Due to the steep hillside terrain, slopes over 25% exist on-site, and we expect that fill slopes will be constructed throughout the development. Infiltration BMP's are not recommended within compacted fill or adjacent to fill slopes. Infiltration BMP's could cause slope instability and failures and result in daylight water seepage that could adversely impact down gradient and adjacent properties.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Form I-5			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Groundwater is not expected within 10 feet from any proposed infiltration BMP, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Researching downstream water rights is beyond the scope of the geotechnical consultant. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		No Partial Infiltration

Form I-5 Certification

The Geotechnical Engineer certifies they completed Form I-5 except Criteria 4 & 8 (see Appendix C.4.3).

Professional Geotechnical Engineer's Printed Name:

Trevor Myers

Professional Geotechnical Engineer's Signed Name:

Date: 09-09-16

RCE# 63773
EXPIRATION DATE: 9/30/2020

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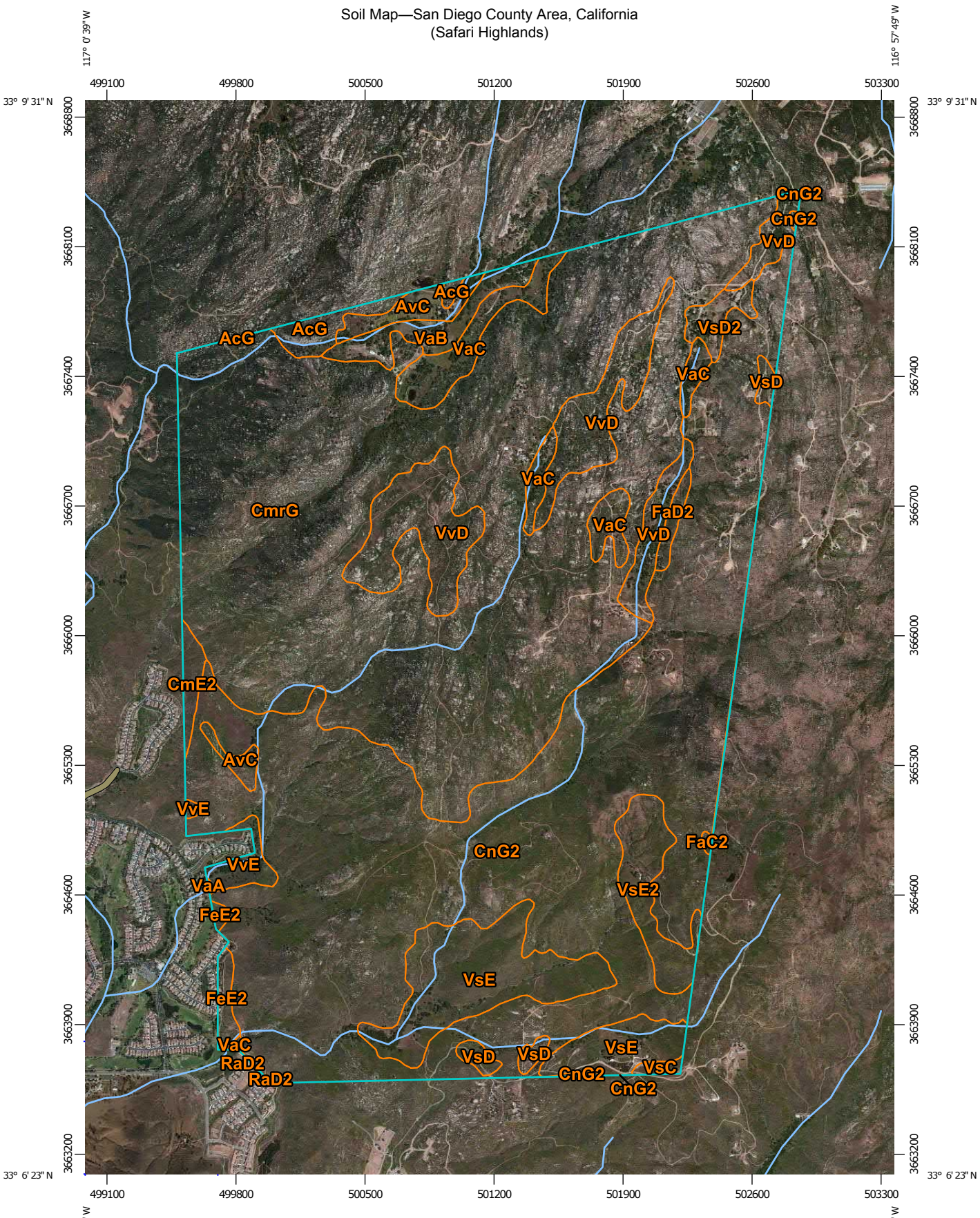
Soil Map—San Diego County Area, California
(Safari Highlands)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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 9, Sep 17, 2015

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

Date(s) aerial images were photographed: May 2, 2010—Nov 22, 2014

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

San Diego County Area, California (CA638)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AcG	Acid igneous rock land	22.8	0.7%
AvC	Arlington coarse sandy loam, 2 to 9 percent slopes	31.5	1.0%
CmE2	Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded	12.8	0.4%
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes	1,282.2	40.5%
CnG2	Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent s lopes, eroded	1,212.3	38.3%
FaC2	Fallbrook sandy loam, 5 to 9 percent slopes, eroded	1.3	0.0%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	8.9	0.3%
FeE2	Fallbrook rocky sandy loam, 9 to 30 percent slopes, ero ded	13.8	0.4%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	0.3	0.0%
VaA	Visalia sandy loam, 0 to 2 percent slopes	0.2	0.0%
VaB	Visalia sandy loam, 2 to 5 percent slopes	37.6	1.2%
VaC	Visalia sandy loam, 5 to 9 percent slopes	78.1	2.5%
VsC	Vista coarse sandy loam, 5 to 9 percent slopes	4.4	0.1%
VsD	Vista coarse sandy loam, 9 to 15 percent slopes	16.0	0.5%
VsD2	Vista coarse sandy loam, 9 to 15 percent slopes, eroded	18.0	0.6%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	166.0	5.2%
VsE2	Vista coarse sandy loam, 15 to 30 percent slopes, erode d	54.2	1.7%
VvD	Vista rocky coarse sandy loam, 5 to 15 percent slopes	189.5	6.0%
VvE	Vista rocky coarse sandy loam, 15 to 30 percent slopes	18.3	0.6%
Totals for Area of Interest		**3,168.1**	**100.0%**

San Diego County Area, California

CmrG—Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hb9v
Elevation: 500 to 4,000 feet
Mean annual precipitation: 8 to 35 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 110 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 45 percent
Cieneba and similar soils: 45 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cieneba

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granite and granodiorite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 12 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 4 to 20 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: SHALLOW LOAMY (1975) (R019XD060CA)
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Vista

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

Las posas

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

Data Source Information

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 9, Sep 17, 2015

San Diego County Area, California

CnG2—Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent s lopes, eroded

Map Unit Setting

National map unit symbol: hb9x
Elevation: 300 to 4,000 feet
Mean annual precipitation: 12 to 35 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Cieneba and similar soils: 40 percent
Fallbrook and similar soils: 35 percent
Rock outcrop: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cieneba

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granite and granodiorite

Typical profile

H1 - 0 to 10 inches: coarse sandy loam
H2 - 10 to 14 inches: weathered bedrock

Properties and qualities

Slope: 30 to 65 percent
Depth to restrictive feature: 4 to 20 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: SHALLOW LOAMY (1975) (R019XD060CA)

Hydric soil rating: No

Description of Fallbrook

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 24 inches: sandy clay loam, loam
H2 - 6 to 24 inches: weathered bedrock
H3 - 24 to 28 inches:

Properties and qualities

Slope: 30 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY (1975) (R019XD029CA)
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Vista

Percent of map unit: 5 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 9, Sep 17, 2015

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

☒Underlying hydrologic soil group
☒Approximate depth to groundwater
☐Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐Critical coarse sediment yield areas to be protected
☒Existing topography and impervious areas
☒Existing and proposed site drainage network and connections to drainage offsite
☐Proposed demolition
☒Proposed grading
☒Proposed impervious features
☒Proposed design features and surface treatments used to minimize imperviousness
☒Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☒Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Step 3.5)
☒Structural BMPs (identify location, structural BMP ID#, type of BMP, and size/detail)

Note: Critical Coarse Sediment Yield Areas (CCSYA) required to be mitigated per Hydromodification Management Plan are show on Attachment 2C

Downstream Systems Requirements for Preservation of Coarse Sediment Supply		Form I-7	
When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply.			
Project Name: Safari Highlands Ranch			
Project Tracking Number / Permit Application Number:			
1	Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel?	☐ Hardened MS4 system	Go to 2
		☒ Un-lined channel	Go to 4
2	Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system).	☐ Convey	Go to 3
		☐ Sink	Go to 7
3	What kind of receiving water will the hardened MS4 system convey the sediment to?	☐ Un-lined channel	Go to 4
		☐ Lake ☐ Reservoir ☐ Bay	Go to 7
		☐ Lagoon ☐ Ocean	Go to 6
4	Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency.	☐ Yes	Go to 7
		☒ No	Go to 5

Form I-7 Page 2 of 2	
5	End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual).
6	End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply).
7	End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project.

ATTACHMENT 2

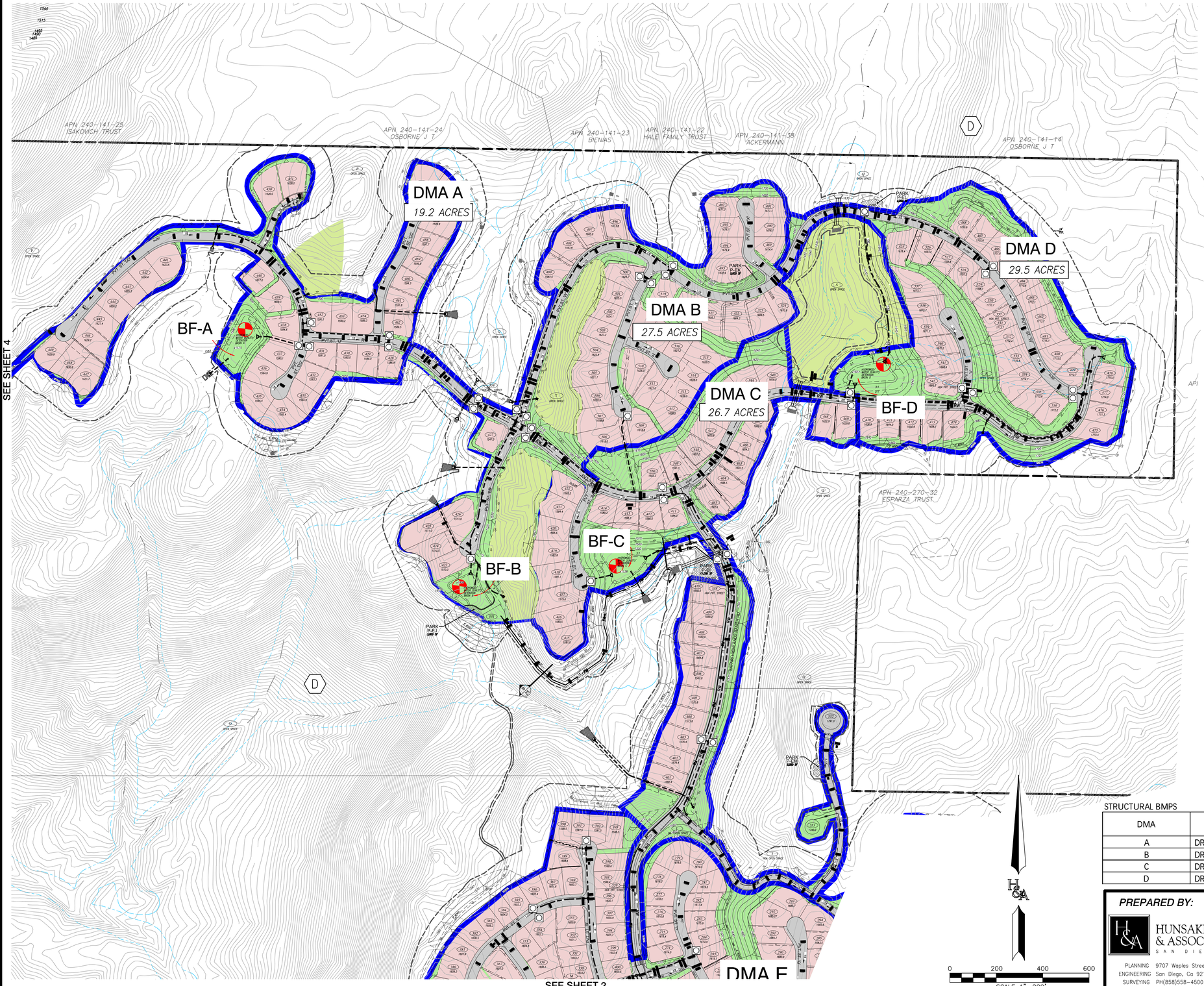
BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the Storm Water Design Manual	☒Included ☐Submitted as separate stand-alone document
Attachment 2b	Hydromodification Management Exhibit (Required)	☒Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2c	Management of Critical Coarse Sediment Yield Areas See Section 6.2 and Appendix H of the Storm Water Design Manual.	☒Exhibit depicting onsite and/or upstream sources of critical coarse sediment as mapped by Regional or Jurisdictional approaches outlined in Appendix H.1 AND, ☐Demonstration that the project effectively avoids and bypasses sources of mapped critical coarse sediment per approaches outlined in Appendix H.2 and H.3. OR, ☒Demonstration that project does not generate a net impact on the receiving water per approaches outlined in Appendix H.4.
Attachment 2d	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the Storm Water Design Manual.	☒Not performed ☐Included ☐Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐Included ☒Not required because BMPs will drain in less than 96 hours



LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- DIRECTION OF FLOW
- PERVIOUS AREAS
- STREETS
- SELF TREATING AREAS
- LOT (50% IMPERVIOUS)
- HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

- BIOFILTRATION BASIN

SOURCE CONTROL BMPs

- MARK INLETS WITH 'NO DUMPING! FLOWS TO BAY' OR SIMILAR.'
- USACE STREAMS 50' BUFFER

NOTES

NO GROUNDWATER FOUND ONSITE

SOURCE CONTROLS: SEE STEP 4 OF SWQMP

SC-1 PREVENTION OF ILLICT DISCHARGES INTO THE MS4

SC-2 STORM DRAIN STENCILING

SC-6A ON-SITE SOTMR DRAIN INLETS

SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DESIGN: SEE STEP 5 OF SWQMP

SD-1 MAINTAIN ANTURAL DRAINAGE PATHWAYS

SD-3 MINIMIZE IMPERVIOUS AREA

SD-5 IMPERVIOUS AREA DISPERSION

SD-7 LANDSCAPING WITH DROUGHT TOLERANT SPECIES

STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED FOOTPRINT (SQFT)	PROVIDED FOOTPRINT (SQFT)
A	DRAINS TO BMP	BIOFILTRATION	BF-A	14315	15077
B	DRAINS TO BMP	BIOFILTRATION	BF-B	13345	13427
C	DRAINS TO BMP	BIOFILTRATION	BF-C	13969	15583
D	DRAINS TO BMP	BIOFILTRATION	BF-D	12282	12605

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PLANNING 9707 Waples Street
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ATTACHMENT 1D
DRAINAGE MANAGEMENT AREA EXHIBIT
SAFARI HIGHLANDS
CITY OF ESCONDIDO, CA

SHEET 1 OF 5

W.O. 2374-0017

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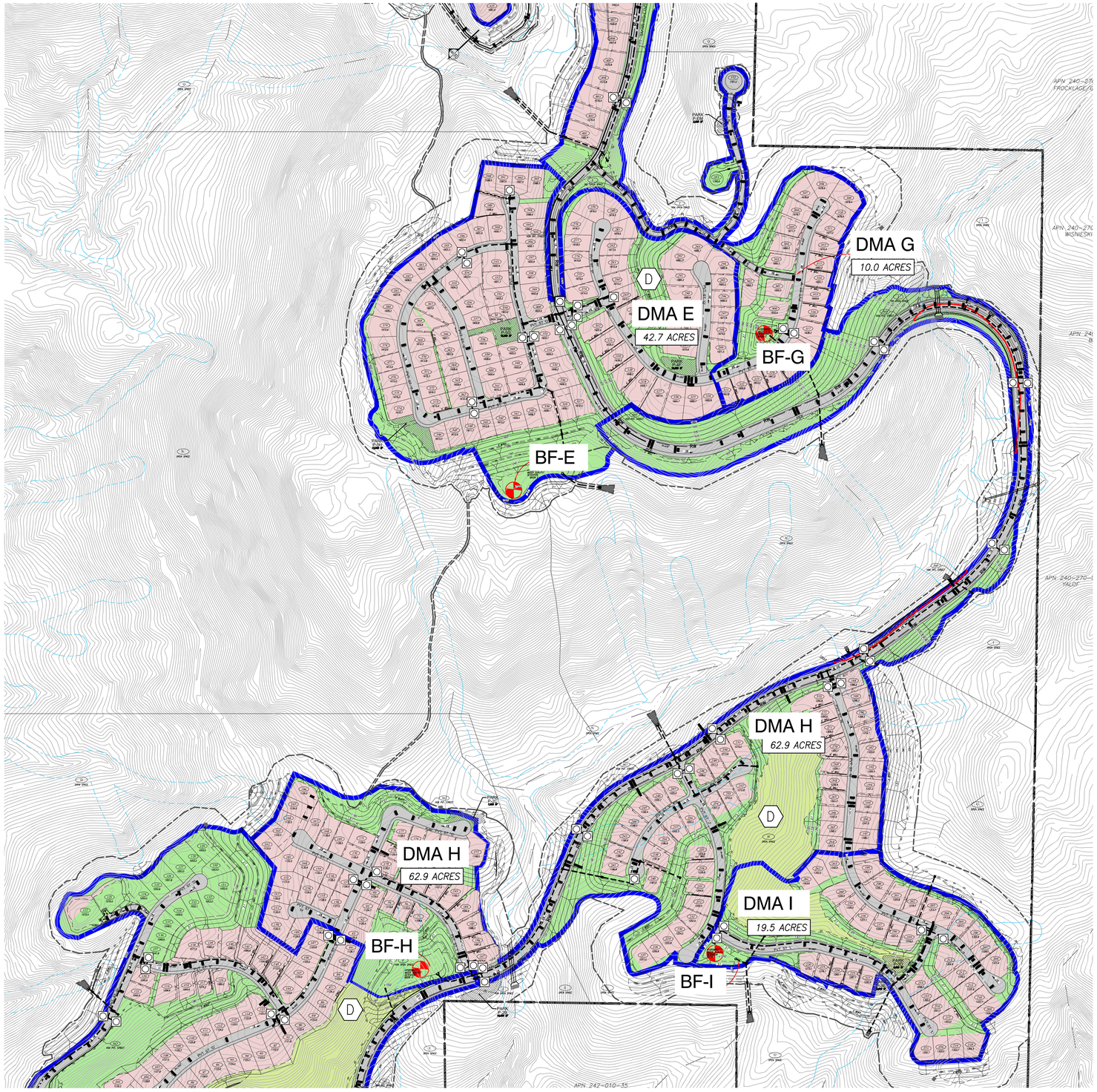
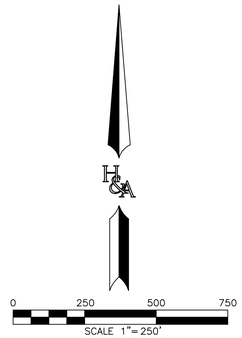
SEE SHEET 1



SEE SHEET 3



LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

DIRECTION OF FLOW

PERVIOUS AREAS

STREETS

SELF TREATING AREAS

LOT (50% IMPERVIOUS)

HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

BIOFILTRATION BASIN

SOURCE CONTROL BMPs

MARK INLETS WITH 'NO DUMPING! FLOWS TO BAY' OR SIMILAR.'

USACE STREAMS 50' BUFFER

NOTES

NO GROUNDWATER FOUND ONSITE

SOURCE CONTROLS: SEE STEP 4 OF SWQMP

SC-1 PREVENTION OF ILLICT DISCHARGES INTO THE MS4

SC-2 STORM DRAIN STENCILING

SC-6A ON-SITE SOTMR DRAIN INLETS

SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DESIGN: SEE STEP 5 OF SWQMP

SD-1 MAINTAIN ANTURAL DRAINAGE PATHWAYS

SD-3 MINIMIZE IMPERVIOUS AREA

SD-5 IMPERVIOUS AREA DISPERSION

SD-7 LANDSCAPING WITH DROUGHT TOLERANT SPECIES

STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED FOOTPRINT (SQFT)	PROVIDED FOOTPRINT (SQFT)
E	DRAINS TO BMP	BIOFILTRATION	BF-E	23597	23619
G	DRAINS TO BMP	BIOFILTRATION	BF-G	5413	5771
H	DRAINS TO BMP	BIOFILTRATION	BF-H	33377	33461
I	DRAINS TO BMP	BIOFILTRATION	BF-I	9486	9533

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ATTACHMENT 1D
DRAINAGE MANAGEMENT AREA EXHIBIT
SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 2 OF 5

W.O. 2374-17

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SEE SHEET 2

0 200 400 600
SCALE 1"= 200'

STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED FOOTPRINT (SQFT)	PROVIDED FOOTPRINT (SQFT)
J	DRAINS TO BMP	BIOFILTRATION	BF-J	30865	30909
F	DRAINS TO BMP	BIOFILTRATION	BF-F	7934	8070
K	DRAINS TO BMP	BIOFILTRATION	BF-K	6700	7567

NOTE 1: DMA Z IS EXISITNG ZOO ROAD/ROCKWOOD ROAD WITH PROPOSED WIDENING WILL IMPLEMENT GREEN STREET ELEMENTS TO ADDRESS WATER QUALITY.

NOTE 2: ZOO ROAD OUTSIDE CITY OF ESCONDIDO IS NOT DELINEATED

A SEPERATE SWQMP REPORT IS SUBMITTED TO THE CITY OF SAN DEIGO FOR ZOO ROAD WIDENING WITHIN CITY OF SAN DIEGO

DMA H
62.9 ACRES
BF-H
DMA J
77.8 ACRES
BF-J
BF-F
DMA F
14.3 ACRES
DMA K
9.0 ACRES
BF-K

LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- DIRECTION OF FLOW
- PERVIOUS AREAS
- STREETS
- SELF TREATING AREAS
- LOT (50% IMPERVIOUS)
- HYDROLOGIC SOIL TYPE
- STRUCTURAL BMPS
- BIOFILTRATION BASIN
- SOURCE CONTROL BMPs
- MARK INLETS WITH 'NO DUMPING! FLOWS TO BAY' OR SIMILAR.'
- USACE STREAMS 50' BUFFER
- NOTES
- NO GROUNDWATER FOUND ONSITE

SOURCE CONTROLS: SEE STEP 4 OF SWQMP

SC-1 PREVENTION OF ILLICT DISCHARGES INTO THE MS4

SC-2 STORM DRAIN STENCILING

SC-6A ON-SITE SOTMR DRAIN INLETS

SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DESIGN: SEE STEP 5 OF SWQMP

SD-1 MAINTAIN ANTURAL DRAINAGE PATHWAYS

SD-3 MINIMIZE IMPERVIOUS AREA

SD-5 IMPERVIOUS AREA DISPERSION

SD-7 LANDSCAPING WITH DROUGHT TOLERANT SPECIES

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC.
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4600 FX(858)558-1414

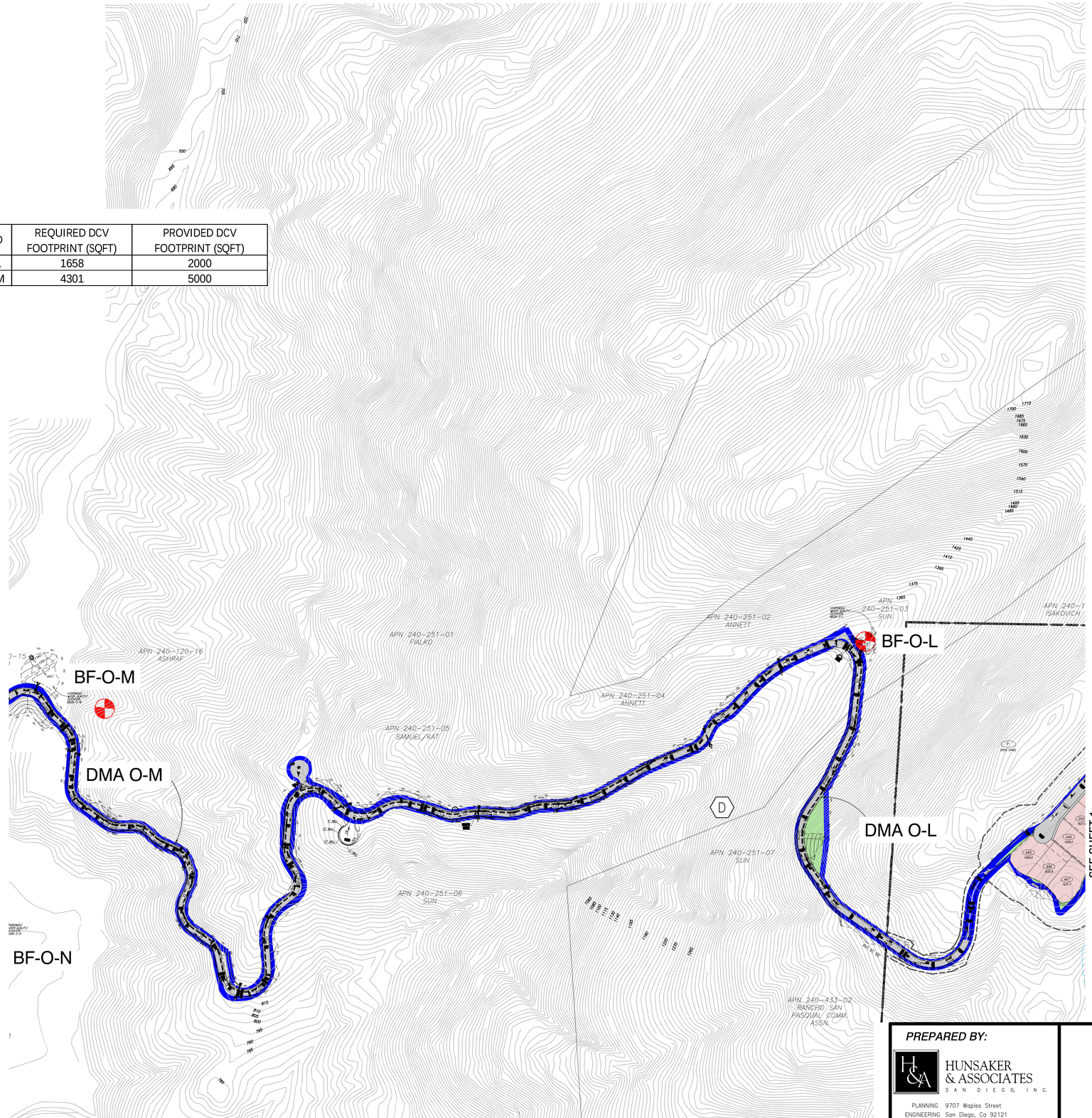
ATTACHMENT 1D
DRAINAGE MANAGEMENT AREA EXHIBIT
SAFARI HIGHLANDS
CITY OF ESCONDIDO, CA

SHEET 3 OF 5

W.O. 2374-17

STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED DCV FOOTPRINT (SQFT)	PROVIDED DCV FOOTPRINT (SQFT)
O-L	DRAINS TO BMP	BIOFILTRATION	BF O-L	1658	2000
O-M	DRAINS TO BMP	BIOFILTRATION	BF O-M	4301	5000



SEE SHEET 5

SEE SHEET 1

LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

DIRECTION OF FLOW

PERVIOUS AREAS

STREETS

LOT (50% IMPERVIOUS)

HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

BIOFILTRATION BASIN

SOURCE CONTROL BMPs

MARK INLETS WITH 'NO DUMPING! FLOWS TO BAY' OR SIMILAR.'

NOTES

NO GROUNDWATER FOUND ONSITE

0 200 400 600

SCALE 1"= 200'

SOURCE CONTROLS: SEE STEP 4 OF SWQMP

SC-1 PREVENTION OF ILLICT DISCHARGES INTO THE MS4

SC-2 STORM DRAIN STENCILING

SC-6A ON-SITE SOTMR DRAIN INLETS

SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DESIGN: SEE STEP 5 OF SWQMP

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SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 4 OF 5

W.O. 2374-17

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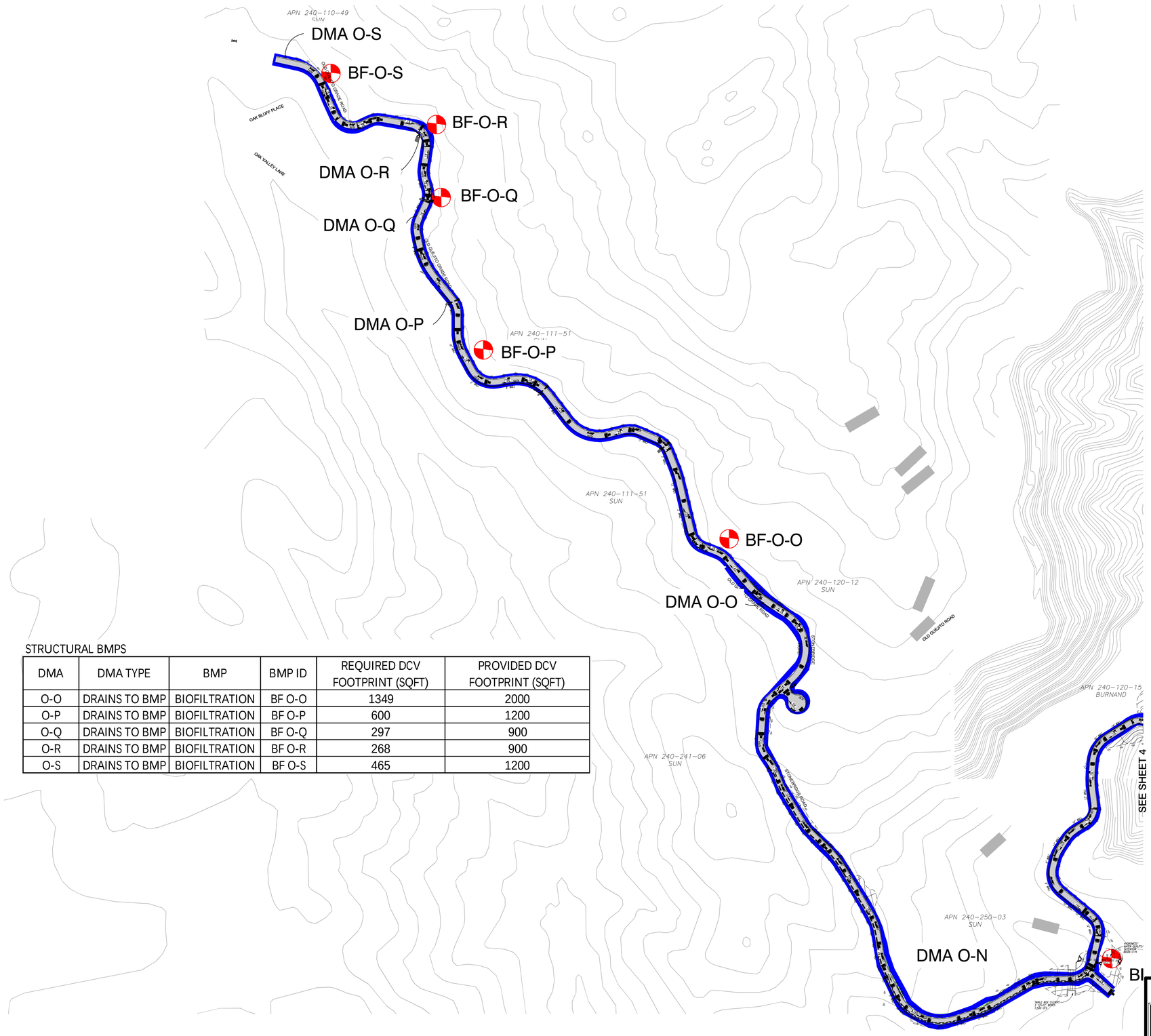
SEE SHEET 2



STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED DCV FOOTPRINT (SQFT)	PROVIDED DCV FOOTPRINT (SQFT)
O-O	DRAINS TO BMP	BIOFILTRATION	BF O-O	1349	2000
O-P	DRAINS TO BMP	BIOFILTRATION	BF O-P	600	1200
O-Q	DRAINS TO BMP	BIOFILTRATION	BF O-Q	297	900
O-R	DRAINS TO BMP	BIOFILTRATION	BF O-R	268	900
O-S	DRAINS TO BMP	BIOFILTRATION	BF O-S	465	1200

LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

DIRECTION OF FLOW

PERVIOUS AREAS

STREETS

LOT (50% IMPERVIOUS)

HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

BIOFILTRATION BASIN

SOURCE CONTROL BMPs

MARK INLETS WITH 'NO DUMPING! FLOWS TO BAY' OR SIMILAR.'

NOTES

NO GROUNDWATER FOUND ONSITE

0 200 400 600
SCALE 1"= 200'

SOURCE CONTROLS: SEE STEP 4 OF SWQMP

SC-1 PREVENTION OF ILLICT DISCHARGES INTO THE MS4

SC-2 STORM DRAIN STENCILING

SC-6A ON-SITE SOTMR DRAIN INLETS

SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DESIGN: SEE STEP 5 OF SWQMP

SD-1 MAINTAIN ANTURAL DRAINAGE PATHWAYS

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ATTACHMENT 1D
DRAINAGE MANAGEMENT AREA EXHIBIT
SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 5 *OF* 5

W.O. 2374-17

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Hydromodification Management Plan

INTRODUCTION

This report summarizes the approach used to model the proposed Safari Highlands project site in Escondido, CA using the Environmental Protection Agency (EPA) Storm Water Management Model 5.1 (SWMM). SWMM models were prepared for the pre and post developed conditions at the site in order to determine if the proposed biofiltration facilities have sufficient footprint to meet the current Hydromodification Management Plan (HMP) requirements from the Regional Water Quality Control Board (RWQCB).

SWMM MODEL DEVELOPMENT

Ten (10) SWMM models were prepared for this study, five for point of compliance 1 - 5 (POC) in existing conditions and five for POC 1 - 5 in the proposed condition. For all SWMM models, flow duration curves were prepared to demonstrate that the proposed biofiltration basin footprint will be sufficient to meet the current HMP requirements.

The inputs required to develop SWMM models include rainfall, watershed characteristics, and BMP configurations. The Escondido Rain Gage from the Project Clean Water website was used for this study, since it is the most representative of the project site precipitation.

Evaporation for the site was modeled using average monthly values from the San Diego County hourly dataset. The site was modeled with hydrologic soil group D soils as determined from both the San Diego County Hydrology Manual soil map and the USGS Survey web-based Soil Survey Map. Other SWMM inputs for the subareas are discussed in the attachment to this document where the selection of the parameters is explained in detail.

BIOFILTRATION MODELING

Developed storm water runoff is routed through nineteen (19) biofiltration basins. The basins were modeled using the bioretention LID module within SWMM. The bioretention module can model the underground gravel storage layer, underdrain with an orifice plate, amended soil layer, and a surface storage pond up to the elevation of the invert of the bottom orifice. A separate diversion and detention basin were used to model the portion of the storage pond between the base orifice invert elevations and the spillway elevation from the biofiltration basin, according to the assumptions explained in the appendix. Once runoff has been routed through the respective basin outlet structures, it is conveyed via a storm drain pipe to each POC.

Basin Discussion:

Flow control in the basin is achieved using multiple orifices on a concrete riser box. The size, number and location of the orifices are presented in the Basin Table below. Each basin also contains an emergency overflow riser that is only utilized in storm events equal to or larger than the 100 year storm. Sizing and further peak flow discussion is in the "Drainage Report for Safari Highlands".

Basin Table POC1

	Basin A	Basin B	Basin C	Basin D
Weir Height (ft)*	4	4	4	4
Weir Length (ft)	10	10	10	10
Amended Soil Depth (in)	18	18	18	18
Class 2 Perm. Depth (in)	12	12	12	12
Top Orifice				
No. of Orifices	12	12	12	12
Diameter (in)	4	4	4	4
Invert Height (ft)*	2	2	2	2.5
Middle Orifice				
No. of Orifices	0	0	0	2
Diameter (in)	-	-	-	1
Invert Height (ft)*	-	-	-	1
Bottom Orifice				
No. of Orifices	2	2	2	2
Diameter (in)	2	2	2	2
Invert Height (ft)*	.5	.5	.5	.5
Sub-Drain Orifice				
No. of Orifices	1	1	1	1
Diameter (in)	2	2	2	3

*From finish grade

Basin Table POC 2

	Basin E	Basin F	Basin G	Basin H	Basin I	Basin J	Basin K
Weir Height (ft)*	4	4	4	4	4	4	2
Weir Length (ft)	9.4	12.6	9.4	12.6	12.6	12.6	12.6
Amended Soil Depth (in)	18	18	18	18	18	18	18
Class 2 Perm. Depth (in)	12	12	12	12	12	12	12
Top Orifice							
No. of Orifices	0	10	6	10	12	12	0
Diameter (in)	-	4	5	4	4	4	-
Invert Height (ft)*	-	3	2	3	2	2	-
Middle Orifice							
No. of Orifices	0	12	12	12	6	12	0
Diameter (in)	-	3	5	3	3	3	-
Invert Height (ft)*	-	1	1	1	1	1	-
Bottom Orifice							
No. of Orifices	1	12	1	2	1	1	1
Diameter (in)	2	2	2	12	2	2	2
Invert Height (ft)*	0.5	0.5	0.5	0.5	0.5	0.5	.5
Sub-Drain Orifice							
No. of Orifices	1	1	1	1	1	1	1
Diameter (in)	4	2	4	2	4	1	1

*From finish grade

NOTE: Basins in POC 2 have a circular riser

	Basin O-L	Basin O-M	Basin O-N	Basin O-O	Basin O-P	Basin O-Q	Basin O-R	Basin O-S
Spillway Height (ft)*	2	2	2	0.5	0.5	0.5	0.5	0.5
Spillway Size (sqft)	6	6	6	6	6	6	6	6
Amended Soil Depth (in)	18	18	18	18	18	18	18	18
Class 2 Perm. Depth (in)	12	12	12	12	12	12	12	12
Top Orifice								
No. of Orifices	0	0	0	0	0	0	0	0
Diameter (in)	0	0	0	0	0	0	0	0
Invert Height (ft)*	0	0	0	0	0	0	0	0
Middle Orifice								
No. of Orifices	0	0	0	0	0	0	0	0
Diameter (in)	0	0	0	0	0	0	0	0
Invert Height (ft)*	0	0	0	0	0	0	0	0
Bottom Orifice								
No. of Orifices	2	2	2	0	0	0	0	0
Diameter (in)	2	2	2	0	0	0	0	0
Invert Height (ft)*	0.5	0.5	0.5	0	0	0	0	0
Sub-Drain Orifice								
No. of Orifices	1	1	1	1	1	1	1	1
Diameter (in)	3	2	2	2	2	1.5	1.5	1.5

*From finish grade

FLOW DURATION CURVE COMPARISON

The Flow Duration Curves (FDC) for the site were compared at POCs 1 -5 by exporting the hourly runoff time series results from SWMM to a spreadsheet. The FDC was compared between 10% of the existing condition Q_2 (based on accepting an assumption of high susceptibility for downstream channel erosion as required if no soils tests are completed) up to the existing condition Q_{10}. The Q_2 and Q_{10} were determined using a partial duration statistical analysis of the runoff time series in an Excel spreadsheet. The SWMM Model is a statistical analysis based on the Weibull Plotting Position Method.

The range between 10% of Q_2 and Q_{10} was divided into 100 equal time intervals; the number of hours that each flow rate was exceeded was counted from the hourly series. Additionally, the intermediate peaks with a return period "i" were obtained (Q_i with i=3 to 9). For the purpose of the plot, the values were presented as percentage of time exceeded for each flow rate.

The FDC comparison at POCs 1 - 5 are illustrated in Figure 1 & 3. POC 1 corresponds with the point located downstream of the discharge of Basins A, B, C, D, & F'. POC 2 corresponds with the point located downstream of the discharge of Basins E, F, G,H I, & J. POC 3 corresponds with the point downstream of the offsite discharge of Basin O-L. POC 4 corresponds with the point downstream of offsite basin O-M and O-N. POC 5 corresponds with the point downstream of offsite basins O-O, O-P, O-Q, O-R, and O-S.

As can be seen in Figures 1 & 2, the FDC for the proposed condition with nineteen (19) separate basins is within 110% of the curve for the existing condition. The additional runoff volume generated from developing the site will be released to the downstream storm drain at a flow rate below the 10% Q_2 lower threshold. Additionally, the project will not increase peak flow rates between the Q_2 and the Q_{10}, as shown in the graphic and also in the attached table.

SUMMARY & CONCLUSION

A summary of existing and proposed areas draining to each point of compliance (POC) are shown in the table below. The model includes the onsite project areas and offsite drainage areas. The increase in area draining to each POC is attributed grading and development of the property. Eleven biofiltration basins are proposed to mitigate increased flow frequencies as a result of development.

Area Summary

	Existing (AC)	Proposed (AC)
POC 1	403.9	403.9
POC2	2005.1	2005.1
POC 3	76.0	76.0
POC 4	3440.0	3440.0
POC 5	212.0	212.0
TOTAL	6137	6137

This study has demonstrated that the proposed biofiltration footprint at the Safari Highlands site is sufficient to meet the current HMP criteria if the biofiltration cross-section areas and volumes recommended within this attachment are incorporated within the proposed project site.

KEY ASSUMPTIONS

1. D Soils are representative of the existing conditions for a majority of the site.

ATTACHMENTS

1. Flow Duration Curve Analysis
2. Elevation vs. Area Curves vs. Discharge Curves to be used in SWMM
3. Biofiltration Details
4. SWMM Input Data (Existing and Proposed Models)
5. SWMM Screens and Explanation of Significant Variables
6. Drying Time of the Surface Layer of Biofiltration cells

Flow duration curve shall not exceed the existing conditions by more than 10% neither in peak flow nor duration.

The figure on the following page illustrates that the flow duration curve in post-development conditions after the proposed BMPs is below the existing flow duration curve. The flow duration curve table following the curve shows that if the interval 0.10Q 2 – Q 10 is divided in 100 sub-intervals, then a) the post development divided by pre-development durations are never larger than 110% (the permit allows up to 110%); and b) there are no more than 10 intervals in the range 101%-110% which would imply an excess over 10% of the length of the curve (the permit allows less than 10% of excesses measured as 101-110%).

Consequently, the design passes the hydromodification test.

It is important to note that the flow duration curve can be expressed in the "x" axis as percentage of time, hours per year, total number of hours, or any other similar time variable. As those variables only differ by a multiplying constant, their plot in logarithmic scale is going to look exactly the same and compliance can be observed regardless of the variable selected. The selection of a logarithmic scale in lieu of the normal scale is preferred, as differences between the pre-development and post-development curves can be seen more clearly in the entire range of analysis. Both graphics are presented for reference.

In terms of the "y" axis, the peak flow value is the variable of choice. As an additional analysis performed by H&A, not only the range of analysis is clearly depicted (10% of Q 2 to Q 10) but also all intermediate flows are shown (30% of Q 2 , 50% of Q 2 , Q 2 , Q 3 , Q 4 , Q 5 , Q 6 , Q 7 , Q 8 and Q 9) in order to demonstrate compliance at any range Q x – Q x+1 . It must be pointed out that one of the limitations of both the SWMM and SDHM models is that the intermediate analysis is not performed (to obtain Q i from i = 2 to 10). H&A performed the analysis using the Cunnane Plotting position Method (the preferred method in the HMP permit) from the "n" largest independent peak flows obtained from the continuous time series.

The largest "n" peak flows are attached in this appendix, as well as the values of Q_i with a return period "i", from i=2 to 10. The Q i values are also added into the flow-duration plot.

ATTACHMENT 1 - Flow Duration Curve Analysis, Plot & Table

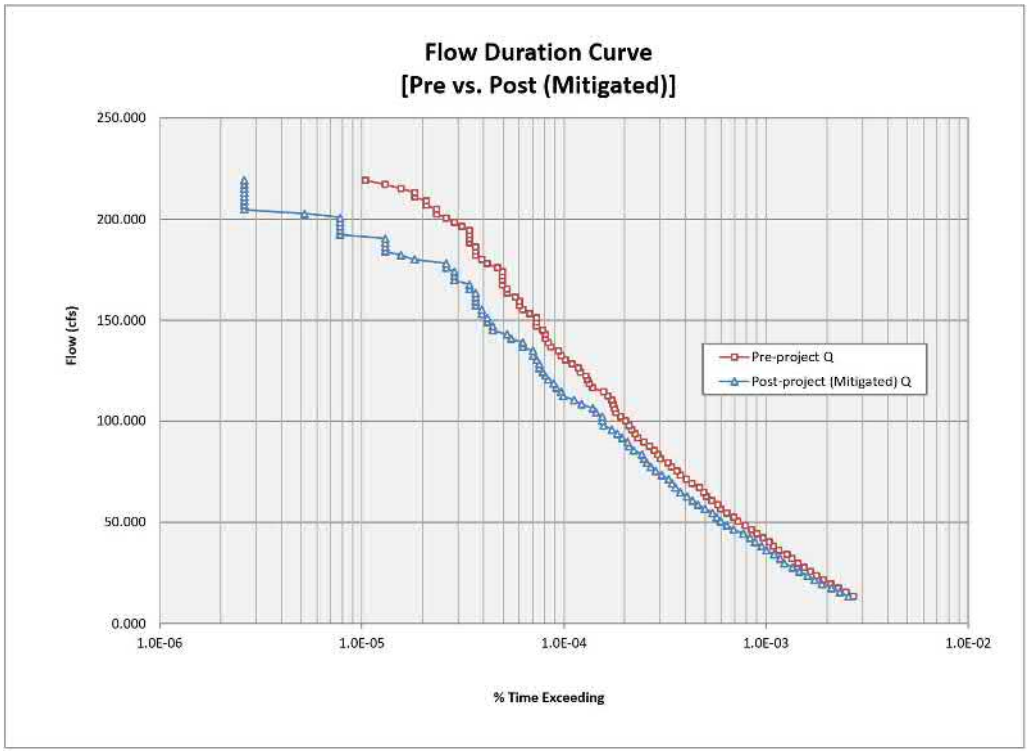


Figure 1 – POC 1 Flow Duration Curve

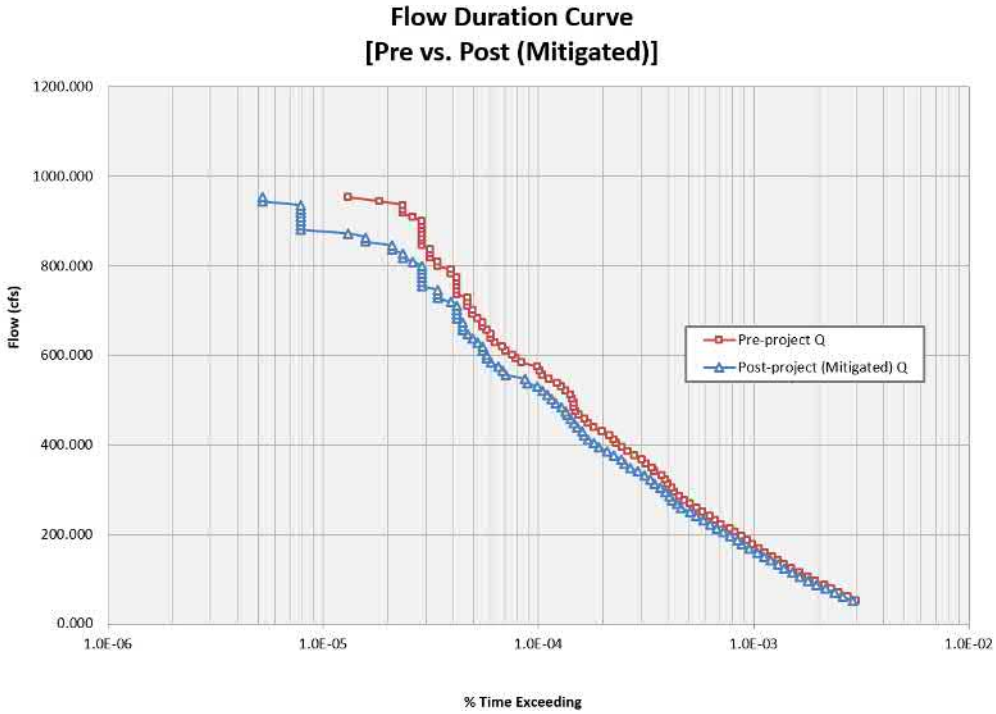


Figure 2 – POC2 Flow Duration Curves

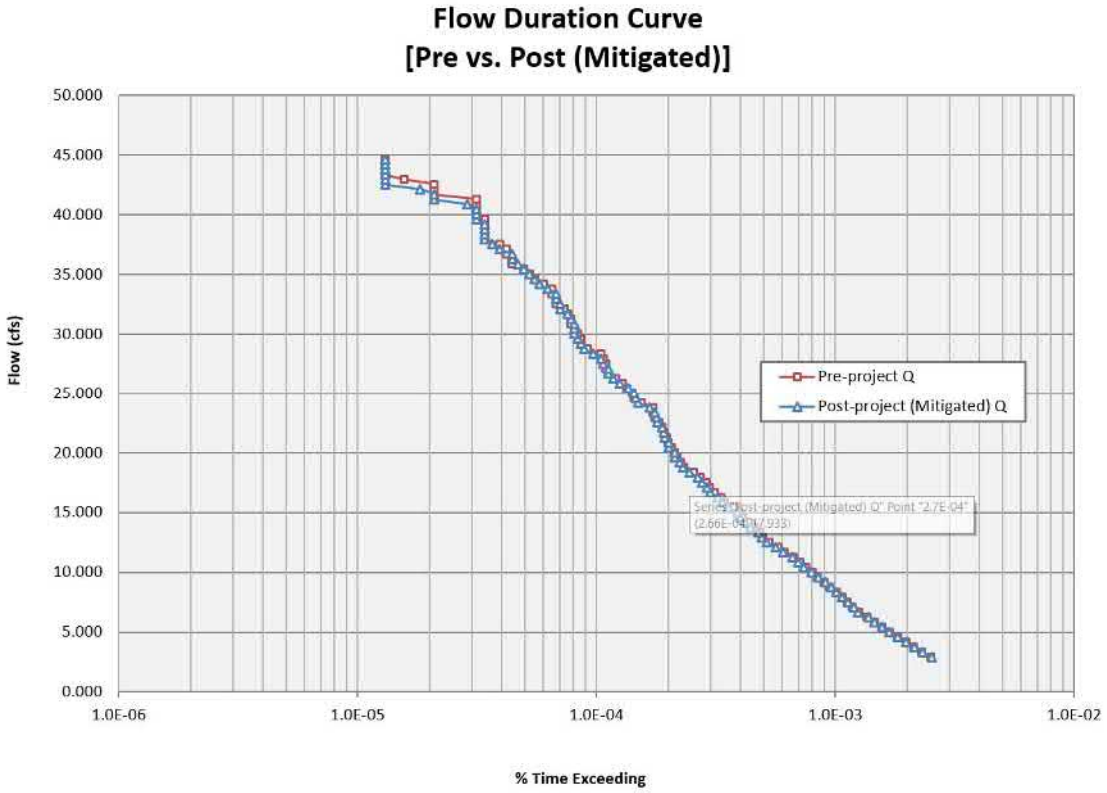


Figure 3 – POC 3 Flow Duration Curve

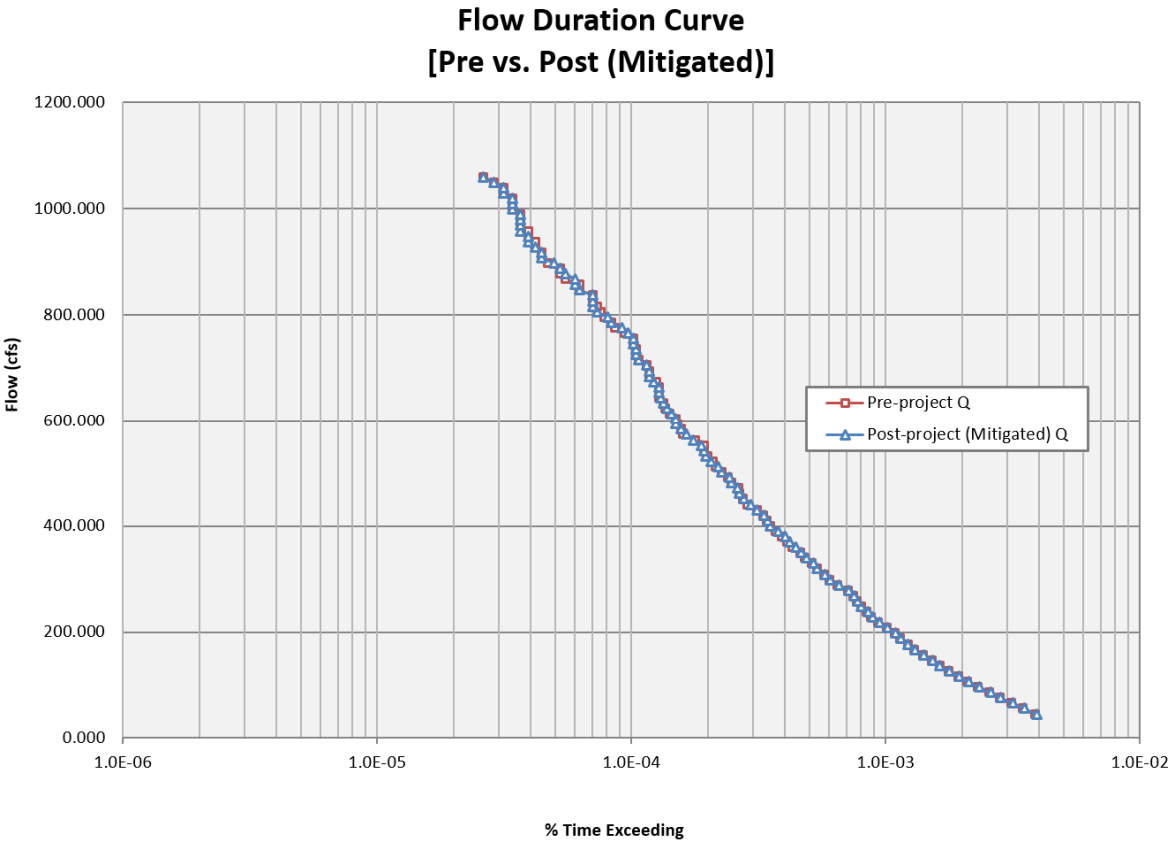


Figure 4 – POC 4 Flow Duration Curves

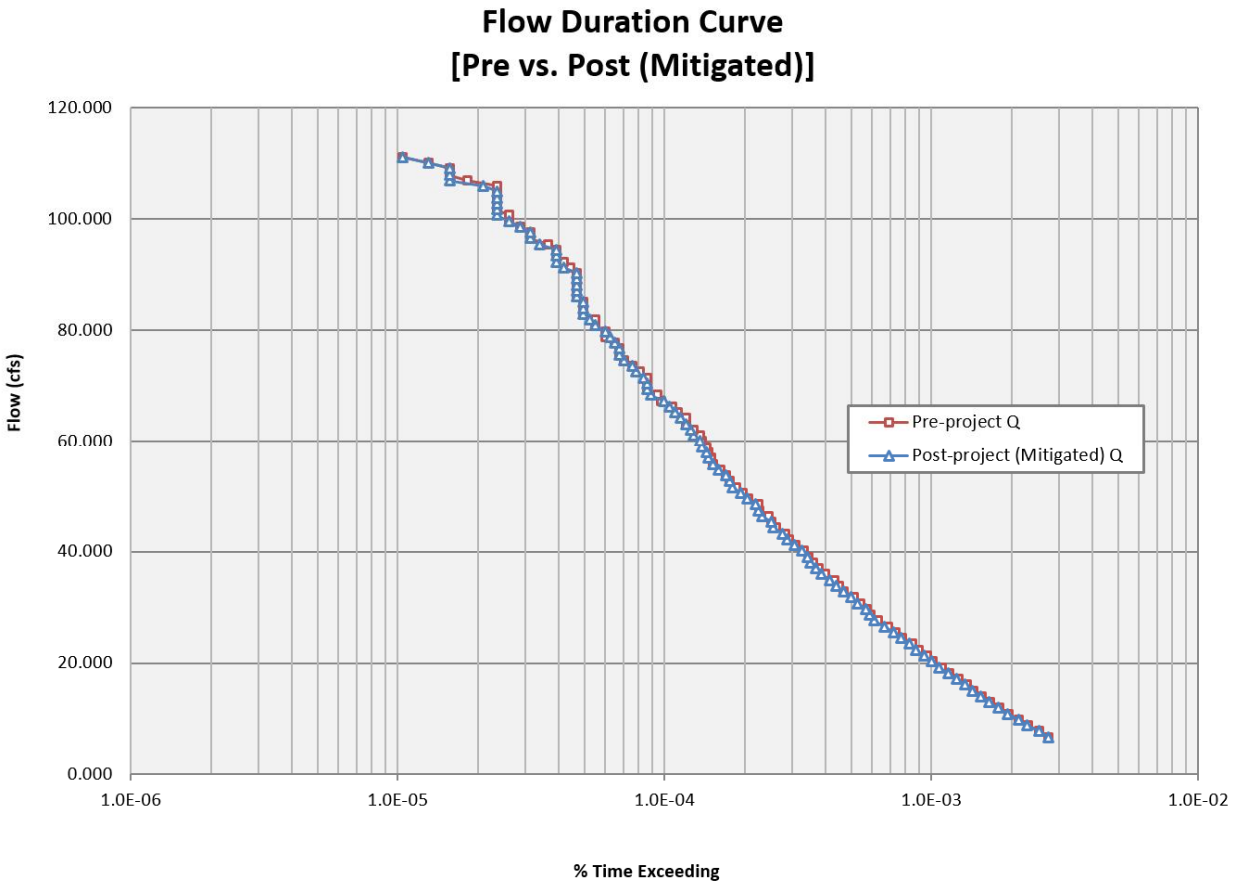


Figure 5 – POC 5 Flow Duration Curves

POC 1

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	13.503	cfs
Q10 (Pre):	219.243	cfs
Ordinate #:	100	
Incremental Q (Pre):	2.05740	cfs
Total Hourly Data:	382751	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	13.503	1031	2.69E-03	1023	2.67E-03	99%	Pass
1	15.560	953	2.49E-03	929	2.43E-03	97%	Pass
2	17.618	871	2.28E-03	841	2.20E-03	97%	Pass
3	19.675	802	2.10E-03	766	2.00E-03	96%	Pass
4	21.733	733	1.92E-03	701	1.83E-03	96%	Pass
5	23.790	677	1.77E-03	648	1.69E-03	96%	Pass
6	25.847	633	1.65E-03	593	1.55E-03	94%	Pass
7	27.905	592	1.55E-03	554	1.45E-03	94%	Pass
8	29.962	549	1.43E-03	511	1.34E-03	93%	Pass
9	32.020	513	1.34E-03	474	1.24E-03	92%	Pass
10	34.077	485	1.27E-03	446	1.17E-03	92%	Pass
11	36.134	444	1.16E-03	413	1.08E-03	93%	Pass
12	38.192	415	1.08E-03	385	1.01E-03	93%	Pass
13	40.249	397	1.04E-03	363	9.48E-04	91%	Pass
14	42.307	370	9.67E-04	342	8.94E-04	92%	Pass
15	44.364	344	8.99E-04	317	8.28E-04	92%	Pass
16	46.421	325	8.49E-04	290	7.58E-04	89%	Pass
17	48.479	303	7.92E-04	268	7.00E-04	88%	Pass
18	50.536	278	7.26E-04	250	6.53E-04	90%	Pass
19	52.594	265	6.92E-04	236	6.17E-04	89%	Pass
20	54.651	244	6.37E-04	224	5.85E-04	92%	Pass
21	56.708	228	5.96E-04	209	5.46E-04	92%	Pass
22	58.766	221	5.77E-04	192	5.02E-04	87%	Pass
23	60.823	206	5.38E-04	182	4.76E-04	88%	Pass
24	62.881	194	5.07E-04	171	4.47E-04	88%	Pass
25	64.938	187	4.89E-04	164	4.28E-04	88%	Pass
26	66.995	179	4.68E-04	150	3.92E-04	84%	Pass
27	69.053	164	4.28E-04	141	3.68E-04	86%	Pass
28	71.110	154	4.02E-04	138	3.61E-04	90%	Pass
29	73.168	144	3.76E-04	131	3.42E-04	91%	Pass
30	75.225	139	3.63E-04	122	3.19E-04	88%	Pass
31	77.282	130	3.40E-04	115	3.00E-04	88%	Pass
32	79.340	125	3.27E-04	108	2.82E-04	86%	Pass
33	81.397	115	3.00E-04	103	2.69E-04	90%	Pass
34	83.455	111	2.90E-04	100	2.61E-04	90%	Pass
35	85.512	107	2.80E-04	94	2.46E-04	88%	Pass
36	87.569	101	2.64E-04	87	2.27E-04	86%	Pass
37	89.627	95	2.48E-04	83	2.17E-04	87%	Pass
38	91.684	89	2.33E-04	79	2.06E-04	89%	Pass
39	93.742	86	2.25E-04	76	1.99E-04	88%	Pass
40	95.799	83	2.17E-04	70	1.83E-04	84%	Pass
41	97.856	80	2.09E-04	67	1.75E-04	84%	Pass
42	99.914	77	2.01E-04	63	1.65E-04	82%	Pass
43	101.971	73	1.91E-04	60	1.57E-04	82%	Pass
44	104.029	69	1.80E-04	60	1.57E-04	87%	Pass
45	106.086	68	1.78E-04	58	1.52E-04	85%	Pass
46	108.143	67	1.75E-04	57	1.49E-04	85%	Pass
47	110.201	66	1.72E-04	53	1.38E-04	80%	Pass
48	112.258	63	1.65E-04	50	1.31E-04	79%	Pass
49	114.316	60	1.57E-04	44	1.15E-04	73%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
50	116.373	53	1.38E-04	43	1.12E-04	81%	Pass
51	118.430	51	1.33E-04	39	1.02E-04	76%	Pass
52	120.488	50	1.31E-04	34	8.88E-05	68%	Pass
53	122.545	49	1.28E-04	33	8.62E-05	67%	Pass
54	124.603	46	1.20E-04	31	8.10E-05	67%	Pass
55	126.660	45	1.18E-04	30	7.84E-05	67%	Pass
56	128.717	42	1.10E-04	29	7.58E-05	69%	Pass
57	130.775	39	1.02E-04	29	7.58E-05	74%	Pass
58	132.832	37	9.67E-05	29	7.58E-05	78%	Pass
59	134.890	36	9.41E-05	28	7.32E-05	78%	Pass
60	136.947	33	8.62E-05	28	7.32E-05	85%	Pass
61	139.004	32	8.36E-05	28	7.32E-05	88%	Pass
62	141.062	31	8.10E-05	26	6.79E-05	84%	Pass
63	143.119	31	8.10E-05	25	6.53E-05	81%	Pass
64	145.177	30	7.84E-05	23	6.01E-05	77%	Pass
65	147.234	28	7.32E-05	21	5.49E-05	75%	Pass
66	149.291	28	7.32E-05	19	4.96E-05	68%	Pass
67	151.349	28	7.32E-05	19	4.96E-05	68%	Pass
68	153.406	26	6.79E-05	19	4.96E-05	73%	Pass
69	155.464	24	6.27E-05	18	4.70E-05	75%	Pass
70	157.521	23	6.01E-05	16	4.18E-05	70%	Pass
71	159.578	23	6.01E-05	16	4.18E-05	70%	Pass
72	161.636	22	5.75E-05	15	3.92E-05	68%	Pass
73	163.693	20	5.23E-05	14	3.66E-05	70%	Pass
74	165.751	20	5.23E-05	14	3.66E-05	70%	Pass
75	167.808	19	4.96E-05	14	3.66E-05	74%	Pass
76	169.865	19	4.96E-05	13	3.40E-05	68%	Pass
77	171.923	19	4.96E-05	13	3.40E-05	68%	Pass
78	173.980	19	4.96E-05	13	3.40E-05	68%	Pass
79	176.038	18	4.70E-05	13	3.40E-05	72%	Pass
80	178.095	16	4.18E-05	12	3.14E-05	75%	Pass
81	180.152	15	3.92E-05	10	2.61E-05	67%	Pass
82	182.210	14	3.66E-05	10	2.61E-05	71%	Pass
83	184.267	14	3.66E-05	8	2.09E-05	57%	Pass
84	186.325	14	3.66E-05	8	2.09E-05	57%	Pass
85	188.382	13	3.40E-05	6	1.57E-05	46%	Pass
86	190.439	13	3.40E-05	5	1.31E-05	38%	Pass
87	192.497	13	3.40E-05	4	1.05E-05	31%	Pass
88	194.554	13	3.40E-05	4	1.05E-05	31%	Pass
89	196.612	12	3.14E-05	3	7.84E-06	25%	Pass
90	198.669	11	2.87E-05	3	7.84E-06	27%	Pass
91	200.726	10	2.61E-05	3	7.84E-06	30%	Pass
92	202.784	9	2.35E-05	3	7.84E-06	33%	Pass
93	204.841	9	2.35E-05	3	7.84E-06	33%	Pass
94	206.899	8	2.09E-05	3	7.84E-06	38%	Pass
95	208.956	8	2.09E-05	2	5.23E-06	25%	Pass
96	211.013	7	1.83E-05	2	5.23E-06	29%	Pass
97	213.071	7	1.83E-05	2	5.23E-06	29%	Pass
98	215.128	6	1.57E-05	2	5.23E-06	33%	Pass
99	217.186	5	1.31E-05	2	5.23E-06	40%	Pass
100	219.243	4	1.05E-05	2	5.23E-06	50%	Pass

POC 2

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	51.452	cfs
Q10 (Pre):	953.884	cfs
Ordinate #:	100	
Incremental Q (Pre):	9.02433	cfs
Total Hourly Data:	382751	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	51.452	1145	2.99E-03	1205	3.15E-03	105%	Pass
1	60.476	1050	2.74E-03	1095	2.86E-03	104%	Pass
2	69.500	953	2.49E-03	979	2.56E-03	103%	Pass
3	78.525	880	2.30E-03	899	2.35E-03	102%	Pass
4	87.549	816	2.13E-03	830	2.17E-03	102%	Pass
5	96.573	743	1.94E-03	754	1.97E-03	101%	Pass
6	105.598	682	1.78E-03	696	1.82E-03	102%	Pass
7	114.622	625	1.63E-03	639	1.67E-03	102%	Pass
8	123.646	571	1.49E-03	581	1.52E-03	102%	Pass
9	132.671	529	1.38E-03	541	1.41E-03	102%	Pass
10	141.695	499	1.30E-03	506	1.32E-03	101%	Pass
11	150.719	468	1.22E-03	471	1.23E-03	101%	Pass
12	159.744	433	1.13E-03	436	1.14E-03	101%	Pass
13	168.768	407	1.06E-03	409	1.07E-03	100%	Pass
14	177.792	379	9.90E-04	383	1.00E-03	101%	Pass
15	186.817	358	9.35E-04	360	9.41E-04	101%	Pass
16	195.841	335	8.75E-04	338	8.83E-04	101%	Pass
17	204.865	312	8.15E-04	317	8.28E-04	102%	Pass
18	213.890	296	7.73E-04	292	7.63E-04	99%	Pass
19	222.914	270	7.05E-04	267	6.98E-04	99%	Pass
20	231.938	254	6.64E-04	256	6.69E-04	101%	Pass
21	240.963	241	6.30E-04	242	6.32E-04	100%	Pass
22	249.987	221	5.77E-04	222	5.80E-04	100%	Pass
23	259.011	208	5.43E-04	207	5.41E-04	100%	Pass
24	268.036	194	5.07E-04	193	5.04E-04	99%	Pass
25	277.060	183	4.78E-04	182	4.76E-04	99%	Pass
26	286.084	173	4.52E-04	170	4.44E-04	98%	Pass
27	295.109	164	4.28E-04	162	4.23E-04	99%	Pass
28	304.133	159	4.15E-04	161	4.21E-04	101%	Pass
29	313.157	153	4.00E-04	156	4.08E-04	102%	Pass
30	322.182	148	3.87E-04	146	3.81E-04	99%	Pass
31	331.206	143	3.74E-04	139	3.63E-04	97%	Pass
32	340.230	132	3.45E-04	130	3.40E-04	98%	Pass
33	349.255	129	3.37E-04	127	3.32E-04	98%	Pass
34	358.279	121	3.16E-04	117	3.06E-04	97%	Pass
35	367.303	116	3.03E-04	107	2.80E-04	92%	Pass
36	376.327	107	2.80E-04	104	2.72E-04	97%	Pass
37	385.352	100	2.61E-04	101	2.64E-04	101%	Pass
38	394.376	94	2.46E-04	92	2.40E-04	98%	Pass
39	403.400	88	2.30E-04	88	2.30E-04	100%	Pass
40	412.425	86	2.25E-04	82	2.14E-04	95%	Pass
41	421.449	82	2.14E-04	77	2.01E-04	94%	Pass
42	430.473	76	1.99E-04	74	1.93E-04	97%	Pass
43	439.498	69	1.80E-04	68	1.78E-04	99%	Pass
44	448.522	65	1.70E-04	65	1.70E-04	100%	Pass
45	457.546	63	1.65E-04	59	1.54E-04	94%	Pass
46	466.571	59	1.54E-04	58	1.52E-04	98%	Pass
47	475.595	57	1.49E-04	58	1.52E-04	102%	Pass
48	484.619	56	1.46E-04	57	1.49E-04	102%	Pass
49	493.644	56	1.46E-04	57	1.49E-04	102%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
50	502.668	55	1.44E-04	55	1.44E-04	100%	Pass
51	511.692	54	1.41E-04	52	1.36E-04	96%	Pass
52	520.717	51	1.33E-04	50	1.31E-04	98%	Pass
53	529.741	49	1.28E-04	49	1.28E-04	100%	Pass
54	538.765	47	1.23E-04	45	1.18E-04	96%	Pass
55	547.790	43	1.12E-04	41	1.07E-04	95%	Pass
56	556.814	40	1.05E-04	40	1.05E-04	100%	Pass
57	565.838	39	1.02E-04	35	9.14E-05	90%	Pass
58	574.863	38	9.93E-05	33	8.62E-05	87%	Pass
59	583.887	32	8.36E-05	29	7.58E-05	91%	Pass
60	592.911	30	7.84E-05	29	7.58E-05	97%	Pass
61	601.936	29	7.58E-05	28	7.32E-05	97%	Pass
62	610.960	27	7.05E-05	27	7.05E-05	100%	Pass
63	619.984	26	6.79E-05	27	7.05E-05	104%	Pass
64	629.009	24	6.27E-05	25	6.53E-05	104%	Pass
65	638.033	23	6.01E-05	24	6.27E-05	104%	Pass
66	647.057	23	6.01E-05	24	6.27E-05	104%	Pass
67	656.082	22	5.75E-05	20	5.23E-05	91%	Pass
68	665.106	21	5.49E-05	20	5.23E-05	95%	Pass
69	674.130	21	5.49E-05	19	4.96E-05	90%	Pass
70	683.155	20	5.23E-05	18	4.70E-05	90%	Pass
71	692.179	19	4.96E-05	18	4.70E-05	95%	Pass
72	701.203	19	4.96E-05	18	4.70E-05	95%	Pass
73	710.228	18	4.70E-05	17	4.44E-05	94%	Pass
74	719.252	18	4.70E-05	17	4.44E-05	94%	Pass
75	728.276	18	4.70E-05	16	4.18E-05	89%	Pass
76	737.301	16	4.18E-05	16	4.18E-05	100%	Pass
77	746.325	16	4.18E-05	15	3.92E-05	94%	Pass
78	755.349	16	4.18E-05	15	3.92E-05	94%	Pass
79	764.374	16	4.18E-05	15	3.92E-05	94%	Pass
80	773.398	16	4.18E-05	13	3.40E-05	81%	Pass
81	782.422	15	3.92E-05	13	3.40E-05	87%	Pass
82	791.447	15	3.92E-05	13	3.40E-05	87%	Pass
83	800.471	13	3.40E-05	12	3.14E-05	92%	Pass
84	809.495	13	3.40E-05	12	3.14E-05	92%	Pass
85	818.520	12	3.14E-05	12	3.14E-05	100%	Pass
86	827.544	12	3.14E-05	12	3.14E-05	100%	Pass
87	836.568	12	3.14E-05	12	3.14E-05	100%	Pass
88	845.593	11	2.87E-05	11	2.87E-05	100%	Pass
89	854.617	11	2.87E-05	11	2.87E-05	100%	Pass
90	863.641	11	2.87E-05	11	2.87E-05	100%	Pass
91	872.665	11	2.87E-05	10	2.61E-05	91%	Pass
92	881.690	11	2.87E-05	10	2.61E-05	91%	Pass
93	890.714	11	2.87E-05	10	2.61E-05	91%	Pass
94	899.738	11	2.87E-05	10	2.61E-05	91%	Pass
95	908.763	10	2.61E-05	9	2.35E-05	90%	Pass
96	917.787	9	2.35E-05	8	2.09E-05	89%	Pass
97	926.811	9	2.35E-05	7	1.83E-05	78%	Pass
98	935.836	9	2.35E-05	7	1.83E-05	78%	Pass
99	944.860	7	1.83E-05	5	1.31E-05	71%	Pass
100	953.884	5	1.31E-05	4	1.05E-05	80%	Pass

POC3

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	2.912	cfs
Q10 (Pre):	44.636	cfs
Ordinate #:	100	
Incremental Q (Pre):	0.41724	cfs
Total Hourly Data:	382751	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	2.912	959	2.51E-03	971	2.54E-03	101%	Pass
1	3.329	883	2.31E-03	885	2.31E-03	100%	Pass
2	3.746	812	2.12E-03	819	2.14E-03	101%	Pass
3	4.164	757	1.98E-03	757	1.98E-03	100%	Pass
4	4.581	696	1.82E-03	697	1.82E-03	100%	Pass
5	4.998	647	1.69E-03	643	1.68E-03	99%	Pass
6	5.415	599	1.56E-03	600	1.57E-03	100%	Pass
7	5.833	559	1.46E-03	558	1.46E-03	100%	Pass
8	6.250	519	1.36E-03	526	1.37E-03	101%	Pass
9	6.667	478	1.25E-03	477	1.25E-03	100%	Pass
10	7.084	450	1.18E-03	457	1.19E-03	102%	Pass
11	7.502	428	1.12E-03	432	1.13E-03	101%	Pass
12	7.919	409	1.07E-03	410	1.07E-03	100%	Pass
13	8.336	385	1.01E-03	385	1.01E-03	100%	Pass
14	8.753	363	9.48E-04	367	9.59E-04	101%	Pass
15	9.171	343	8.96E-04	348	9.09E-04	101%	Pass
16	9.588	322	8.41E-04	324	8.47E-04	101%	Pass
17	10.005	306	7.99E-04	305	7.97E-04	100%	Pass
18	10.422	288	7.52E-04	284	7.42E-04	99%	Pass
19	10.840	271	7.08E-04	267	6.98E-04	99%	Pass
20	11.257	254	6.64E-04	253	6.61E-04	100%	Pass
21	11.674	234	6.11E-04	232	6.06E-04	99%	Pass
22	12.091	220	5.75E-04	216	5.64E-04	98%	Pass
23	12.508	203	5.30E-04	197	5.15E-04	97%	Pass
24	12.926	189	4.94E-04	188	4.91E-04	99%	Pass
25	13.343	185	4.83E-04	182	4.76E-04	98%	Pass
26	13.760	175	4.57E-04	170	4.44E-04	97%	Pass
27	14.177	165	4.31E-04	160	4.18E-04	97%	Pass
28	14.595	156	4.08E-04	153	4.00E-04	98%	Pass
29	15.012	151	3.95E-04	149	3.89E-04	99%	Pass
30	15.429	144	3.76E-04	137	3.58E-04	95%	Pass

31	15.846	131	3.42E-04	129	3.37E-04	98%	Pass
32	16.264	127	3.32E-04	123	3.21E-04	97%	Pass
33	16.681	119	3.11E-04	115	3.00E-04	97%	Pass
34	17.098	114	2.98E-04	111	2.90E-04	97%	Pass
35	17.515	110	2.87E-04	106	2.77E-04	96%	Pass
36	17.933	104	2.72E-04	102	2.66E-04	98%	Pass
37	18.350	98	2.56E-04	94	2.46E-04	96%	Pass
38	18.767	89	2.33E-04	88	2.30E-04	99%	Pass
39	19.184	86	2.25E-04	85	2.22E-04	99%	Pass
40	19.602	83	2.17E-04	81	2.12E-04	98%	Pass
41	20.019	81	2.12E-04	81	2.12E-04	100%	Pass
42	20.436	79	2.06E-04	77	2.01E-04	97%	Pass
43	20.853	76	1.99E-04	77	2.01E-04	101%	Pass
44	21.271	75	1.96E-04	74	1.93E-04	99%	Pass
45	21.688	73	1.91E-04	73	1.91E-04	100%	Pass
46	22.105	72	1.88E-04	72	1.88E-04	100%	Pass
47	22.522	70	1.83E-04	69	1.80E-04	99%	Pass
48	22.940	67	1.75E-04	68	1.78E-04	101%	Pass
49	23.357	66	1.72E-04	67	1.75E-04	102%	Pass
50	23.774	66	1.72E-04	64	1.67E-04	97%	Pass
51	24.191	59	1.54E-04	57	1.49E-04	97%	Pass
52	24.609	55	1.44E-04	56	1.46E-04	102%	Pass
53	25.026	54	1.41E-04	55	1.44E-04	102%	Pass
54	25.443	51	1.33E-04	52	1.36E-04	102%	Pass
55	25.860	49	1.28E-04	48	1.25E-04	98%	Pass
56	26.278	46	1.20E-04	45	1.18E-04	98%	Pass
57	26.695	43	1.12E-04	43	1.12E-04	100%	Pass
58	27.112	42	1.10E-04	43	1.12E-04	102%	Pass
59	27.529	42	1.10E-04	41	1.07E-04	98%	Pass
60	27.947	41	1.07E-04	40	1.05E-04	98%	Pass
61	28.364	40	1.05E-04	37	9.67E-05	93%	Pass
62	28.781	35	9.14E-05	34	8.88E-05	97%	Pass
63	29.198	33	8.62E-05	33	8.62E-05	100%	Pass
64	29.616	33	8.62E-05	32	8.36E-05	97%	Pass
65	30.033	32	8.36E-05	31	8.10E-05	97%	Pass
66	30.450	31	8.10E-05	31	8.10E-05	100%	Pass
67	30.867	30	7.84E-05	31	8.10E-05	103%	Pass
68	31.284	30	7.84E-05	30	7.84E-05	100%	Pass
69	31.702	29	7.58E-05	29	7.58E-05	100%	Pass
70	32.119	28	7.32E-05	27	7.05E-05	96%	Pass
71	32.536	26	6.79E-05	27	7.05E-05	104%	Pass
72	32.953	26	6.79E-05	26	6.79E-05	100%	Pass
73	33.371	25	6.53E-05	26	6.79E-05	104%	Pass
74	33.788	25	6.53E-05	24	6.27E-05	96%	Pass

75	34.205	23	6.01E-05	22	5.75E-05	96%	Pass
76	34.622	21	5.49E-05	21	5.49E-05	100%	Pass
77	35.040	20	5.23E-05	20	5.23E-05	100%	Pass
78	35.457	19	4.96E-05	19	4.96E-05	100%	Pass
79	35.874	17	4.44E-05	18	4.70E-05	106%	Pass
80	36.291	17	4.44E-05	17	4.44E-05	100%	Pass
81	36.709	16	4.18E-05	17	4.44E-05	106%	Pass
82	37.126	16	4.18E-05	15	3.92E-05	94%	Pass
83	37.543	15	3.92E-05	14	3.66E-05	93%	Pass
84	37.960	13	3.40E-05	13	3.40E-05	100%	Pass
85	38.378	13	3.40E-05	13	3.40E-05	100%	Pass
86	38.795	13	3.40E-05	13	3.40E-05	100%	Pass
87	39.212	13	3.40E-05	13	3.40E-05	100%	Pass
88	39.629	13	3.40E-05	12	3.14E-05	92%	Pass
89	40.047	12	3.14E-05	12	3.14E-05	100%	Pass
90	40.464	12	3.14E-05	12	3.14E-05	100%	Pass
91	40.881	12	3.14E-05	11	2.87E-05	92%	Pass
92	41.298	12	3.14E-05	8	2.09E-05	67%	Pass
93	41.716	8	2.09E-05	8	2.09E-05	100%	Pass
94	42.133	8	2.09E-05	7	1.83E-05	88%	Pass
95	42.550	8	2.09E-05	5	1.31E-05	63%	Pass
96	42.967	6	1.57E-05	5	1.31E-05	83%	Pass
97	43.385	5	1.31E-05	5	1.31E-05	100%	Pass
98	43.802	5	1.31E-05	5	1.31E-05	100%	Pass
99	44.219	5	1.31E-05	5	1.31E-05	100%	Pass
100	44.636	5	1.31E-05	5	1.31E-05	100%	Pass

POC 4

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	45.643	cfs
Q10 (Pre):	1059.745	cfs
Ordinate #:	100	
Incremental Q (Pre):	10.14102	cfs
Total Hourly Data:	382751	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	45.643	1481	3.87E-03	1505	3.93E-03	102%	Pass
1	55.784	1320	3.45E-03	1341	3.50E-03	102%	Pass
2	65.925	1196	3.12E-03	1217	3.18E-03	102%	Pass
3	76.066	1073	2.80E-03	1087	2.84E-03	101%	Pass
4	86.207	977	2.55E-03	991	2.59E-03	101%	Pass
5	96.348	879	2.30E-03	890	2.33E-03	101%	Pass
6	106.489	800	2.09E-03	809	2.11E-03	101%	Pass
7	116.630	736	1.92E-03	745	1.95E-03	101%	Pass
8	126.771	677	1.77E-03	680	1.78E-03	100%	Pass
9	136.912	624	1.63E-03	624	1.63E-03	100%	Pass
10	147.053	580	1.52E-03	584	1.53E-03	101%	Pass
11	157.194	536	1.40E-03	535	1.40E-03	100%	Pass
12	167.335	496	1.30E-03	496	1.30E-03	100%	Pass
13	177.476	469	1.23E-03	467	1.22E-03	100%	Pass
14	187.617	437	1.14E-03	436	1.14E-03	100%	Pass
15	197.758	416	1.09E-03	417	1.09E-03	100%	Pass
16	207.899	387	1.01E-03	389	1.02E-03	101%	Pass
17	218.040	358	9.35E-04	362	9.46E-04	101%	Pass
18	228.181	336	8.78E-04	339	8.86E-04	101%	Pass
19	238.322	321	8.39E-04	327	8.54E-04	102%	Pass
20	248.463	306	7.99E-04	305	7.97E-04	100%	Pass
21	258.604	295	7.71E-04	296	7.73E-04	100%	Pass
22	268.745	285	7.45E-04	285	7.45E-04	100%	Pass
23	278.886	271	7.08E-04	272	7.11E-04	100%	Pass
24	289.028	247	6.45E-04	249	6.51E-04	101%	Pass
25	299.169	230	6.01E-04	230	6.01E-04	100%	Pass
26	309.310	219	5.72E-04	218	5.70E-04	100%	Pass
27	319.451	206	5.38E-04	205	5.36E-04	100%	Pass
28	329.592	196	5.12E-04	198	5.17E-04	101%	Pass
29	339.733	184	4.81E-04	186	4.86E-04	101%	Pass
30	349.874	176	4.60E-04	175	4.57E-04	99%	Pass
31	360.015	164	4.28E-04	166	4.34E-04	101%	Pass
32	370.156	157	4.10E-04	159	4.15E-04	101%	Pass
33	380.297	149	3.89E-04	152	3.97E-04	102%	Pass
34	390.438	141	3.68E-04	140	3.66E-04	99%	Pass
35	400.579	134	3.50E-04	133	3.47E-04	99%	Pass
36	410.720	130	3.40E-04	131	3.42E-04	101%	Pass
37	420.861	126	3.29E-04	125	3.27E-04	99%	Pass
38	431.002	119	3.11E-04	118	3.08E-04	99%	Pass
39	441.143	109	2.85E-04	109	2.85E-04	100%	Pass
40	451.284	105	2.74E-04	106	2.77E-04	101%	Pass
41	461.425	102	2.66E-04	102	2.66E-04	100%	Pass
42	471.566	101	2.64E-04	100	2.61E-04	99%	Pass
43	481.707	95	2.48E-04	93	2.43E-04	98%	Pass
44	491.848	92	2.40E-04	92	2.40E-04	100%	Pass
45	501.989	87	2.27E-04	87	2.27E-04	100%	Pass
46	512.130	82	2.14E-04	82	2.14E-04	100%	Pass
47	522.271	80	2.09E-04	79	2.06E-04	99%	Pass
48	532.412	76	1.99E-04	75	1.96E-04	99%	Pass
49	542.553	74	1.93E-04	74	1.93E-04	100%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
50	552.694	74	1.93E-04	71	1.85E-04	96%	Pass
51	562.835	68	1.78E-04	64	1.67E-04	94%	Pass
52	572.976	61	1.59E-04	61	1.59E-04	100%	Pass
53	583.117	60	1.57E-04	59	1.54E-04	98%	Pass
54	593.258	58	1.52E-04	57	1.49E-04	98%	Pass
55	603.399	57	1.49E-04	57	1.49E-04	100%	Pass
56	613.540	54	1.41E-04	53	1.38E-04	98%	Pass
57	623.681	52	1.36E-04	52	1.36E-04	100%	Pass
58	633.822	51	1.33E-04	51	1.33E-04	100%	Pass
59	643.963	49	1.28E-04	49	1.28E-04	100%	Pass
60	654.104	49	1.28E-04	49	1.28E-04	100%	Pass
61	664.245	49	1.28E-04	49	1.28E-04	100%	Pass
62	674.386	48	1.25E-04	46	1.20E-04	96%	Pass
63	684.527	45	1.18E-04	45	1.18E-04	100%	Pass
64	694.668	45	1.18E-04	45	1.18E-04	100%	Pass
65	704.809	44	1.15E-04	44	1.15E-04	100%	Pass
66	714.951	41	1.07E-04	40	1.05E-04	98%	Pass
67	725.092	40	1.05E-04	40	1.05E-04	100%	Pass
68	735.233	40	1.05E-04	40	1.05E-04	100%	Pass
69	745.374	39	1.02E-04	39	1.02E-04	100%	Pass
70	755.515	39	1.02E-04	38	9.93E-05	97%	Pass
71	765.656	36	9.41E-05	36	9.41E-05	100%	Pass
72	775.797	33	8.62E-05	33	8.62E-05	100%	Pass
73	785.938	32	8.36E-05	32	8.36E-05	100%	Pass
74	796.079	30	7.84E-05	30	7.84E-05	100%	Pass
75	806.220	29	7.58E-05	28	7.32E-05	97%	Pass
76	816.361	28	7.32E-05	27	7.05E-05	96%	Pass
77	826.502	27	7.05E-05	27	7.05E-05	100%	Pass
78	836.643	27	7.05E-05	26	6.79E-05	96%	Pass
79	846.784	24	6.27E-05	24	6.27E-05	100%	Pass
80	856.925	24	6.27E-05	23	6.01E-05	96%	Pass
81	867.066	21	5.49E-05	21	5.49E-05	100%	Pass
82	877.207	20	5.23E-05	20	5.23E-05	100%	Pass
83	887.348	20	5.23E-05	20	5.23E-05	100%	Pass
84	897.489	18	4.70E-05	18	4.70E-05	100%	Pass
85	907.630	17	4.44E-05	17	4.44E-05	100%	Pass
86	917.771	17	4.44E-05	17	4.44E-05	100%	Pass
87	927.912	16	4.18E-05	16	4.18E-05	100%	Pass
88	938.053	16	4.18E-05	15	3.92E-05	94%	Pass
89	948.194	15	3.92E-05	15	3.92E-05	100%	Pass
90	958.335	15	3.92E-05	14	3.66E-05	93%	Pass
91	968.476	14	3.66E-05	14	3.66E-05	100%	Pass
92	978.617	14	3.66E-05	14	3.66E-05	100%	Pass
93	988.758	14	3.66E-05	14	3.66E-05	100%	Pass
94	998.899	13	3.40E-05	13	3.40E-05	100%	Pass
95	1009.040	13	3.40E-05	13	3.40E-05	100%	Pass
96	1019.181	13	3.40E-05	12	3.14E-05	92%	Pass
97	1029.322	12	3.14E-05	12	3.14E-05	100%	Pass
98	1039.463	12	3.14E-05	11	2.87E-05	92%	Pass
99	1049.604	11	2.87E-05	11	2.87E-05	100%	Pass
100	1059.745	10	2.61E-05	10	2.61E-05	100%	Pass

POC5

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	6.728	cfs
Q10 (Pre):	111.122	cfs
Ordinate #:	100	
Incremental Q (Pre):	1.04394	cfs
Total Hourly Data:	382751	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	6.728	1046	2.73E-03	1047	2.74E-03	100%	Pass
1	7.772	973	2.54E-03	972	2.54E-03	100%	Pass
2	8.816	882	2.30E-03	875	2.29E-03	99%	Pass
3	9.860	813	2.12E-03	810	2.12E-03	100%	Pass
4	10.904	746	1.95E-03	741	1.94E-03	99%	Pass
5	11.948	685	1.79E-03	680	1.78E-03	99%	Pass
6	12.992	635	1.66E-03	628	1.64E-03	99%	Pass
7	14.035	590	1.54E-03	587	1.53E-03	99%	Pass
8	15.079	549	1.43E-03	546	1.43E-03	99%	Pass
9	16.123	519	1.36E-03	513	1.34E-03	99%	Pass
10	17.167	482	1.26E-03	475	1.24E-03	99%	Pass
11	18.211	445	1.16E-03	442	1.15E-03	99%	Pass
12	19.255	417	1.09E-03	408	1.07E-03	98%	Pass
13	20.299	387	1.01E-03	384	1.00E-03	99%	Pass
14	21.343	368	9.61E-04	360	9.41E-04	98%	Pass
15	22.387	342	8.94E-04	334	8.73E-04	98%	Pass
16	23.431	323	8.44E-04	317	8.28E-04	98%	Pass
17	24.475	298	7.79E-04	294	7.68E-04	99%	Pass
18	25.519	280	7.32E-04	277	7.24E-04	99%	Pass
19	26.563	264	6.90E-04	255	6.66E-04	97%	Pass
20	27.607	241	6.30E-04	234	6.11E-04	97%	Pass
21	28.651	226	5.90E-04	224	5.85E-04	99%	Pass
22	29.695	219	5.72E-04	217	5.67E-04	99%	Pass
23	30.739	207	5.41E-04	203	5.30E-04	98%	Pass
24	31.782	196	5.12E-04	191	4.99E-04	97%	Pass
25	32.826	180	4.70E-04	179	4.68E-04	99%	Pass
26	33.870	173	4.52E-04	168	4.39E-04	97%	Pass
27	34.914	165	4.31E-04	159	4.15E-04	96%	Pass
28	35.958	153	4.00E-04	148	3.87E-04	97%	Pass
29	37.002	144	3.76E-04	141	3.68E-04	98%	Pass
30	38.046	138	3.61E-04	135	3.53E-04	98%	Pass

31	39.090	132	3.45E-04	131	3.42E-04	99%	Pass
32	40.134	127	3.32E-04	125	3.27E-04	98%	Pass
33	41.178	118	3.08E-04	117	3.06E-04	99%	Pass
34	42.222	112	2.93E-04	110	2.87E-04	98%	Pass
35	43.266	108	2.82E-04	106	2.77E-04	98%	Pass
36	44.310	100	2.61E-04	98	2.56E-04	98%	Pass
37	45.354	96	2.51E-04	96	2.51E-04	100%	Pass
38	46.398	94	2.46E-04	89	2.33E-04	95%	Pass
39	47.442	87	2.27E-04	86	2.25E-04	99%	Pass
40	48.486	86	2.25E-04	84	2.19E-04	98%	Pass
41	49.529	79	2.06E-04	78	2.04E-04	99%	Pass
42	50.573	75	1.96E-04	74	1.93E-04	99%	Pass
43	51.617	71	1.85E-04	69	1.80E-04	97%	Pass
44	52.661	67	1.75E-04	67	1.75E-04	100%	Pass
45	53.705	65	1.70E-04	65	1.70E-04	100%	Pass
46	54.749	62	1.62E-04	61	1.59E-04	98%	Pass
47	55.793	58	1.52E-04	58	1.52E-04	100%	Pass
48	56.837	57	1.49E-04	56	1.46E-04	98%	Pass
49	57.881	56	1.46E-04	55	1.44E-04	98%	Pass
50	58.925	55	1.44E-04	53	1.38E-04	96%	Pass
51	59.969	53	1.38E-04	52	1.36E-04	98%	Pass
52	61.013	52	1.36E-04	49	1.28E-04	94%	Pass
53	62.057	49	1.28E-04	48	1.25E-04	98%	Pass
54	63.101	46	1.20E-04	46	1.20E-04	100%	Pass
55	64.145	46	1.20E-04	44	1.15E-04	96%	Pass
56	65.189	43	1.12E-04	42	1.10E-04	98%	Pass
57	66.233	41	1.07E-04	40	1.05E-04	98%	Pass
58	67.276	37	9.67E-05	38	9.93E-05	103%	Pass
59	68.320	36	9.41E-05	34	8.88E-05	94%	Pass
60	69.364	33	8.62E-05	33	8.62E-05	100%	Pass
61	70.408	33	8.62E-05	33	8.62E-05	100%	Pass
62	71.452	33	8.62E-05	32	8.36E-05	97%	Pass
63	72.496	31	8.10E-05	30	7.84E-05	97%	Pass
64	73.540	29	7.58E-05	29	7.58E-05	100%	Pass
65	74.584	27	7.05E-05	27	7.05E-05	100%	Pass
66	75.628	26	6.79E-05	26	6.79E-05	100%	Pass
67	76.672	26	6.79E-05	26	6.79E-05	100%	Pass
68	77.716	25	6.53E-05	25	6.53E-05	100%	Pass
69	78.760	23	6.01E-05	24	6.27E-05	104%	Pass
70	79.804	23	6.01E-05	23	6.01E-05	100%	Pass
71	80.848	21	5.49E-05	21	5.49E-05	100%	Pass
72	81.892	21	5.49E-05	20	5.23E-05	95%	Pass
73	82.936	19	4.96E-05	19	4.96E-05	100%	Pass
74	83.980	19	4.96E-05	19	4.96E-05	100%	Pass

75	85.023	19	4.96E-05	19	4.96E-05	100%	Pass
76	86.067	18	4.70E-05	18	4.70E-05	100%	Pass
77	87.111	18	4.70E-05	18	4.70E-05	100%	Pass
78	88.155	18	4.70E-05	18	4.70E-05	100%	Pass
79	89.199	18	4.70E-05	18	4.70E-05	100%	Pass
80	90.243	18	4.70E-05	18	4.70E-05	100%	Pass
81	91.287	17	4.44E-05	16	4.18E-05	94%	Pass
82	92.331	16	4.18E-05	15	3.92E-05	94%	Pass
83	93.375	15	3.92E-05	15	3.92E-05	100%	Pass
84	94.419	15	3.92E-05	15	3.92E-05	100%	Pass
85	95.463	14	3.66E-05	13	3.40E-05	93%	Pass
86	96.507	12	3.14E-05	12	3.14E-05	100%	Pass
87	97.551	12	3.14E-05	12	3.14E-05	100%	Pass
88	98.595	11	2.87E-05	11	2.87E-05	100%	Pass
89	99.639	10	2.61E-05	10	2.61E-05	100%	Pass
90	100.683	10	2.61E-05	9	2.35E-05	90%	Pass
91	101.727	9	2.35E-05	9	2.35E-05	100%	Pass
92	102.770	9	2.35E-05	9	2.35E-05	100%	Pass
93	103.814	9	2.35E-05	9	2.35E-05	100%	Pass
94	104.858	9	2.35E-05	9	2.35E-05	100%	Pass
95	105.902	9	2.35E-05	8	2.09E-05	89%	Pass
96	106.946	7	1.83E-05	6	1.57E-05	86%	Pass
97	107.990	6	1.57E-05	6	1.57E-05	100%	Pass
98	109.034	6	1.57E-05	6	1.57E-05	100%	Pass
99	110.078	5	1.31E-05	5	1.31E-05	100%	Pass
100	111.122	4	1.05E-05	4	1.05E-05	100%	Pass

ATTACHMENT 2 - Elevation vs. Area Curves vs. Discharge Curves to be used in SWMM

Elevation vs. Area

For the portion of the flow diverted in the LID Control to the receiving detention basin, a pond is used to route the hydrographs. The elevation vs area curve in the model is calculated in Excel and imported into the model at a 0.1 ft interval range.

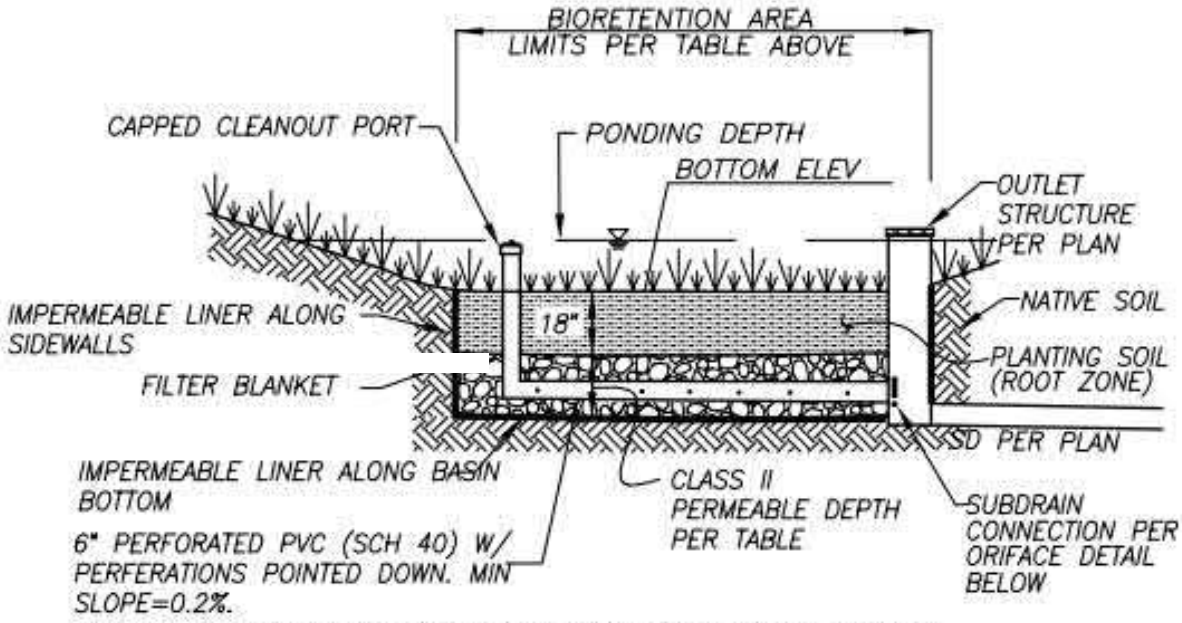
Elevation vs Discharge

The total discharge peak flow is imported from an Excel spreadsheet that calculated the elevation vs discharge of the multiple outlet system.

The orifices have been selected to maximize their size while still restricting flows to conform to the required 10% of the Q2 event flow as mandated in the Final Hydromodification Management Plan by Brown & Caldwell, dated March 2011. While we acknowledge that these orifices are small, to increase the size of these outlets would impact the basins' ability to restrict flows beneath the HMP thresholds, thus preventing the BMP from conformance with HMP requirements.

In order to prevent blockage of the orifices, a debris screen will be fitted to the base invert of the lower orifices located within the detention basin. Regular maintenance of the riser and orifices will be performed to ensure potential blockages are minimized. A detail of the orifice and riser structure is provided in Attachment 5 of this attachment. The stage-storage and stage-discharge calculations have been provided on the following pages.

ATTACHMENT 3 – Biofiltration Details



TYPICAL BIORETENTION SECTION

LIMITS @ TOE OF SLOPE NTS

ATTACHMENT 4 - SWMM Input Data (Existing and Proposed Models)

POC1 - EX	
Soil Type	D
Area (AC)	403.9
Flowpath (ft)	2664
Width (ft)	2664
% Slope	36
%Impervious	0
Suction Head (in)	9
Conductivity (in/hr)	0.025
Initial Deficit	0.33

POC2 - EX	
Soil Type	D
Area (AC)	2005.1
Flowpath (ft)	20534
Width (ft)	20534
% Slope	36
%Impervious	0
Suction Head (in)	9
Conductivity (in/hr)	0.025
Initial Deficit	0.33

POC3 - EX	
Soil Type	D
Area (AC)	76.0
Flowpath (ft)	3612
Width (ft)	3612
% Slope	20.3
%Impervious	0
Suction Head (in)	9
Conductivity (in/hr)	0.025
Initial Deficit	0.33

POC4 - EX	
Soil Type	D
Area (AC)	3440
Flowpath (ft)	24743
Width (ft)	24743
% Slope	6
%Impervious	0
Suction Head (in)	9
Conductivity (in/hr)	0.025
Initial Deficit	0.30

POC5 - EX	
Soil Type	D
Area (AC)	212
Flowpath (ft)	4766
Width (ft)	4766
% Slope	17.2
%Impervious	17.2
Suction Head (in)	9
Conductivity (in/hr)	0.025
Initial Deficit	0.33

POC 5 - PR											
	DMA O-O	BF-O-O	DMA O-P	BF-O-P	DMA O-Q	BF-O-Q	DMA O-R	BF-O-R	DMA O-S	BF-O-S	Bypass
Soil Type	D	A	D	A	D	A	D	A	D	A	D
Area (AC)	1.2	0.05	0.53	0.01	0.263	0.03	0.24	0.02	0.41	0.03	208.8
Flowpath (ft)	1547	50	486	50	222	50	203	50	558	50	4766
Width (ft)	1547	50	486	50	222	50	203	50	558	50	4766
% Slope	2.2	0	1.6	0	1	0	1	0	2.8	0	17.2
%Impervious	95	0	95	0	95	0	95	0	95	0	3.2
Suction Head (in)	9	1.5	9	1.5	9	1.5	9	1.5	9	1.5	9
Conductivity (in/hr)	0.025	0.3	0.025	0.3	0.025	0.025	0.025	0.3	0.025	0.025	0.025
Initial Deficit	0.33	0.3	0.33	0.3	0.33	0.3	0.33	0.30	0.33	0.3	0.33

ATTACHMENT 5 - SWMM Screens and Explanation of Significant Variables

Attached, the reader can see the screens associated with the EPA-SWMM Model in both pre-development and post-development conditions. Each portion, i.e., sub-catchments, outfalls, storage units, LID controls for the bio-retention cells, ponding on top of the bio-retention (modeled as a storage unit), weir as a discharge, and outfalls (point of compliance), are also shown.

Variables for modeling are associated with typical recommended values by the EPA-SWMM model, typical values found in the San Diego County BMP Design Manual. Recommended values for the SWMM model have been attained from the interim Orange County criteria established for their SWMM calibration. Currently, no recommended values have been established by the San Diego County HMP Permit for the SWMM Model.

Soil characteristics of the existing soils were determined from the USGS sources.

Some values incorporated within the SWMM model have been determined from the professional experience of H&A using conservative assumption that have a tendency to increase the size of the needed BMP and also generate a long-term runoff as a percentage of rainfall similar to those measured in gage stations in Southern California by the USGS.

Description of model parameters and assumptions:

N-Imperv – Manning's N for impervious surfaces

0.012 (typical)

N-Perv – Manning's N for pervious surfaces

0.05 (typical)

Dstore-Imperv – Depth of depression storage on impervious area (in)

0.02 (typical)

Dstore-Perv – Depth of depression storage on pervious area (in)

0.1 (typical)

%Zero-Imperv – Percentage of impervious area with no depression storage (%)

25 (typical)

Suction Head – Soil capillary suction head (in)

Conductivity – Soil saturated hydraulic comfuctivity (in/hr)

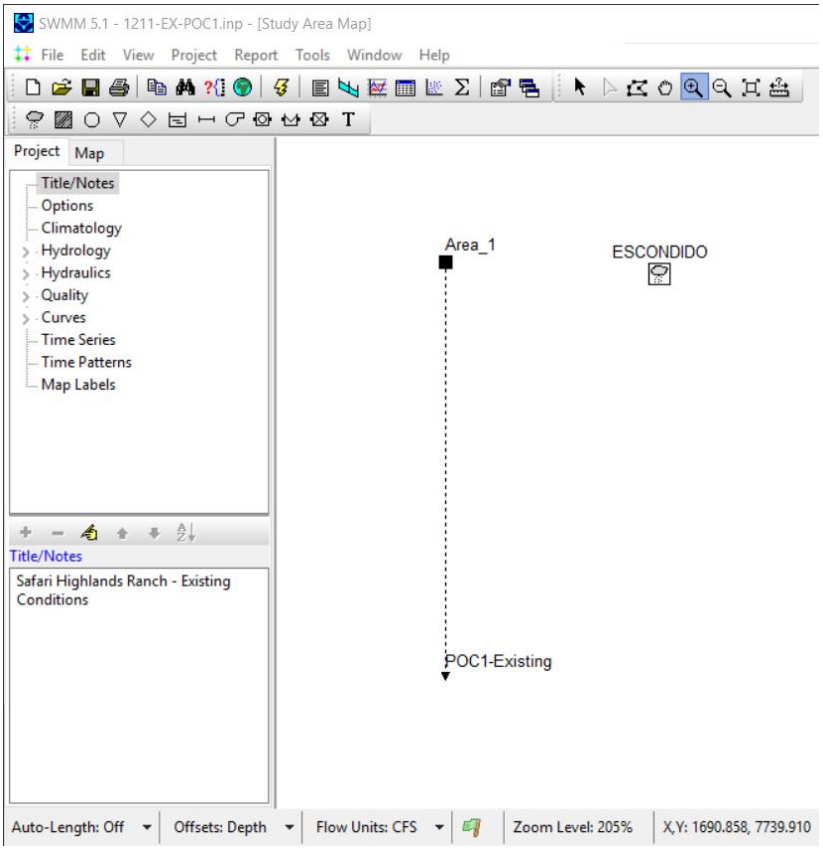
-75% of these values if subcatchment is graded/compacted

Initial Deficit – Initial moisture deficit (fraction)

Soil Type	Suction Head	Conductivity	Initial Deficit
A	1.5	0.3	0.30
B	3	0.2	0.31
C	6	0.1	0.32
D	9	0.025	0.33

NOTE : These values are based on the County of San Diego BMP Design Manual, Appendix G for SWMM and recommended values for the EPA SWMM program.

POC 1 – Pre-Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	VOLUME
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC1-Existing

Property	Value
Name	POC1-Existing
X-Coordinate	1081.360
Y-Coordinate	7778.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

Subcatchment outflow is routed onto (leave blank if not applicable)

Subcatchment Area_1

Property	Value
Name	Area_1
X-Coordinate	1081.360
Y-Coordinate	8095.894
Description	
Tag	
Rain Gage	OCEANSIDE
Outlet	POC1-Existing
Area	403.9
Width	2664
% Slope	36
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.02
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Average surface slope (%)

Infiltration Editor

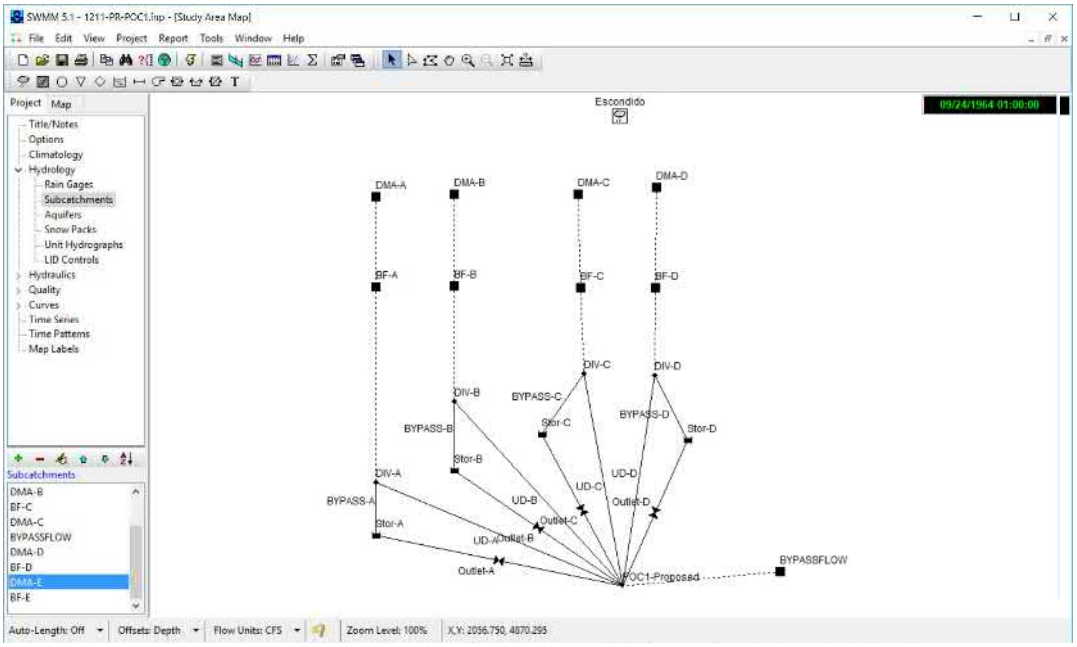
Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	.3

Soil capillary suction head (inches or mm)

OK Cancel Help

POC 1 – Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

Type of rainfall data recorded at rain gage

Outfall POC1-Proposed

Property	Value
Name	POC1-Proposed
X-Coordinate	1481.291
Y-Coordinate	4369.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment DMA-A

Property	Value
Name	DMA-A
X-Coordinate	922.814
Y-Coordinate	5202.933
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-A
Area	19.2
Width	215
% Slope	2
% Imperv	57
N-Imperv	.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-B

Property	Value
Name	DMA-B
X-Coordinate	1096.832
Y-Coordinate	5208.986
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-B
Area	27.5
Width	200
% Slope	5
% Imperv	37
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-C

Property	Value
Name	DMA-C
X-Coordinate	1373.747
Y-Coordinate	5215.038
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-C
Area	26.7
Width	205
% Slope	6
% Imperv	36
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-D

Property	Value
Name	DMA-D
X-Coordinate	1551.751
Y-Coordinate	5223.472
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-D
Area	29.5
Width	500
% Slope	4
% Imperv	32
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment BYPASSFLOW

Property	Value
Name	BYPASSFLOW
X-Coordinate	1828.238
Y-Coordinate	4362.884
Description	
Tag	
Rain Gage	Escondido
Outlet	POC1-Proposed
Area	301
Width	9769
% Slope	36
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Conduit UD-A

Property	Value
Name	UD-A
Inlet Node	DIV-A
Outlet Node	POC1-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit UD-B

Property	Value
Name	UD-B
Inlet Node	DIV-B
Outlet Node	POC1-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit UD-C

Property	Value
Name	UD-C
Inlet Node	DIV-C
Outlet Node	POC1-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

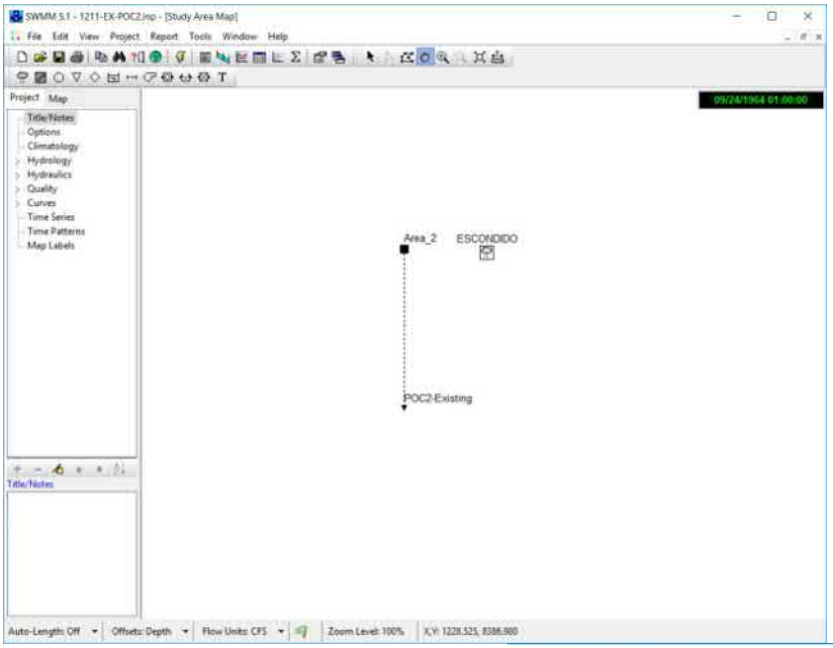
Culvert type code (leave blank for no culvert)

Conduit UD-D

Property	Value
Name	UD-D
Inlet Node	DIV-D
Outlet Node	POC1-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

POC 2 – Pre-Developed Condition



Rain Gage OCEANSIDE

Property	Value
Name	OCEANSIDE
X-Coordinate	1247.258
Y-Coordinate	8085.322
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	OCEANSIDE-RAIN
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

Outfall POC2-Existing

Property	Value
Name	POC2-Existing
X-Coordinate	1081.360
Y-Coordinate	7778.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment Area_2

Property	Value
Name	Area_2
X-Coordinate	1081.360
Y-Coordinate	8095.894
Description	
Tag	
Rain Gage	OCEANSIDE
Outlet	POC2-Existing
Area	2005.1
Width	20534
% Slope	36
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.02
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

User-assigned name of subcatchment

Infiltration Editor

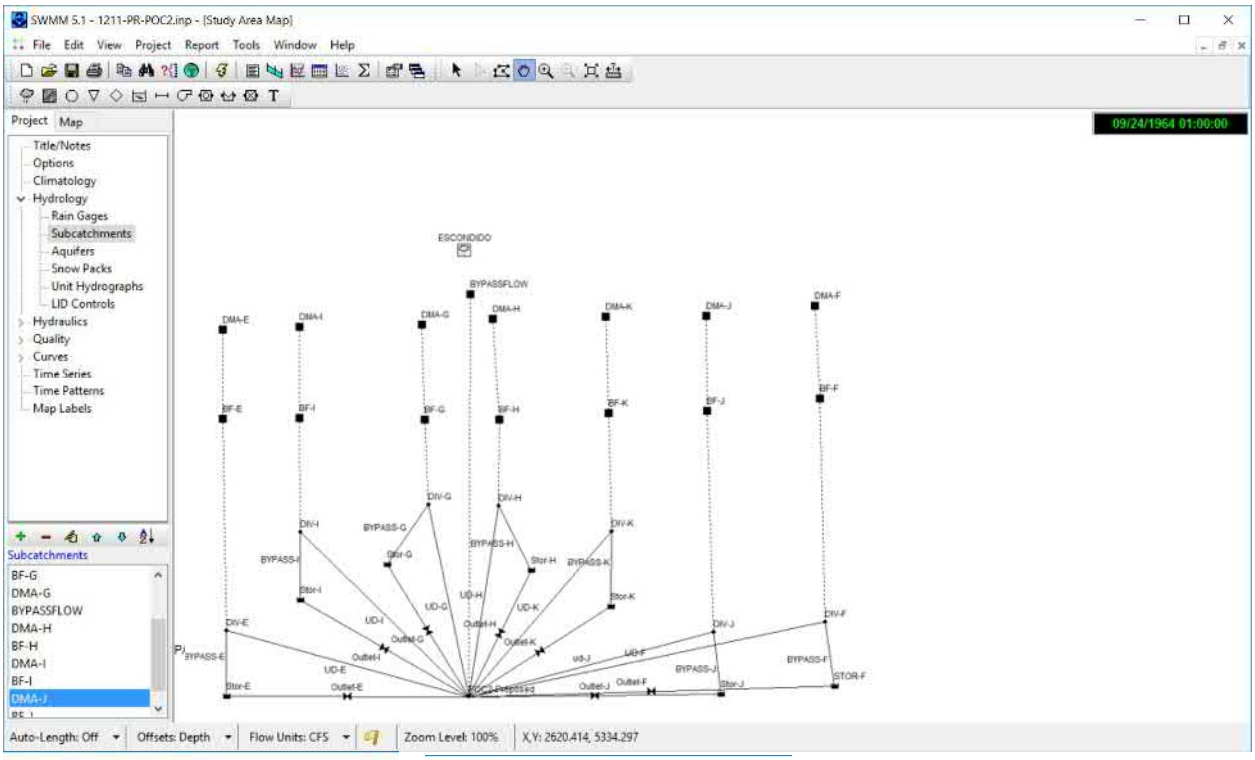
Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	.3

Soil capillary suction head (inches or mm)

OK Cancel Help

POC 2 – Developed Condition



Rain Gage ESCONDIDO

Property	Value
Name	ESCONDIDO
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC2-Proposed

Property	Value
Name	POC2-Proposed
X-Coordinate	1481.291
Y-Coordinate	4369.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment DMA-F

Property	Value
Name	DMA-F
X-Coordinate	2266.533
Y-Coordinate	5257.408
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-F
Area	14.3
Width	500
% Slope	15
% Imperv	42
N-Imperv	0.02
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-E

Property	Value
Name	DMA-E
X-Coordinate	922.814
Y-Coordinate	5202.933
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-E
Area	42.7
Width	2057
% Slope	8
% Imperv	42
N-Imperv	.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	27
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-G

Property	Value
Name	DMA-G
X-Coordinate	1373.747
Y-Coordinate	5215.038
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-G
Area	10
Width	6532
% Slope	10
% Imperv	41
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-H

Property	Value
Name	DMA-H
X-Coordinate	1534.146
Y-Coordinate	5227.144
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-H
Area	62.9
Width	1705
% Slope	6
% Imperv	41
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

nfiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
uction Head	9
onductivity	0.025
nitial Deficit	0.3

oil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-I

Property	Value
Name	DMA-I
X-Coordinate	1791.389
Y-Coordinate	5233.197
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-I
Area	21.5
Width	1193
% Slope	8
% Imperv	34
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-J

Property	Value
Name	DMA-J
X-Coordinate	2019.882
Y-Coordinate	5234.710
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-J
Area	77.8
Width	500
% Slope	15
% Imperv	30
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-K

Property	Value
Name	DMA-K
X-Coordinate	1791.389
Y-Coordinate	5233.197
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	BF-K
Area	9.0
Width	2762
% Slope	19
% Imperv	57
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	35
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment BYPASSFLOW

Property	Value
Name	BYPASSFLOW
X-Coordinate	1483.397
Y-Coordinate	5283.420
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	POC2-Proposed
Area	1753.1
Width	20534
% Slope	36
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Soil capillary suction head (inches or mm)

OK Cancel Help

Conduit UD-K

Property	Value
Name	UD-K
Inlet Node	DIV-K
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

User-assigned name of Conduit

Conduit UD-F

Property	Value
Name	UD-F
Inlet Node	DIV-F
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	400
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit UD-G

Property	Value
Name	UD-G
Inlet Node	DIV-G
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit UD-H

Property	Value
Name	UD-H
Inlet Node	DIV-H
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit UD-I

Property	Value
Name	UD-I
Inlet Node	DIV-I
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Conduit ud-J

Property	Value
Name	ud-J
Inlet Node	DIV-J
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	1
Length	400
Roughness	0.01
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

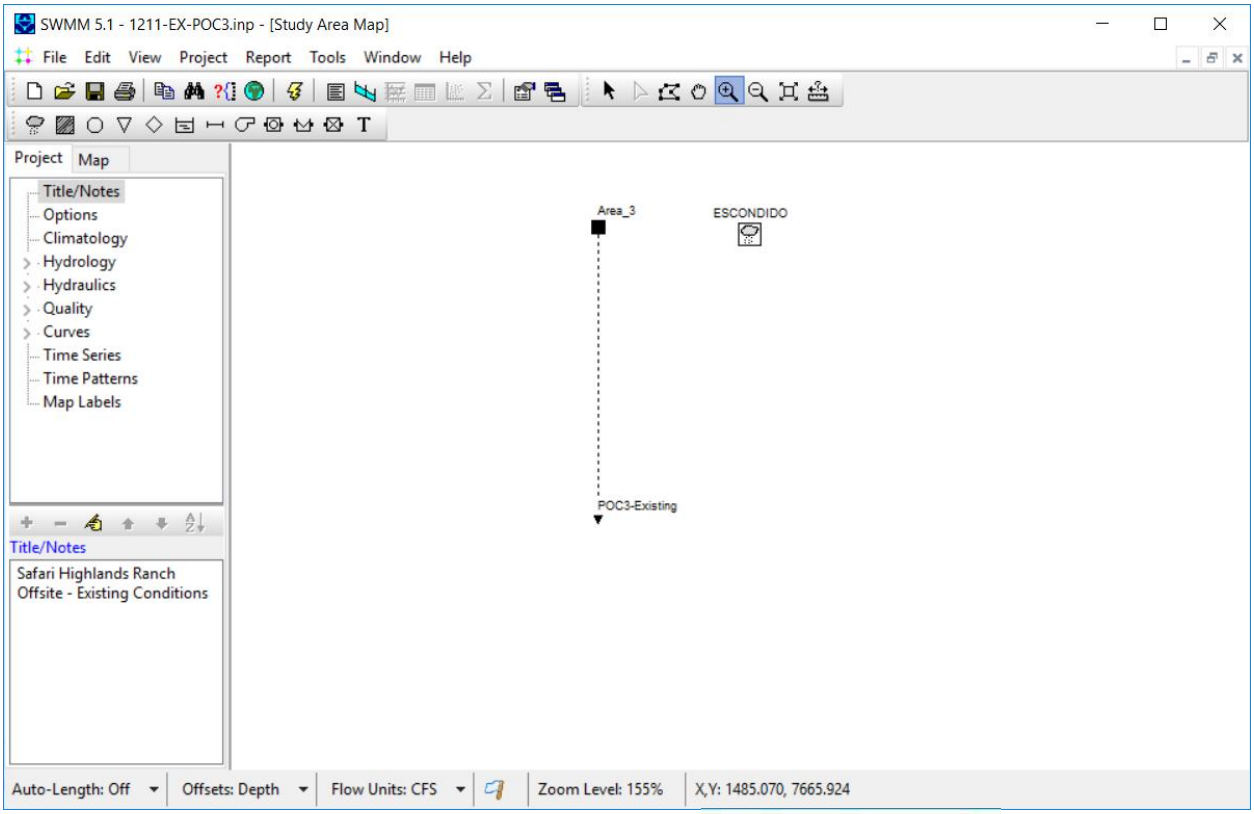
Culvert type code (leave blank for no culvert)

Conduit UD-E

Property	Value
Name	UD-E
Inlet Node	DIV-E
Outlet Node	POC2-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

POC 3 – Pre-Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	VOLUME
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC3-Existing

Property	Value
Name	POC3-Existing
X-Coordinate	1081.360
Y-Coordinate	7778.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment Area_3

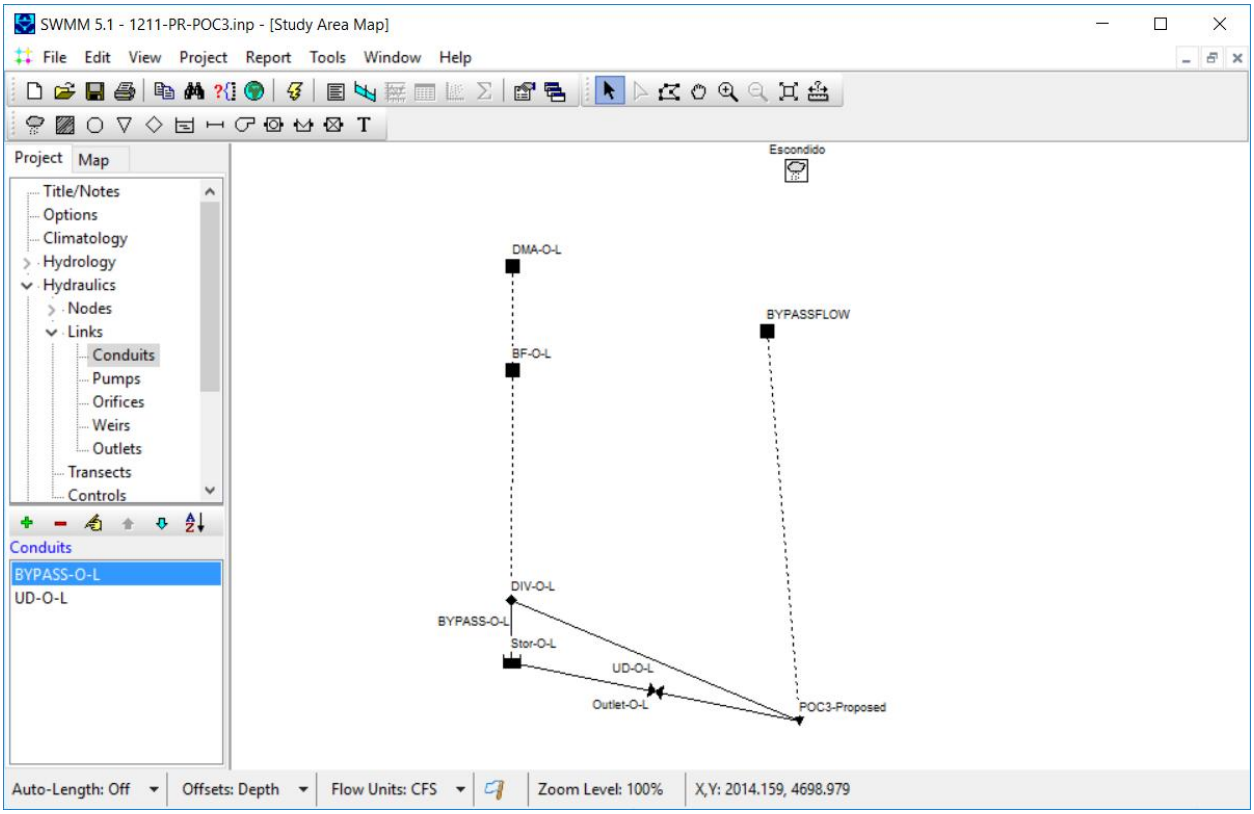
Property	Value
Name	Area_3
X-Coordinate	1081.360
Y-Coordinate	8095.894
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	POC3-Existing
Area	76.0
Width	3612
% Slope	20.3
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	.33

POC 3 – Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

Type of rainfall data recorded at rain gage

Outfall POC3-Proposed

Property	Value
Name	POC3-Proposed
X-Coordinate	1474.848
Y-Coordinate	4329.925
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment DMA-O-L

Property	Value
Name	DMA-O-L
X-Coordinate	922.814
Y-Coordinate	5202.933
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-1
Area	1.4
Width	2066
% Slope	14.4
% Imperv	95
N-Imperv	.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	0.33

Subcatchment BYPASSFLOW

Property	Value
Name	BYPASSFLOW
X-Coordinate	1411.714
Y-Coordinate	5076.785
Description	
Tag	
Rain Gage	Escondido
Outlet	POC3-Proposed
Area	74.8
Width	3612
% Slope	20.3
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.33

Storage Unit Stor-O-L

Property	Value
Name	Stor-O-L
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-L

Conduit UD-O-L

Property	Value
Name	UD-O-L
Inlet Node	DIV-O-L
Outlet Node	POC3-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coeff.	0
Exit Loss Coeff.	0
Avg. Loss Coeff.	0
Seepage Loss Rate	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Subcatchment BF-O-L

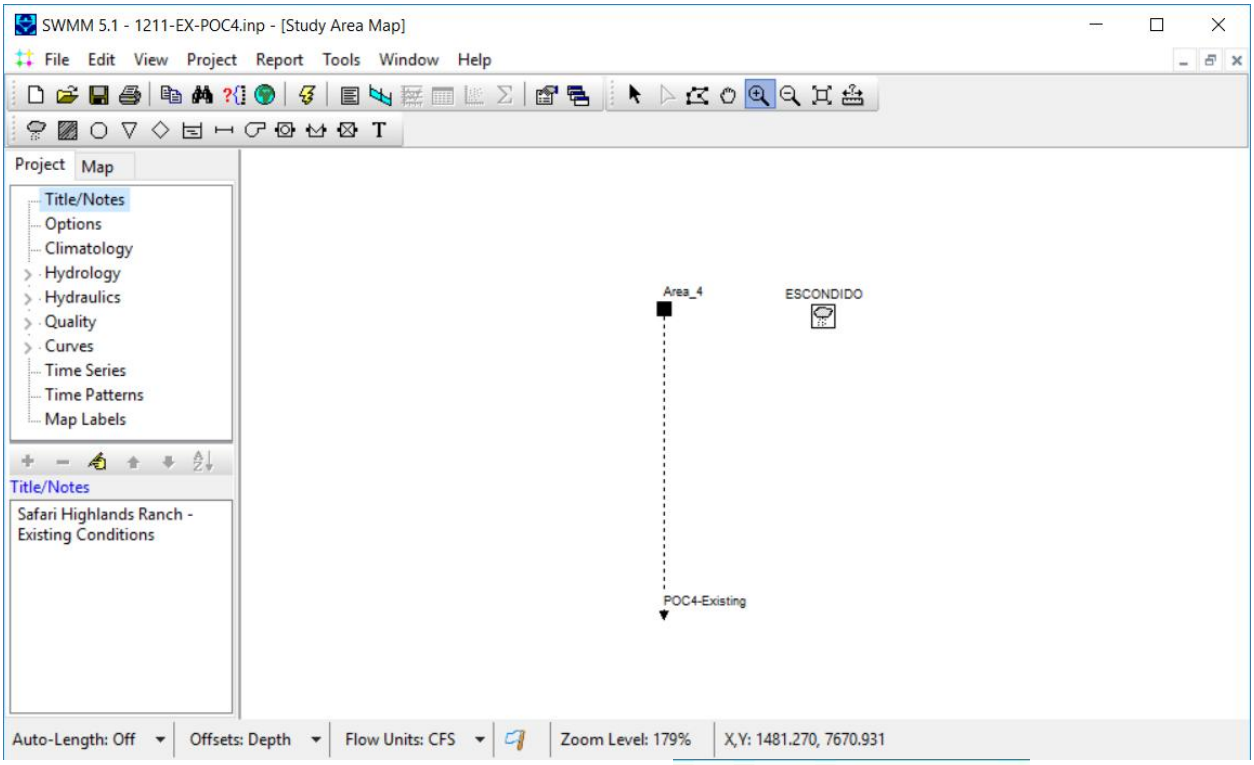
Property	Value
Name	BF-O-L
X-Coordinate	922.814
Y-Coordinate	5001.678
Description	
Tag	
Rain Gage	Escondido
Outlet	DIV-O-L
Area	0.0925
Width	50
% Slope	0.001
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	.3
Initial Deficit	.3

POC 4 – Pre-Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	VOLUME
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC4-Existing

Property	Value
Name	POC4-Existing
X-Coordinate	1081.360
Y-Coordinate	7778.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Out	
Series Name	*

Click to specify any pollutant removal supplied at the outfall

Subcatchment Area_4

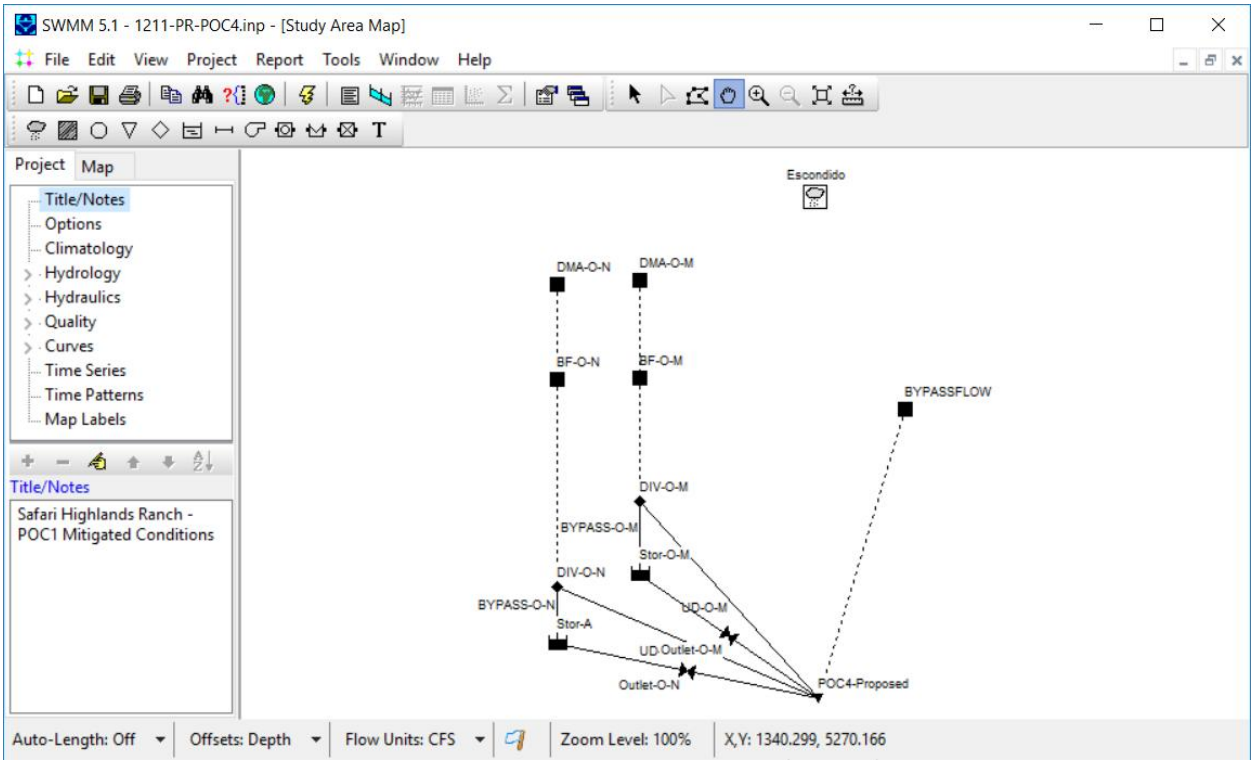
Property	Value
Name	Area_4
X-Coordinate	1081.360
Y-Coordinate	8095.894
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	POC4-Existing
Area	3440
Width	24743
% Slope	6
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routin	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	.33

POC 4 – Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

Type of rainfall data recorded at rain gage

Conduit UD-O-N

Property	Value
Name	UD-O-N
Inlet Node	DIV-O-N
Outlet Node	POC4-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coef	0
Exit Loss Coeff.	0
Avg. Loss Coeff	0
Seepage Loss R	0
Flap Gate	NO
Culvert Code	

Culvert type code (leave blank for no culvert)

Subcatchment DMA-O-N

Property	Value
Name	DMA-O-N
X-Coordinate	922.814
Y-Coordinate	5202.933
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-O-N
Area	15
Width	2441
% Slope	20
% Imperv	19
N-Imperv	.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routin	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	0.33

Subcatchment DMA-O-M

Property	Value
Name	DMA-O-M
X-Coordinate	1096.832
Y-Coordinate	5208.986
Description	
Tag	
Rain Gage	Escondido
Outlet	BF-O-M
Area	4.6
Width	5212
% Slope	12.7
% Imperv	76
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routin	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.33

Subcatchment BYPASSFLOW

Property	Value
Name	BYPASSFLOW
X-Coordinate	1658.347
Y-Coordinate	4937.494
Description	
Tag	
Rain Gage	Escondido
Outlet	POC4-Proposed
Area	3420.4
Width	24743
% Slope	6
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.10
%Zero-Imperv	25
Subarea Routin	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.33

Storage Unit Stor-O-N

Property	Value
Name	Stor-O-N
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Cur	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-N

User-assigned name of storage unit

Storage Unit Stor-O-M

Property	Value
Name	Stor-O-M
X-Coordinate	1098.345
Y-Coordinate	4590.088
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	9748
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Cur	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-M

User-assigned name of storage unit

Conduit UD-O-N

Property	Value
Name	UD-O-N
Inlet Node	DIV-O-N
Outlet Node	POC4-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coef	0
Exit Loss Coeff.	0
Avg. Loss Coeff	0
Seepage Loss R	0
Flap Gate	NO
Culvert Code	

User-assigned name of Conduit

Conduit UD-O-M

Property	Value
Name	UD-O-M
Inlet Node	DIV-O-M
Outlet Node	POC4-Proposed
Description	
Tag	
Shape	CIRCULAR
Max. Depth	0.5
Length	200
Roughness	0.013
Inlet Offset	0
Outlet Offset	0
Initial Flow	0
Maximum Flow	0
Entry Loss Coef	0
Exit Loss Coeff.	0
Avg. Loss Coeff	0
Seepage Loss R	0
Flap Gate	NO
Culvert Code	

User-assigned name of Conduit

Subcatchment BF-O-N

Property	Value
Name	BF-O-N
X-Coordinate	922.814
Y-Coordinate	5001.678
Description	
Tag	
Rain Gage	Escondido
Outlet	DIV-O-N
Area	.251
Width	50
% Slope	0.001
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	.3
Initial Deficit	.3

Subcatchment BF-O-M

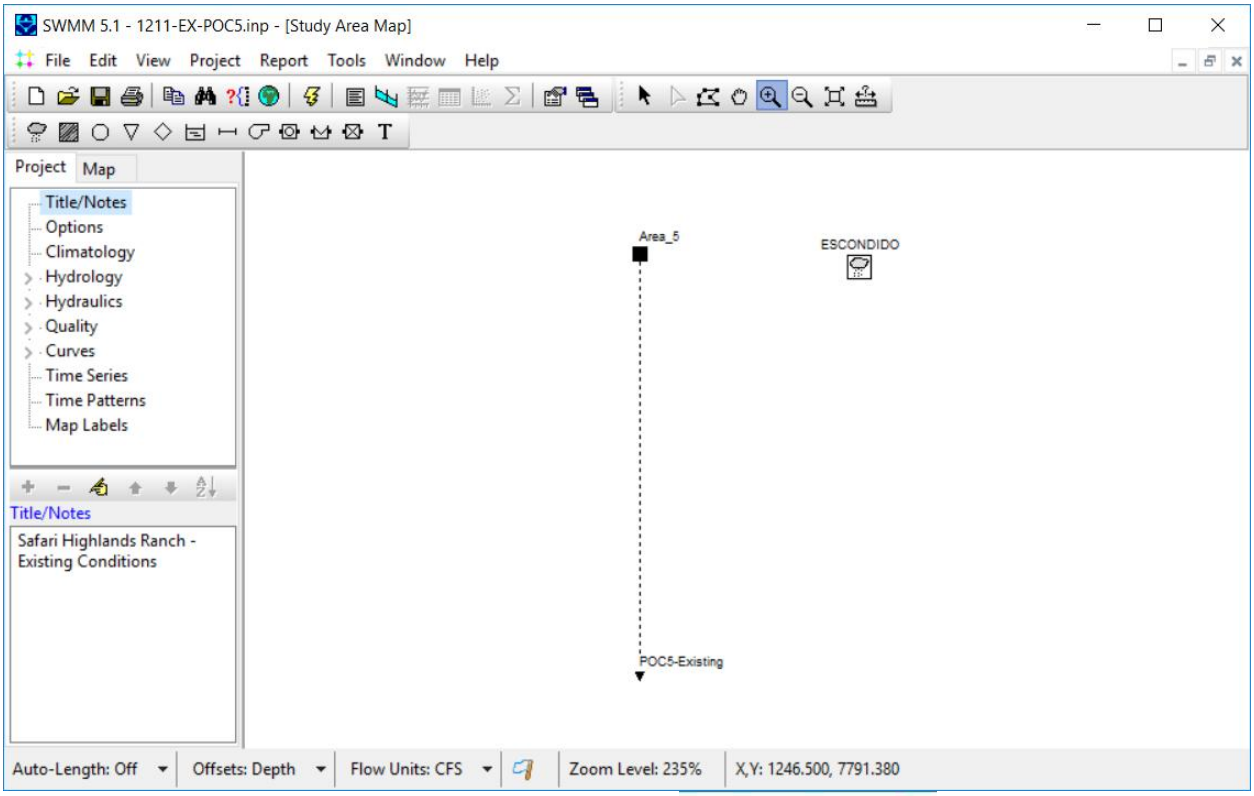
Property	Value
Name	BF-O-M
X-Coordinate	1096.832
Y-Coordinate	5003.191
Description	
Tag	
Rain Gage	Escondido
Outlet	DIV-O-M
Area	.229
Width	35
% Slope	0.001
% Imperv	0
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	.05
Dstore-Perv	.10
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE

Infiltration Editor

Infiltration Method	GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	.3
Initial Deficit	.30

POC 5 – Pre-Developed Condition



Rain Gage Escondido

Property	Value
Name	Escondido
X-Coordinate	1472.076
Y-Coordinate	5381.329
Description	
Tag	
Rain Format	VOLUME
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	ESCONDIDO-RAINFALL
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC5-Existing

Property	Value
Name	POC5-Existing
X-Coordinate	1081.360
Y-Coordinate	7778.736
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Route To	
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Out	
Series Name	*

Click to specify any pollutant removal supplied at the outfall

Subcatchment Area_5

Property	Value
Name	Area_5
X-Coordinate	1081.360
Y-Coordinate	8095.894
Description	
Tag	
Rain Gage	ESCONDIDO
Outlet	POC5-Existing
Area	212
Width	4766
% Slope	17.2
% Imperv	3.2
N-Imperv	0.012
N-Perv	0.15
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routin	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Name of node or another subcatchment that receives runoff

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	.025
Initial Deficit	.33

Soil capillary suction head (inches or mm)

OK Cancel Help

EXPLANATION OF SELECTED VARIABLES

Parameters for the pre- and post-developed models include soil type D in accordance with the San Diego County Hydrology Manual and the USGS Soil Survey Map (attached at the end of this appendix). Suction head, conductivity and initial deficit corresponds to average values expected for the soil types, according to sources consulted, professional experience, and approximate values obtained from the BMP Design Manual.

H&A selected infiltration values, such that the percentage of total precipitation that becomes runoff, is realistic for soil type D and slightly smaller than measured values for Southern California watersheds.

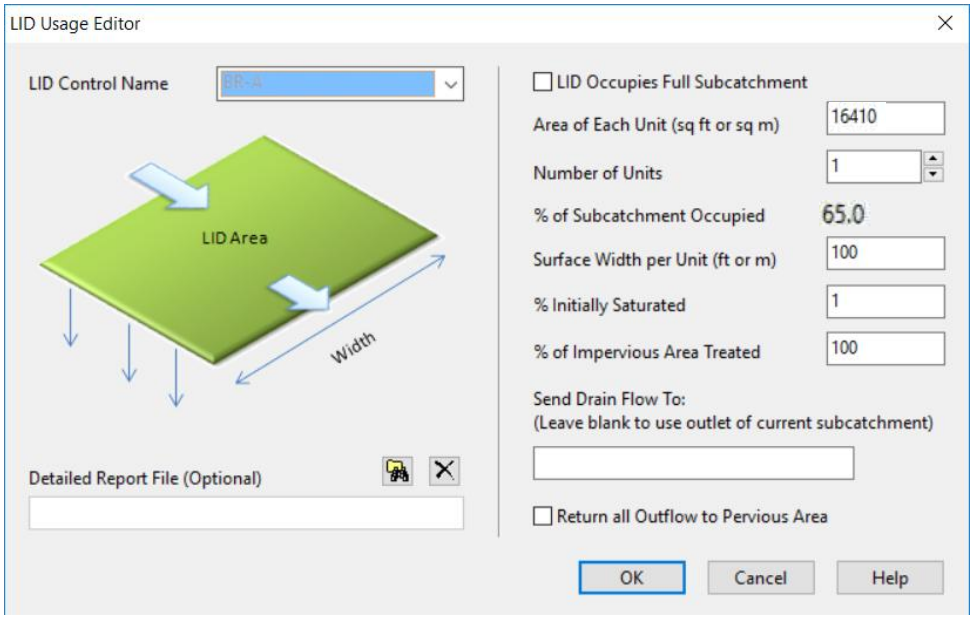
Selection of a Kinematic Approach: As the continuous model is based on hourly rainfall, and the time of concentration for the pre-development and post-development conditions is significantly smaller than 60 minutes, precise routing of the flows through the impervious surfaces, the underdrain pipe system, and the discharge pipe was considered unnecessary. The truncation error of the precipitation into hourly steps is much more significant than the precise routing in a system where the time of concentration is much smaller than 1 hour.

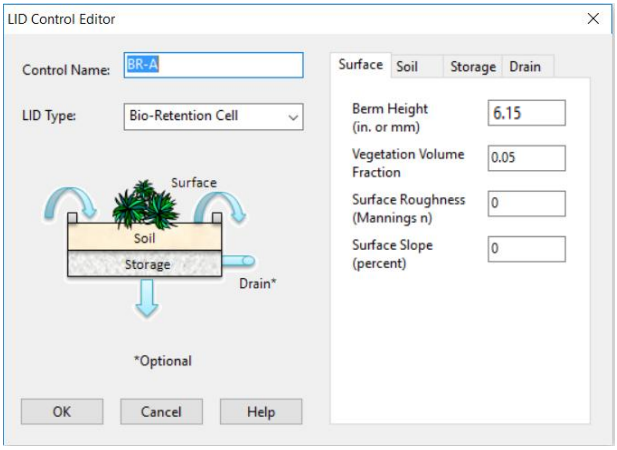
Sub-catchments BF-A, BF-B, BF-C, BF-D, BF-E, BF-F, BF-K, BF-G, BF-H, BF-I, BF-J, BF-O-L, BF-OM, BF-ON, BF-O-P, BF-O-Q, BF-O-R, BF-O-S.

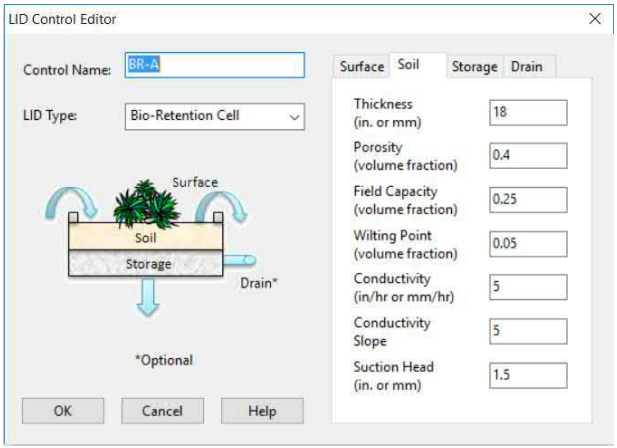
The area of Prop-X + BF-X must be equal to the area of the development tributary to that particular bio-retention facility. Five (5) decimal places were given regarding the areas of the biofiltration to insure that the area used by the program for the LID subroutine corresponds exactly with these tributaries.

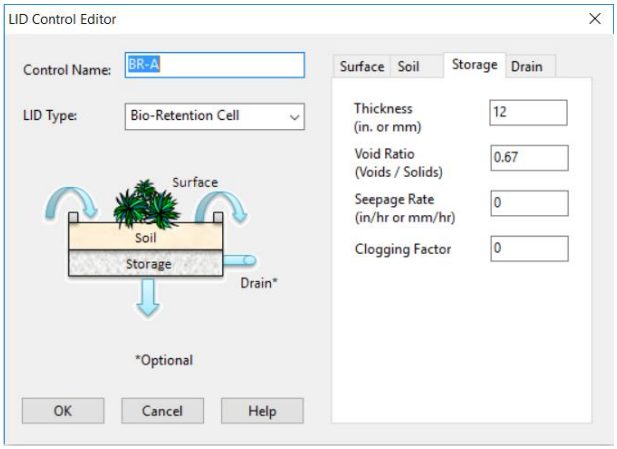
POC1

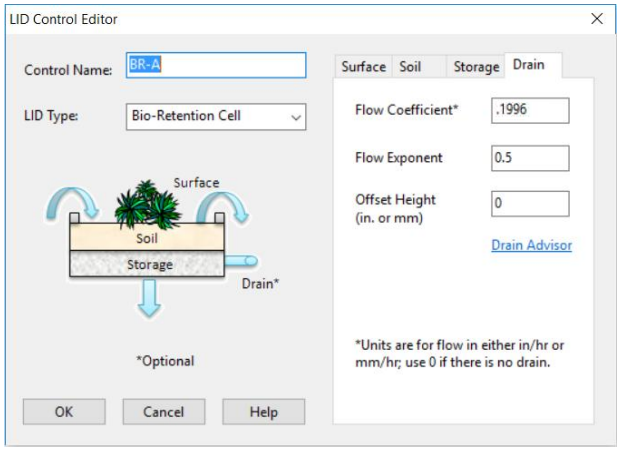
BIOFILTRATION BASIN A



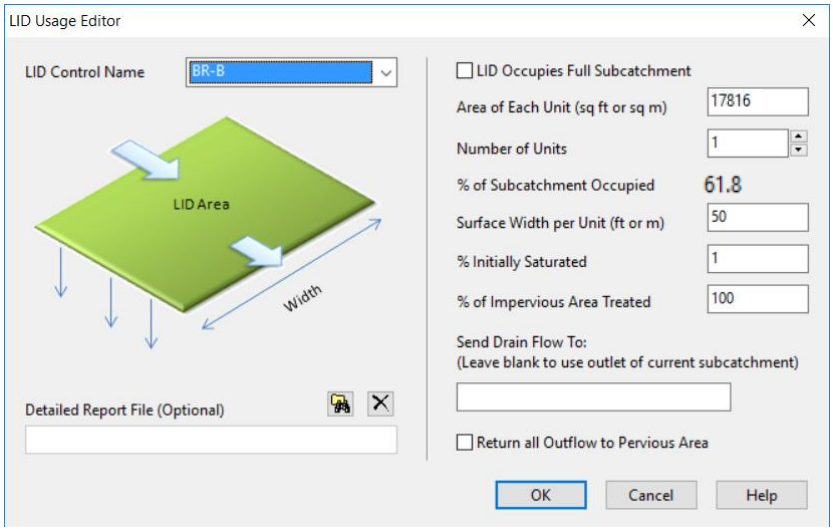


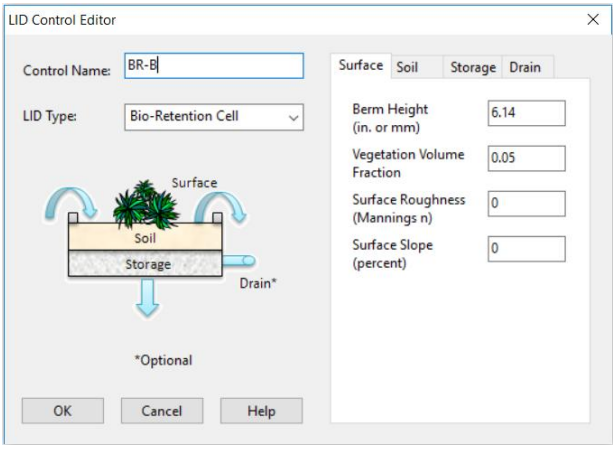


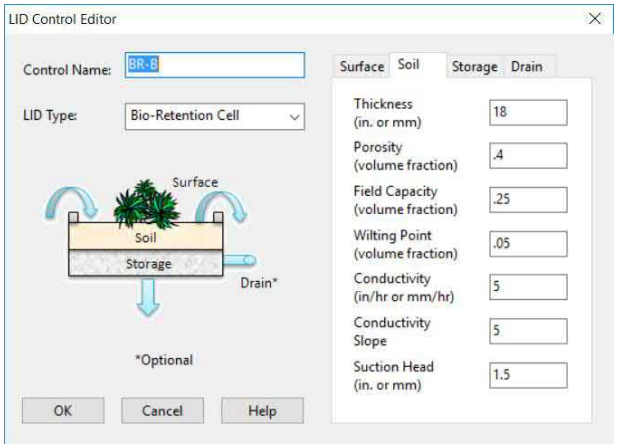


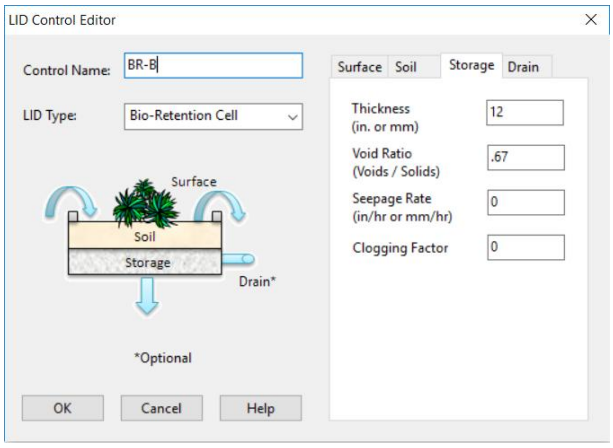


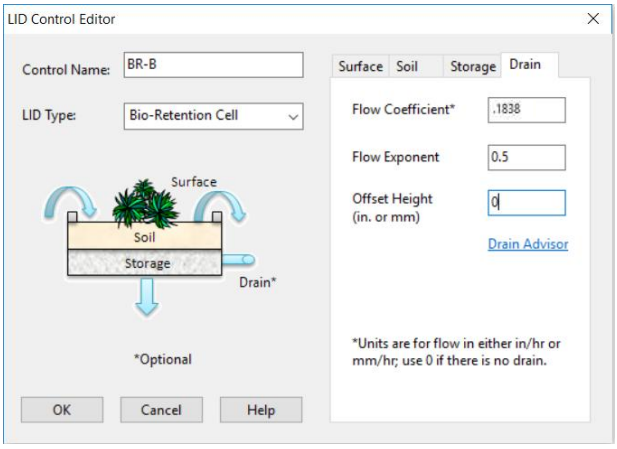
BIOFILTRATION BASIN B



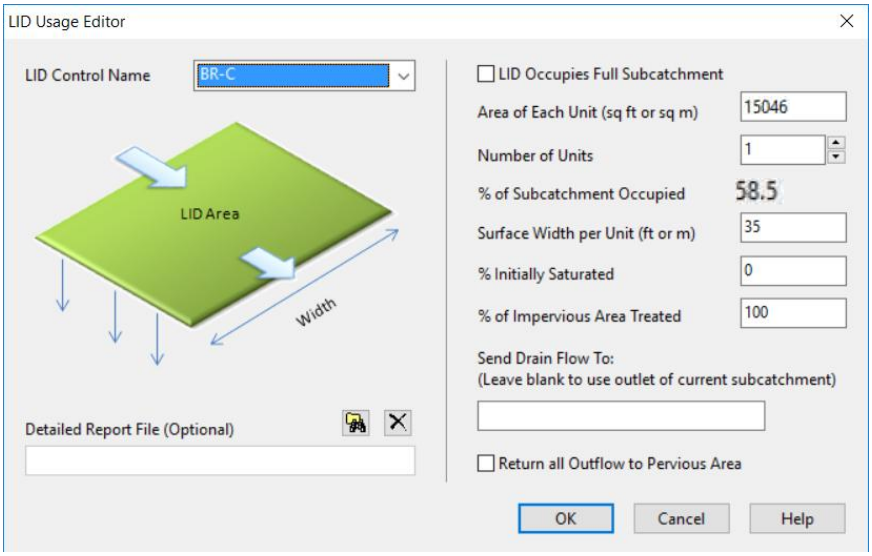


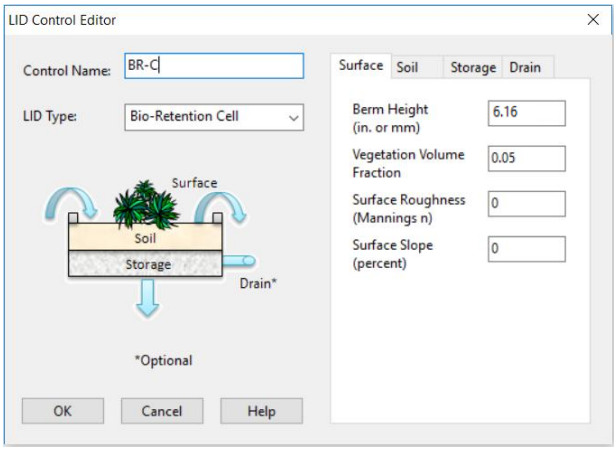


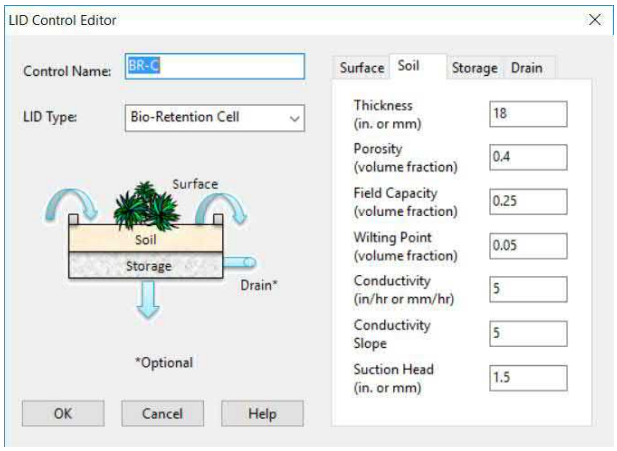


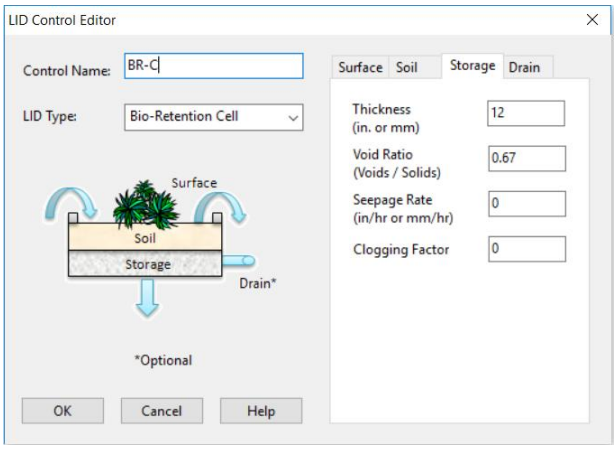


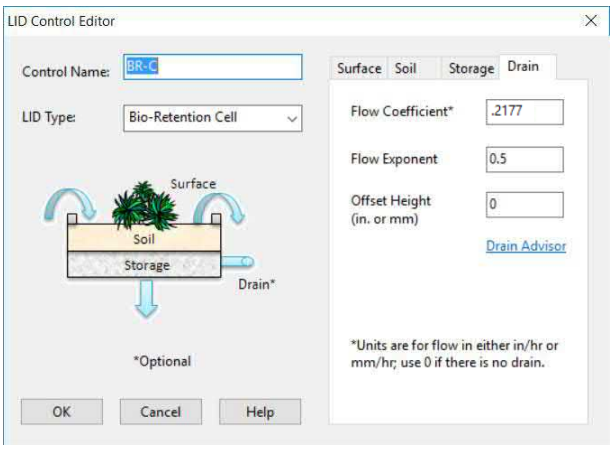
BIOFILTRATION BASIN C



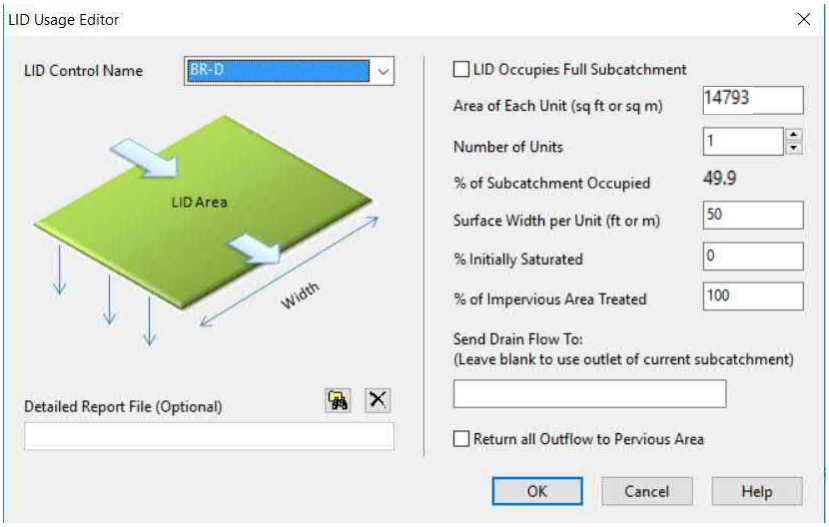


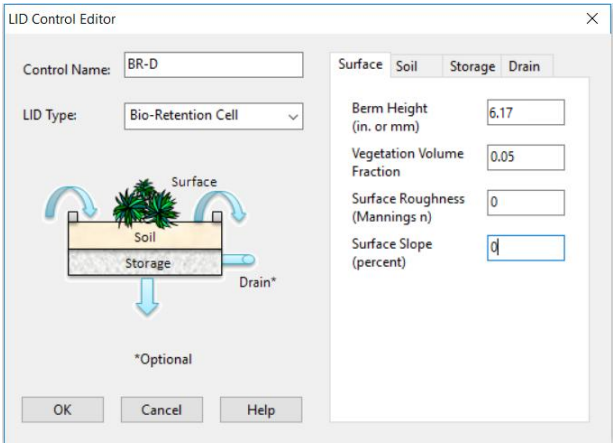


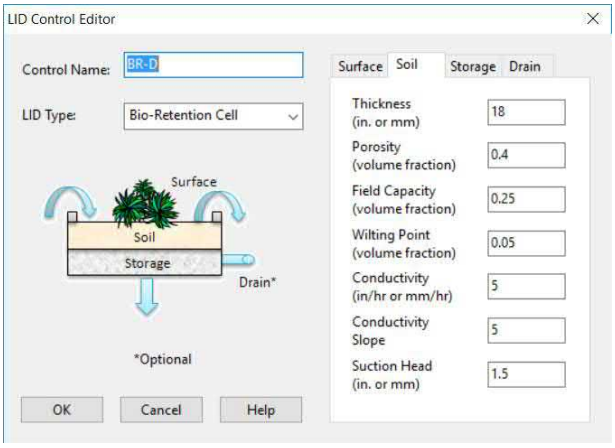


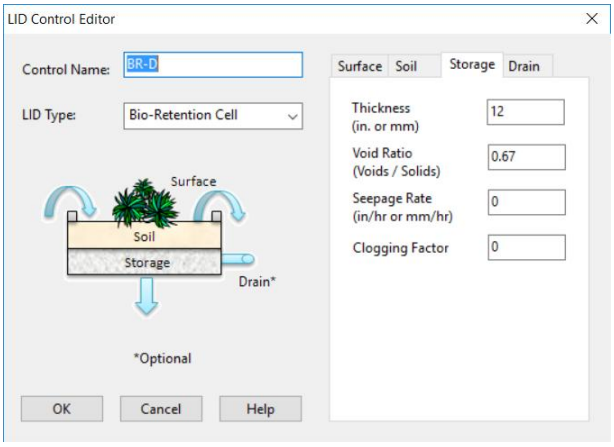


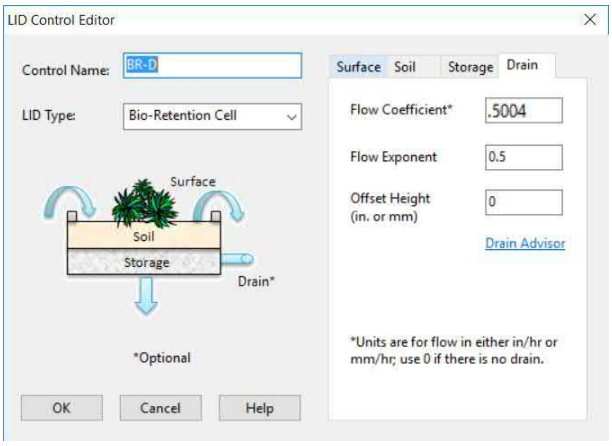
BIOFILTRATION BASIN D











POC2

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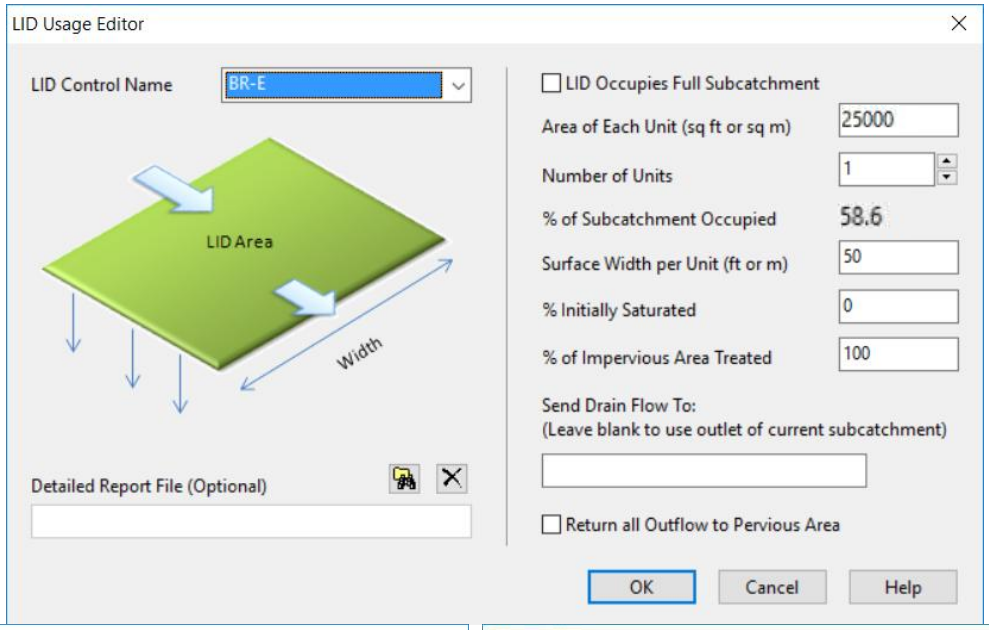

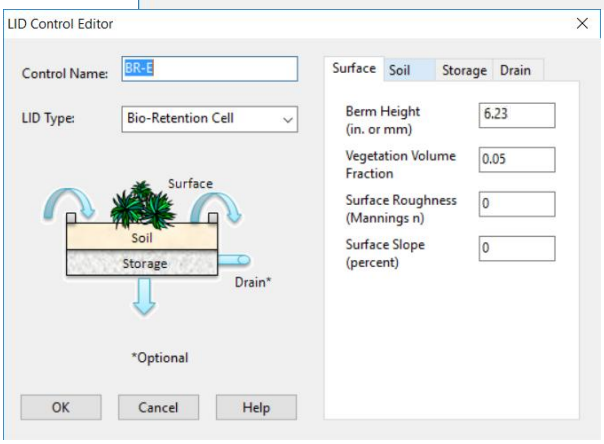

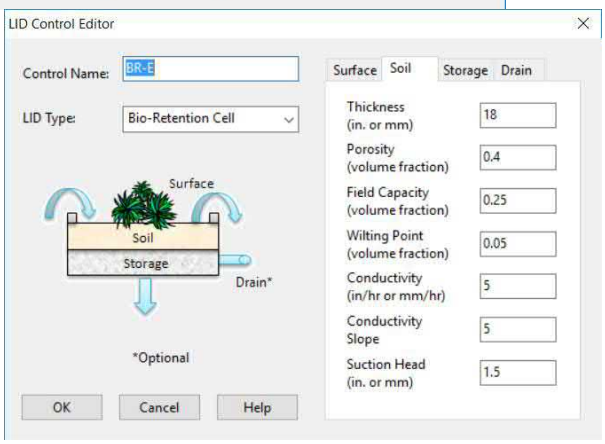

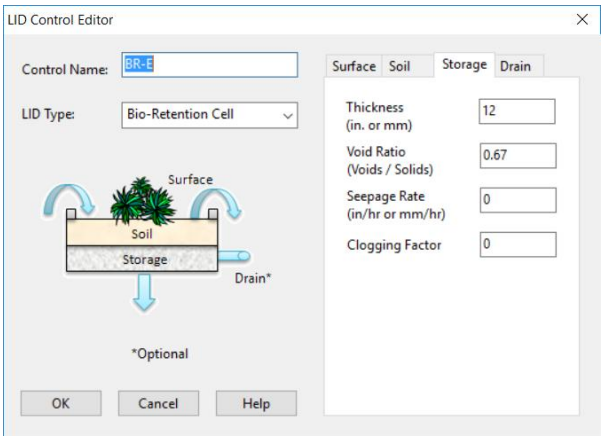

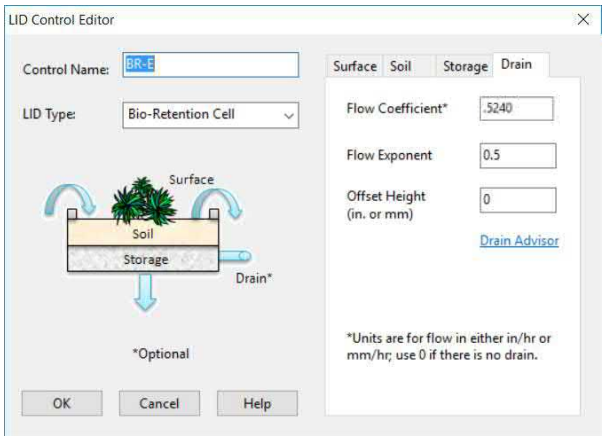

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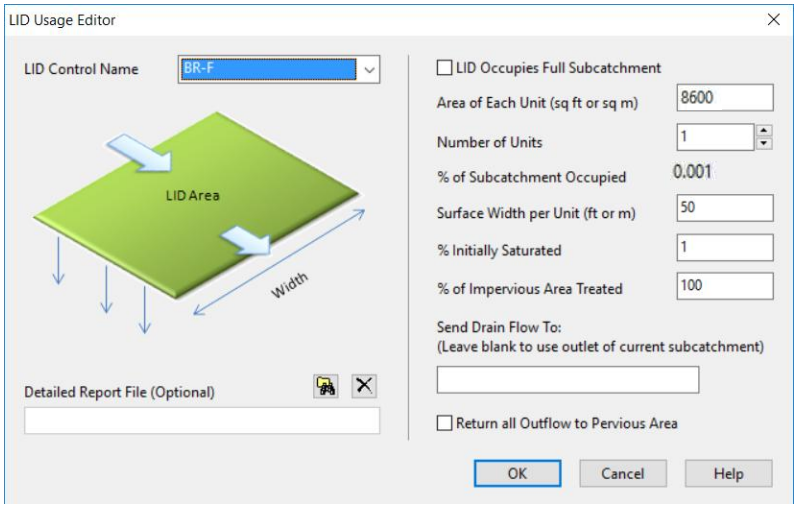

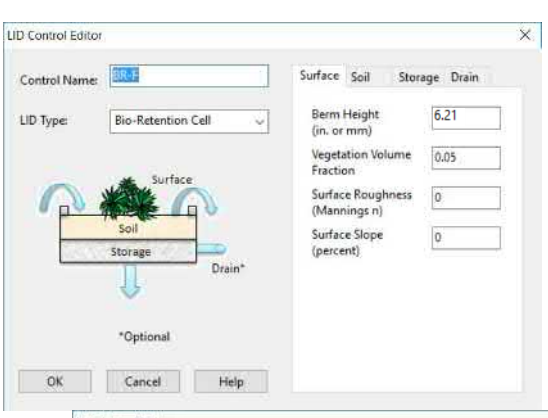

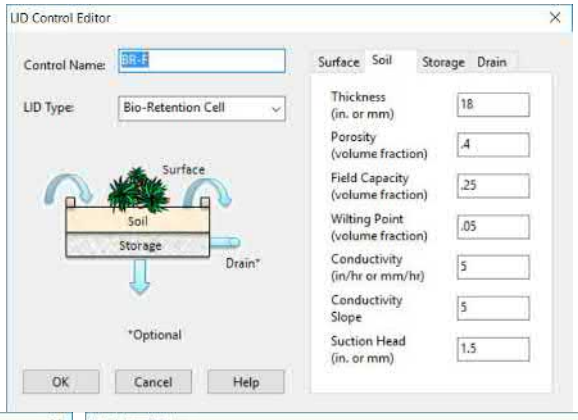

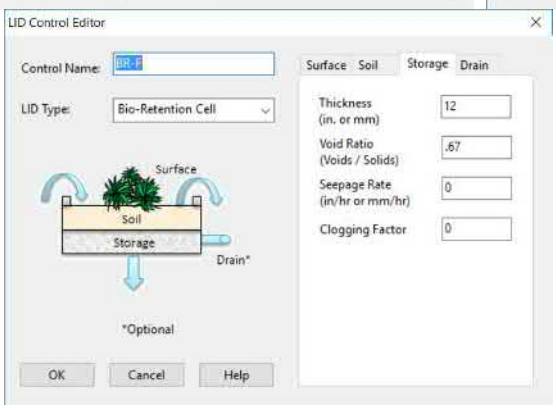

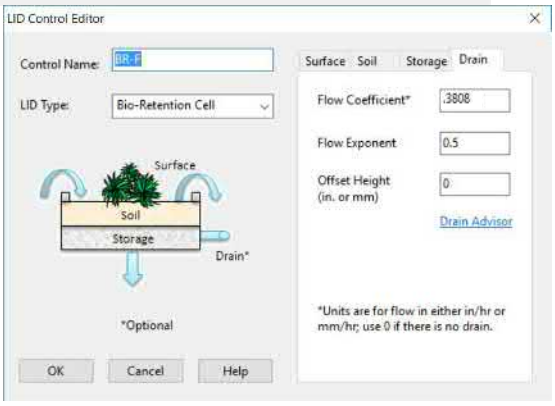

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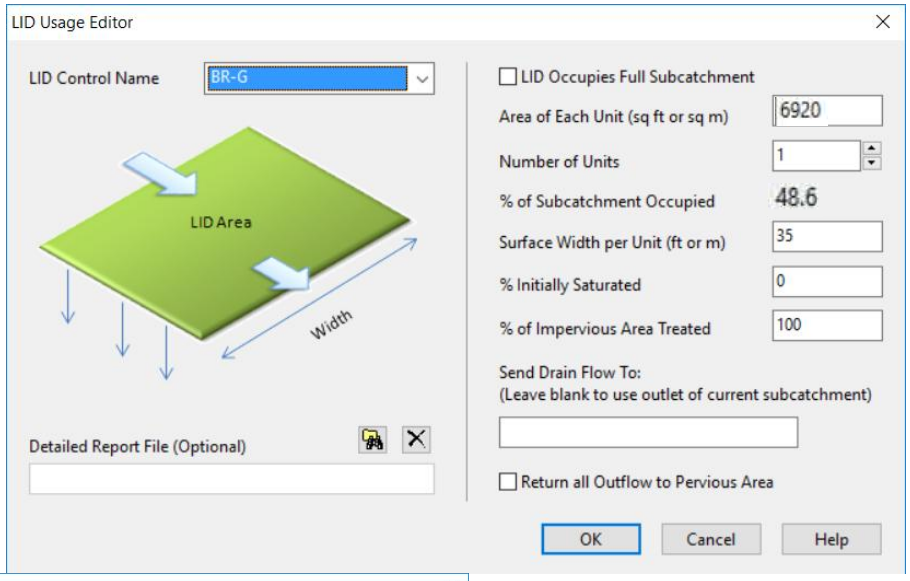

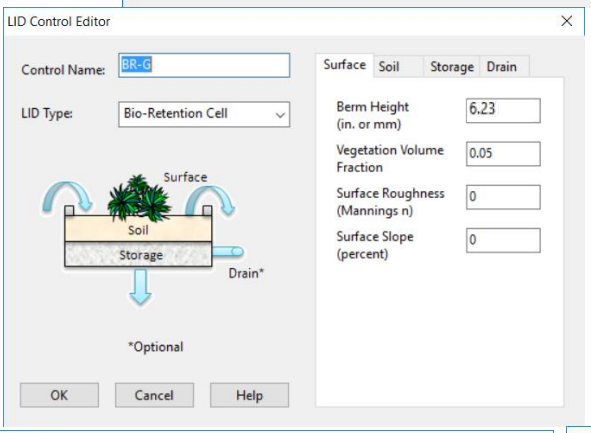

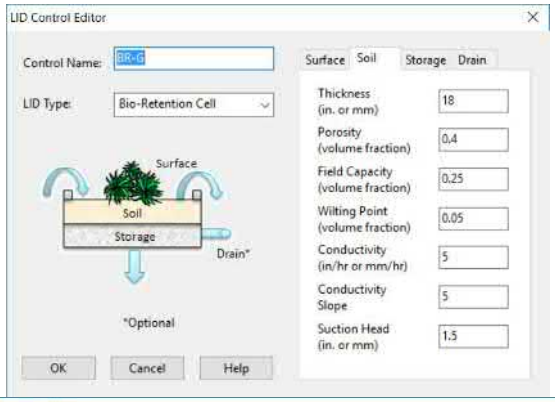

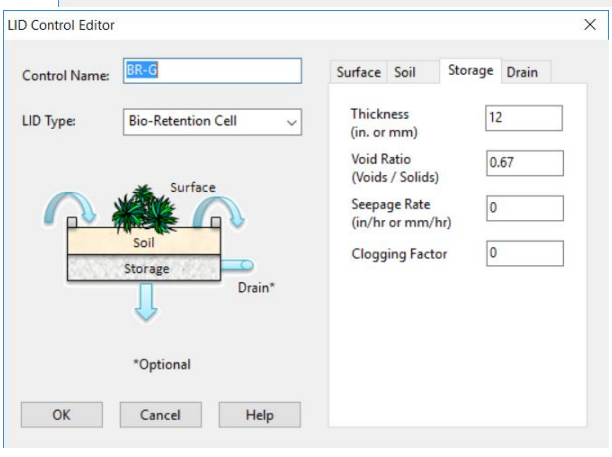

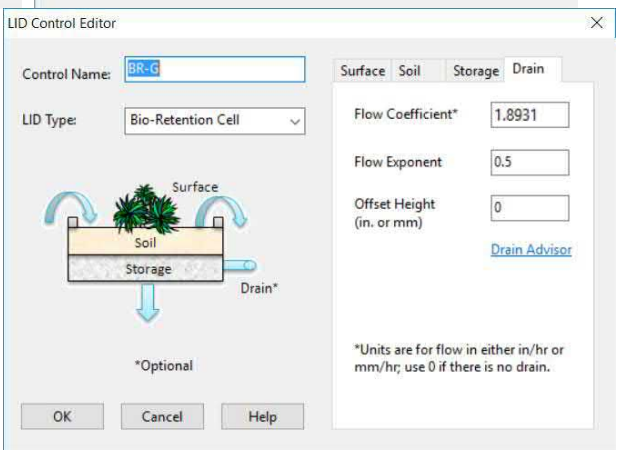

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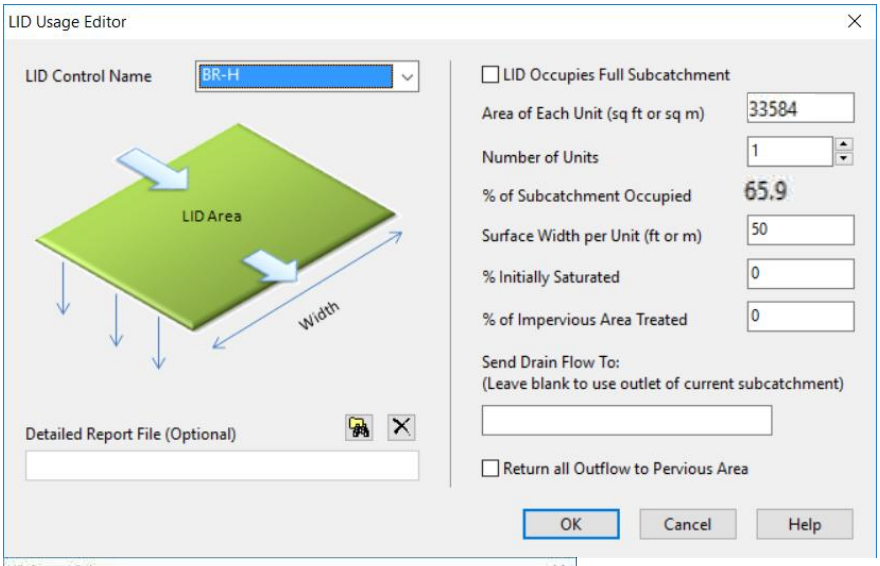

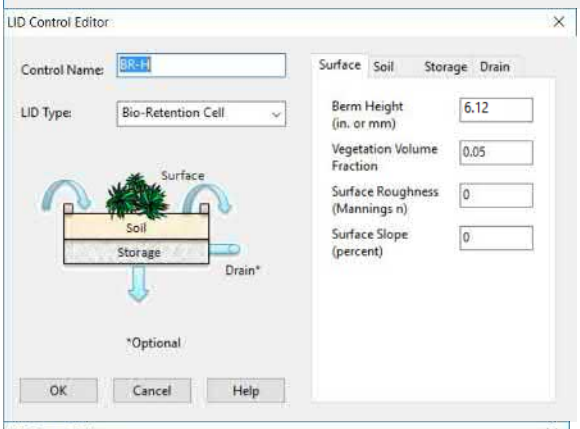

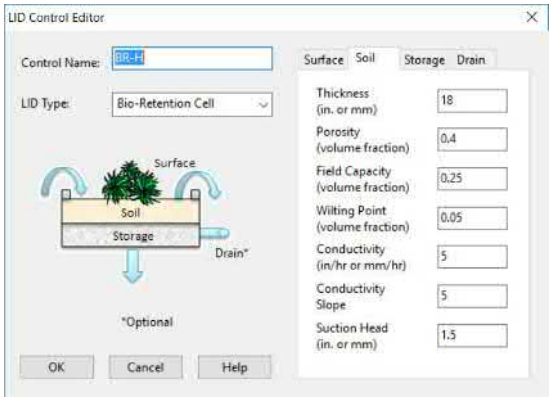

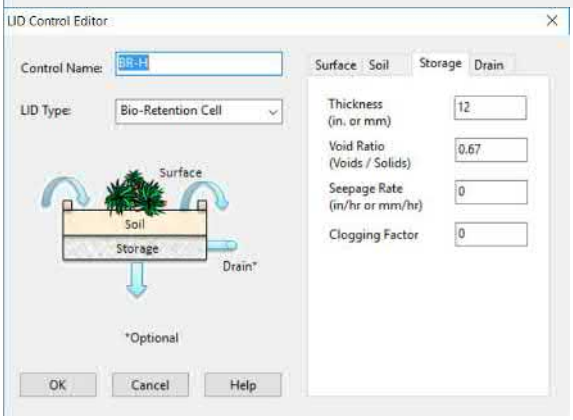

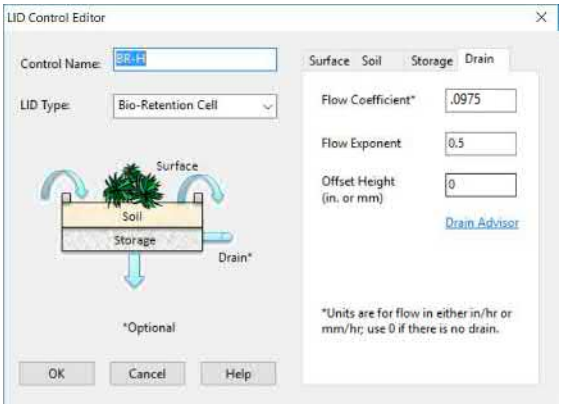

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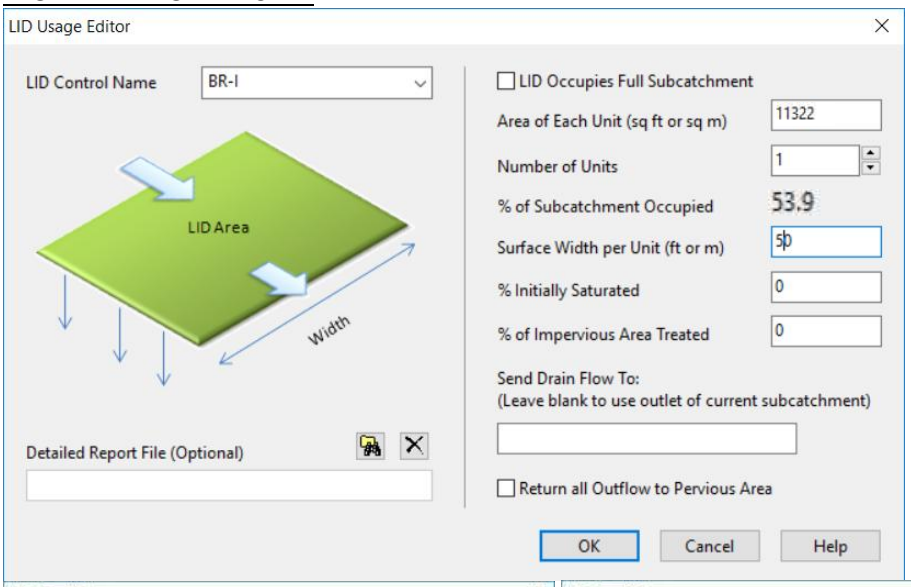

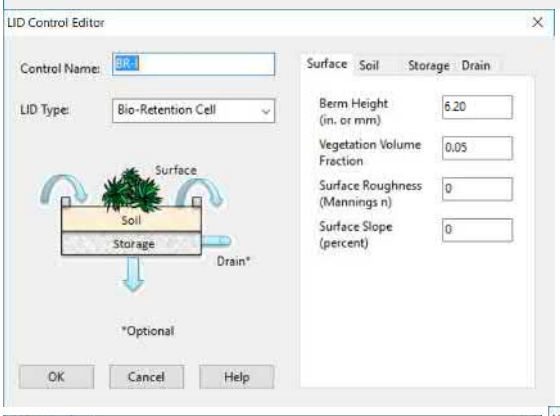

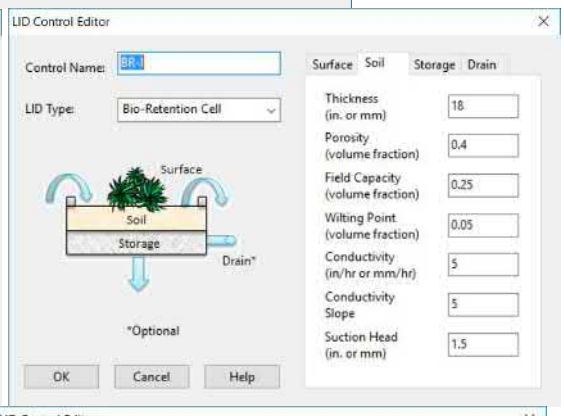

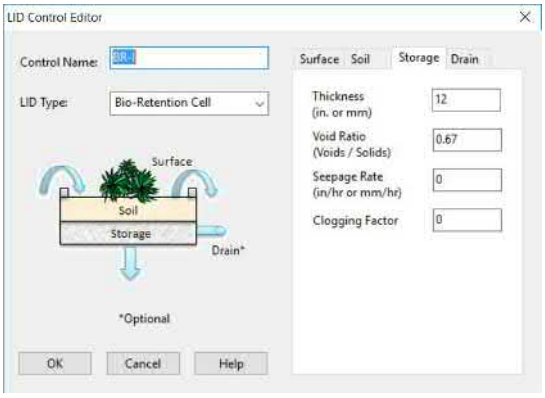

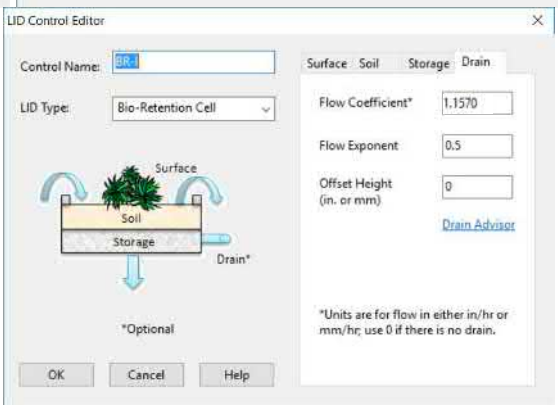

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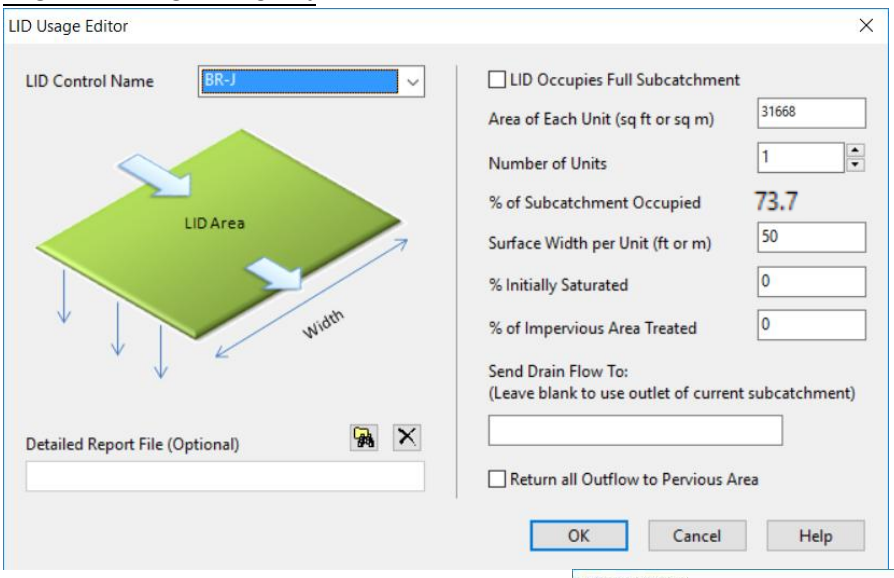

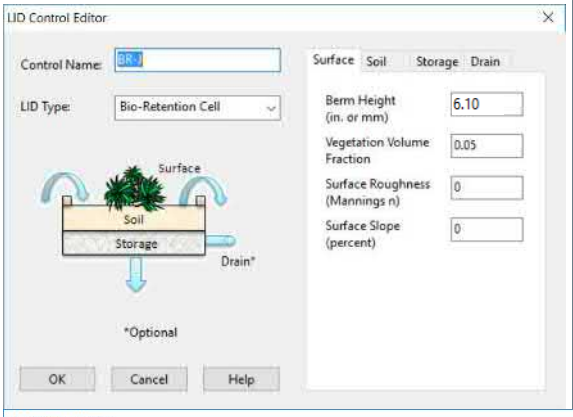

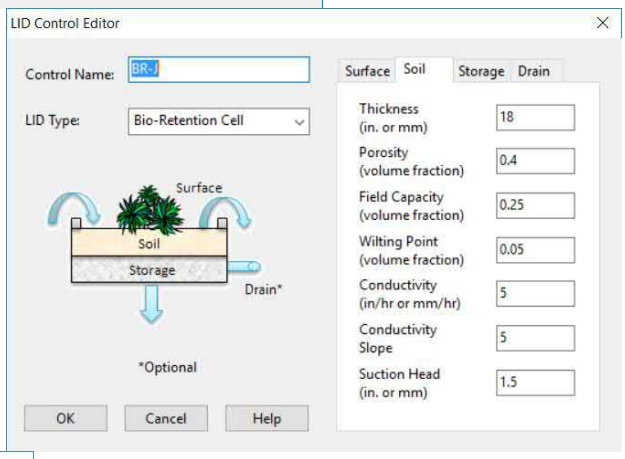

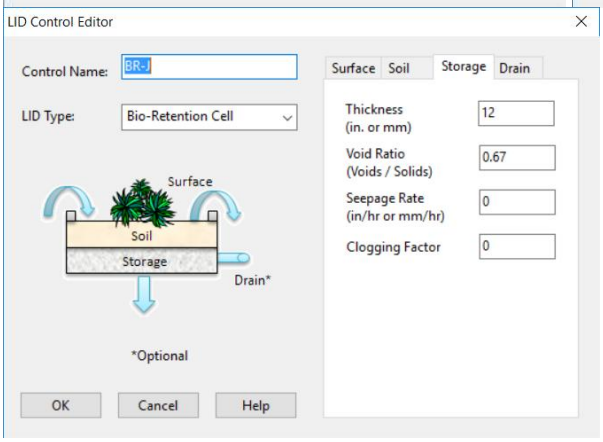

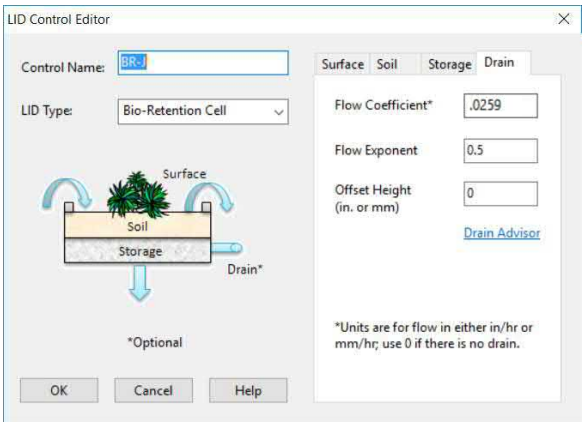

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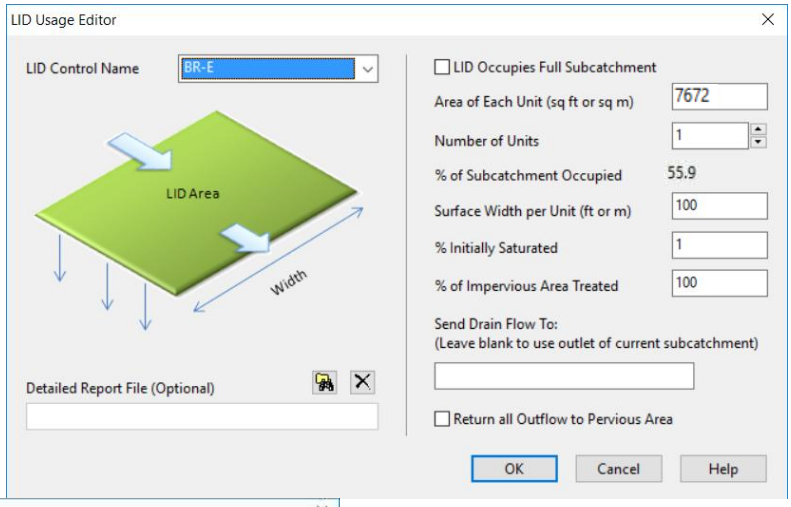

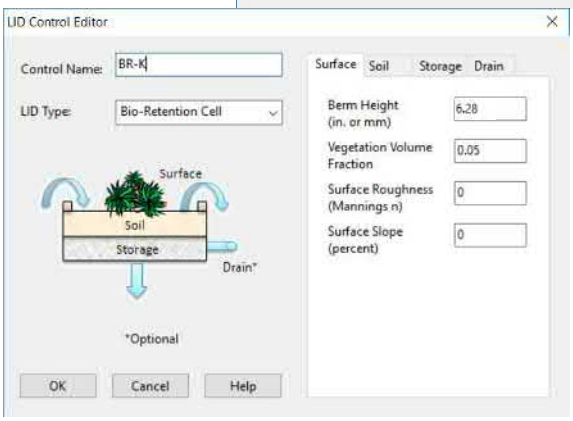

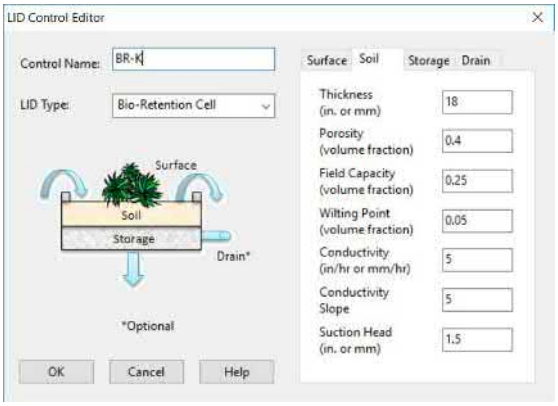

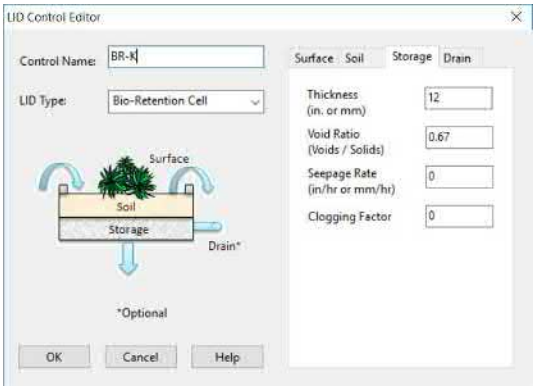

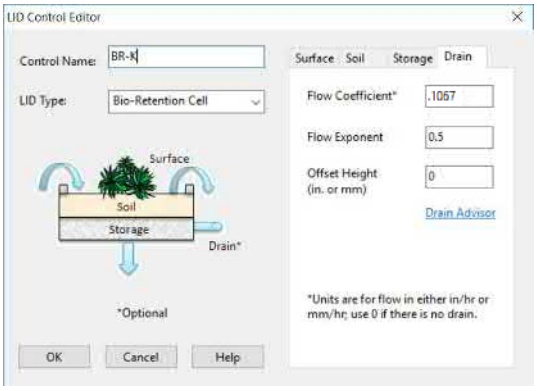

POC3

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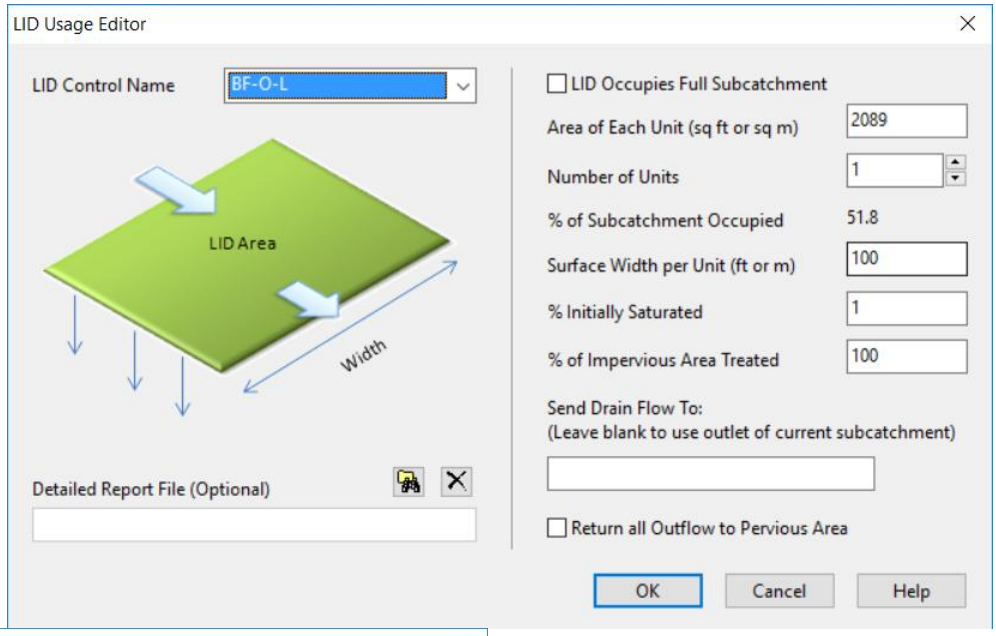

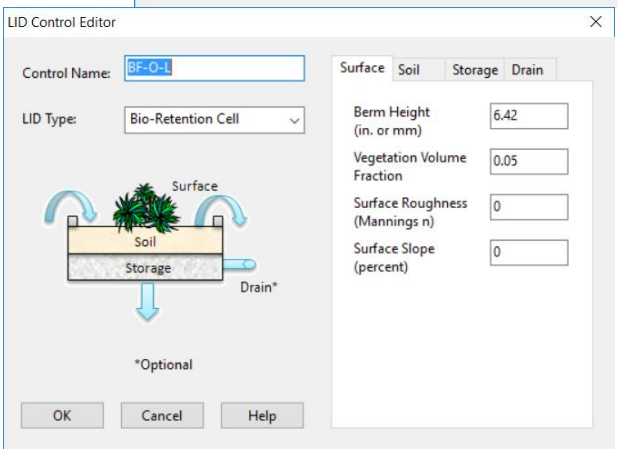

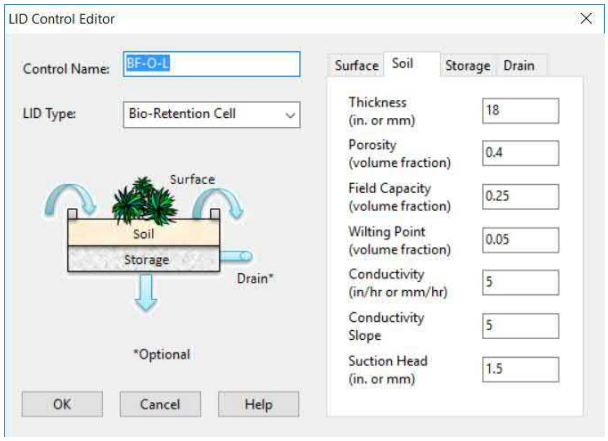

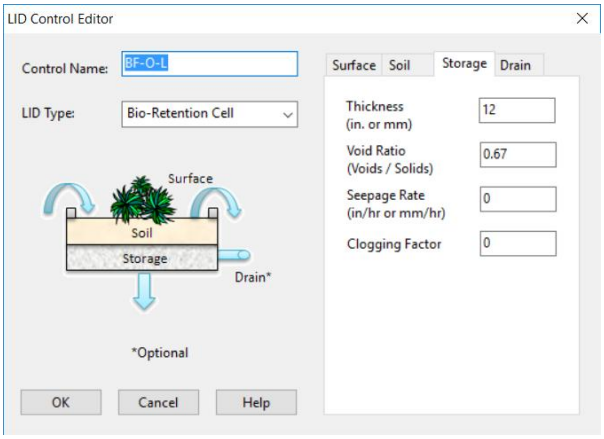

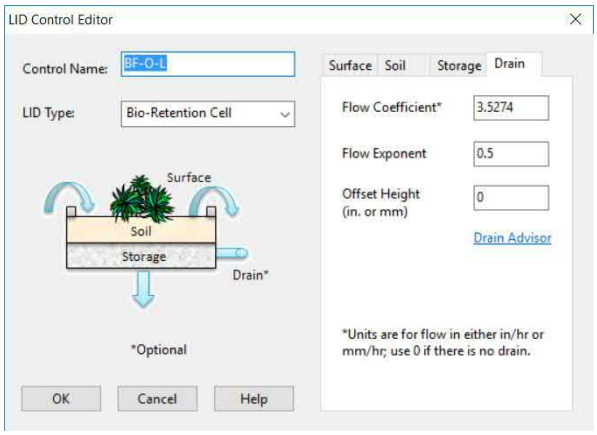

POC 4

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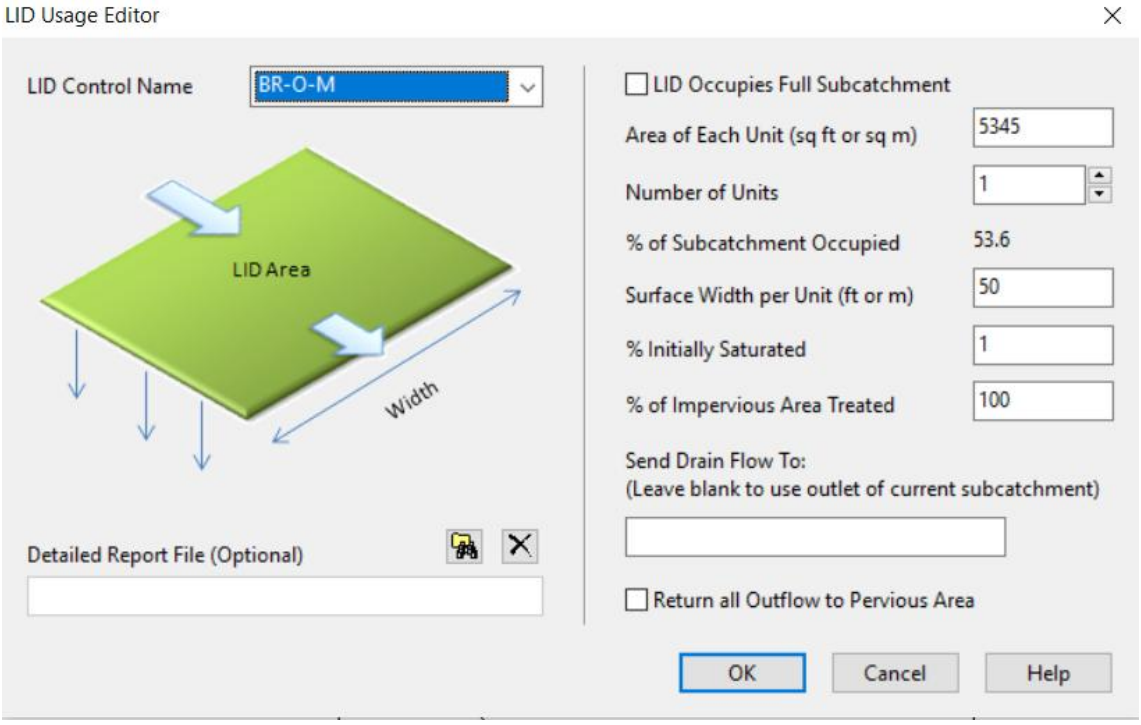

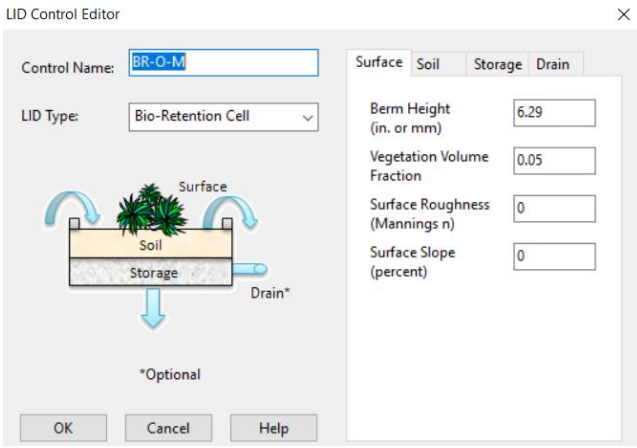

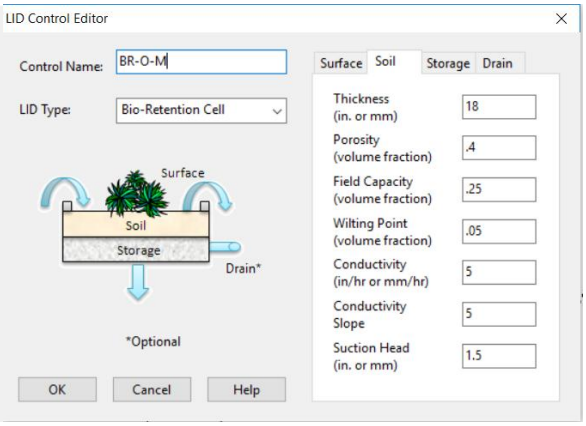

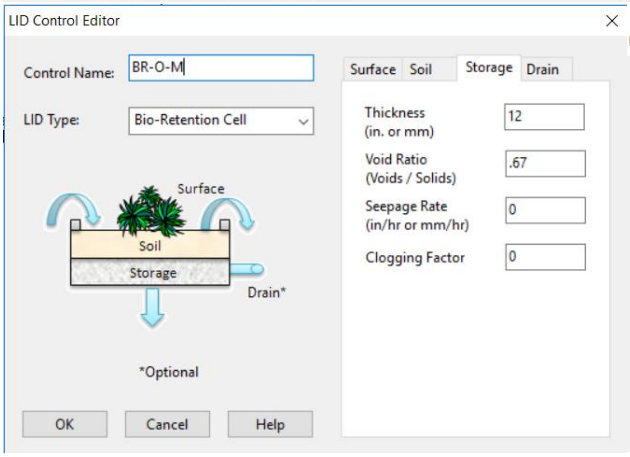

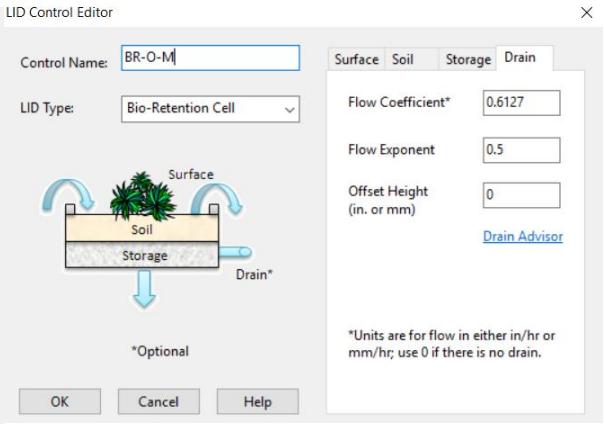

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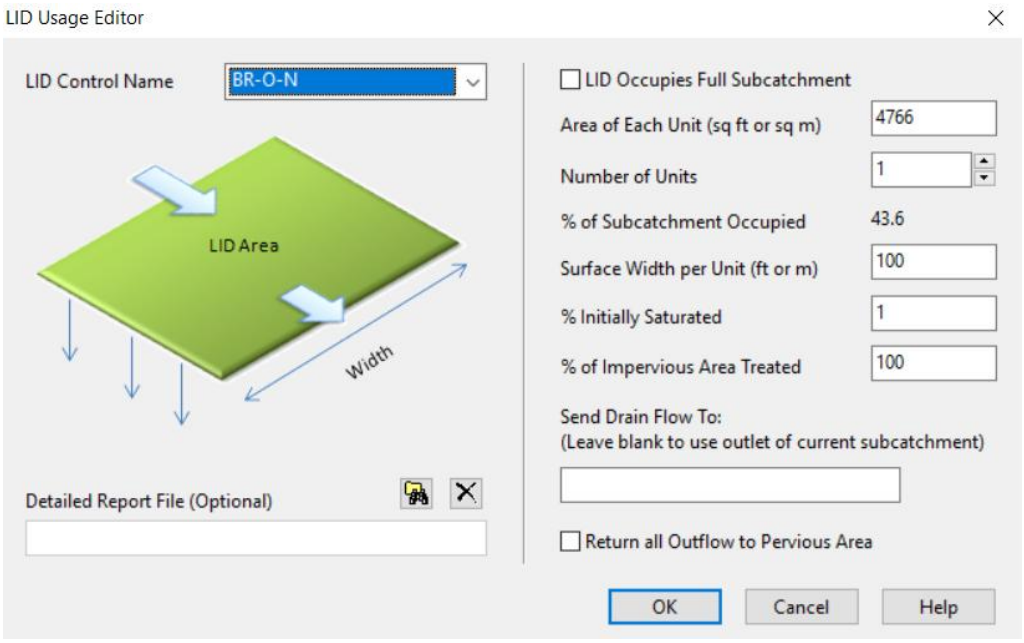

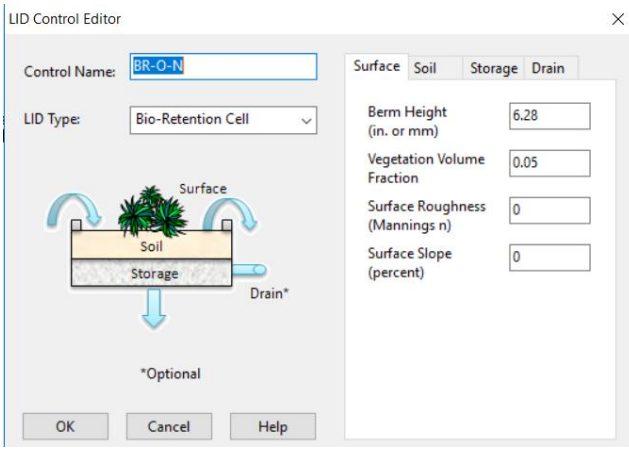

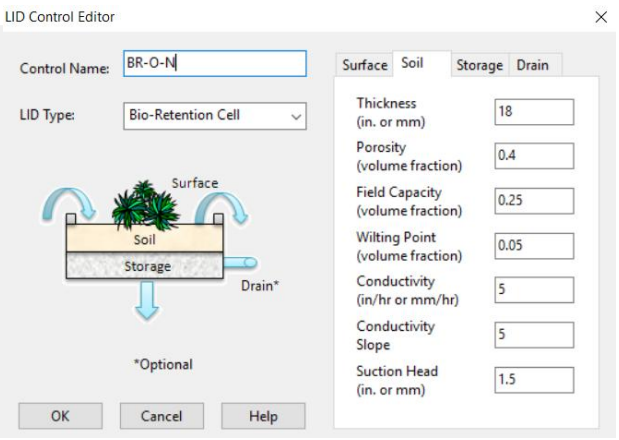

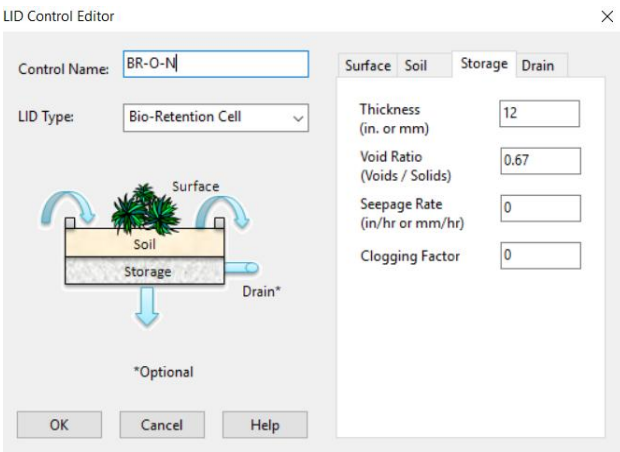

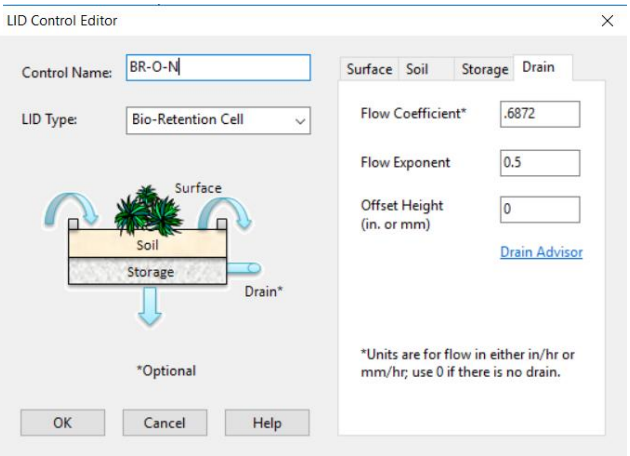

POC5

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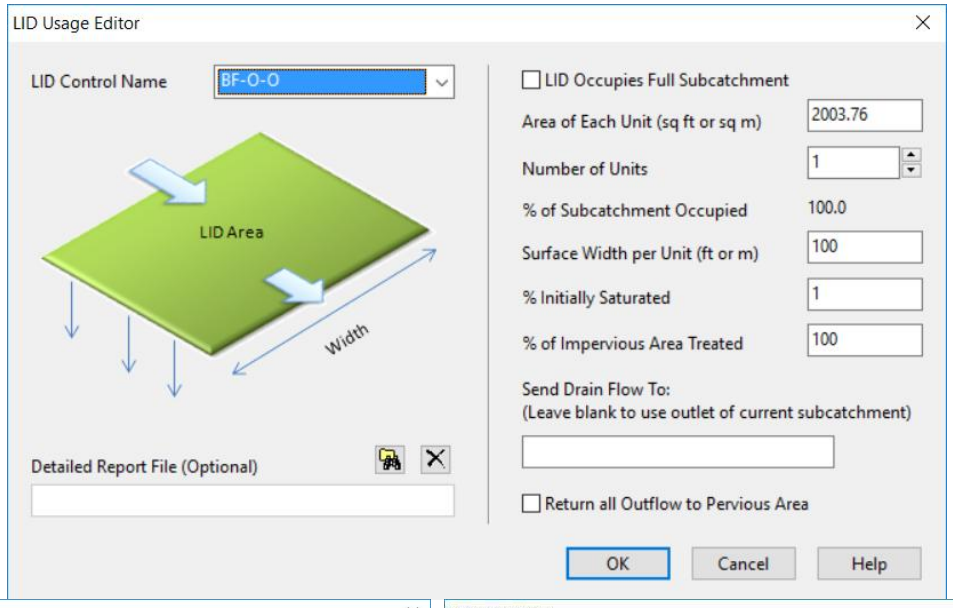
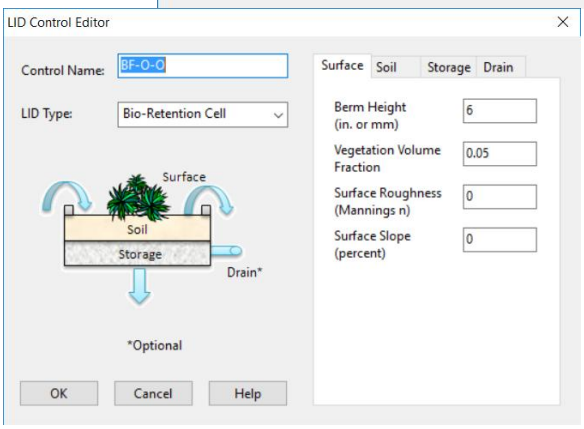
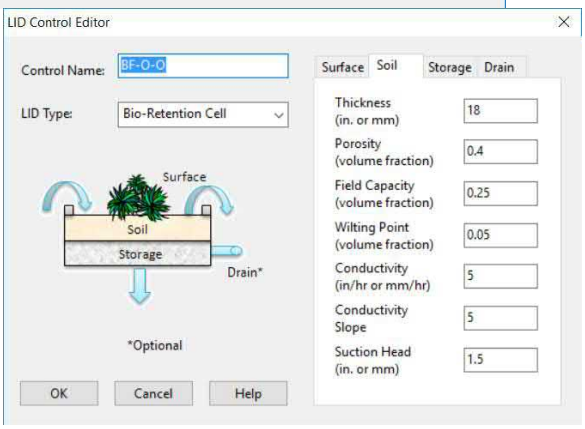
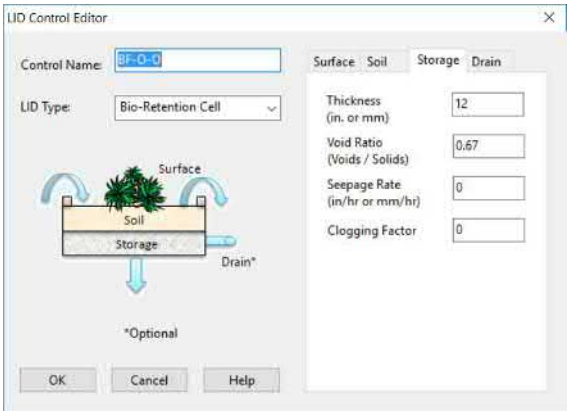
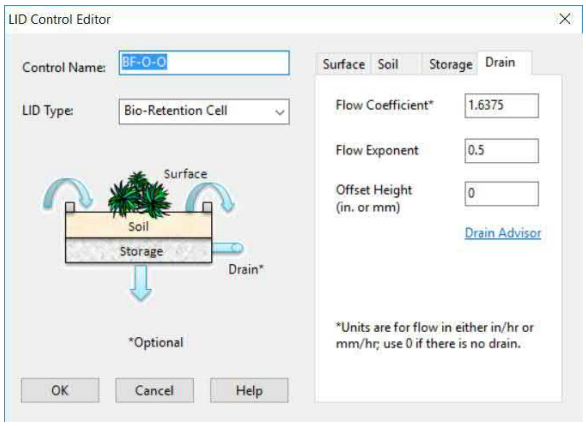


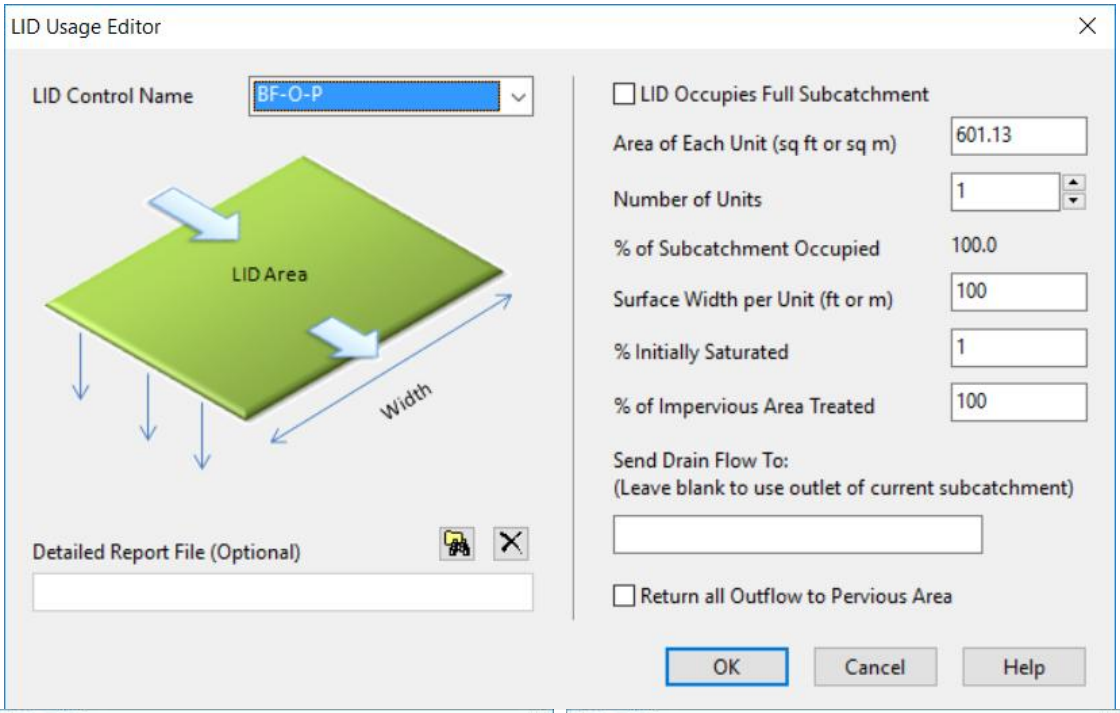


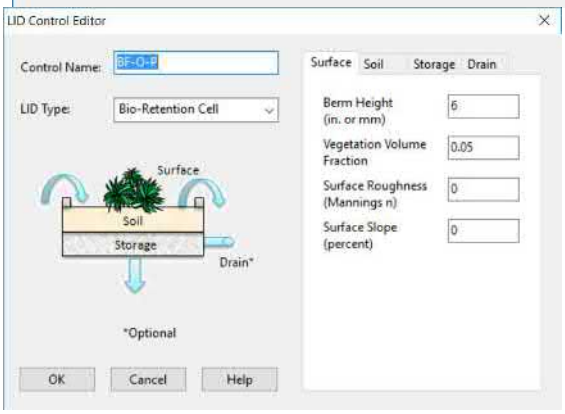


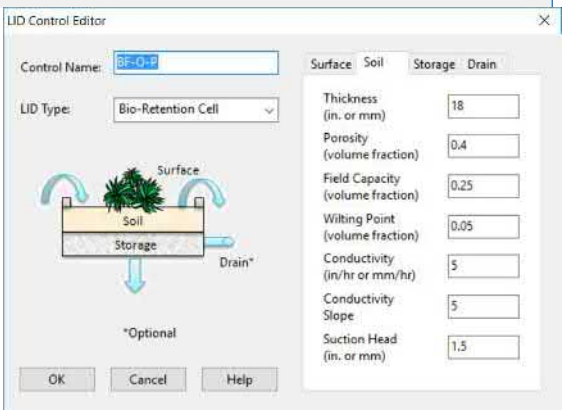


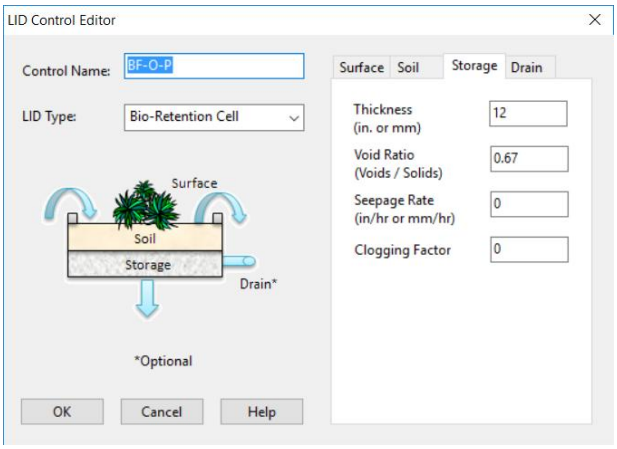


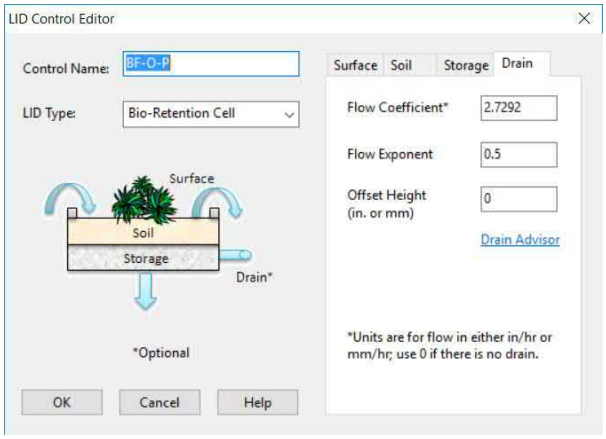
BIOFILTRATION BASIN O-P











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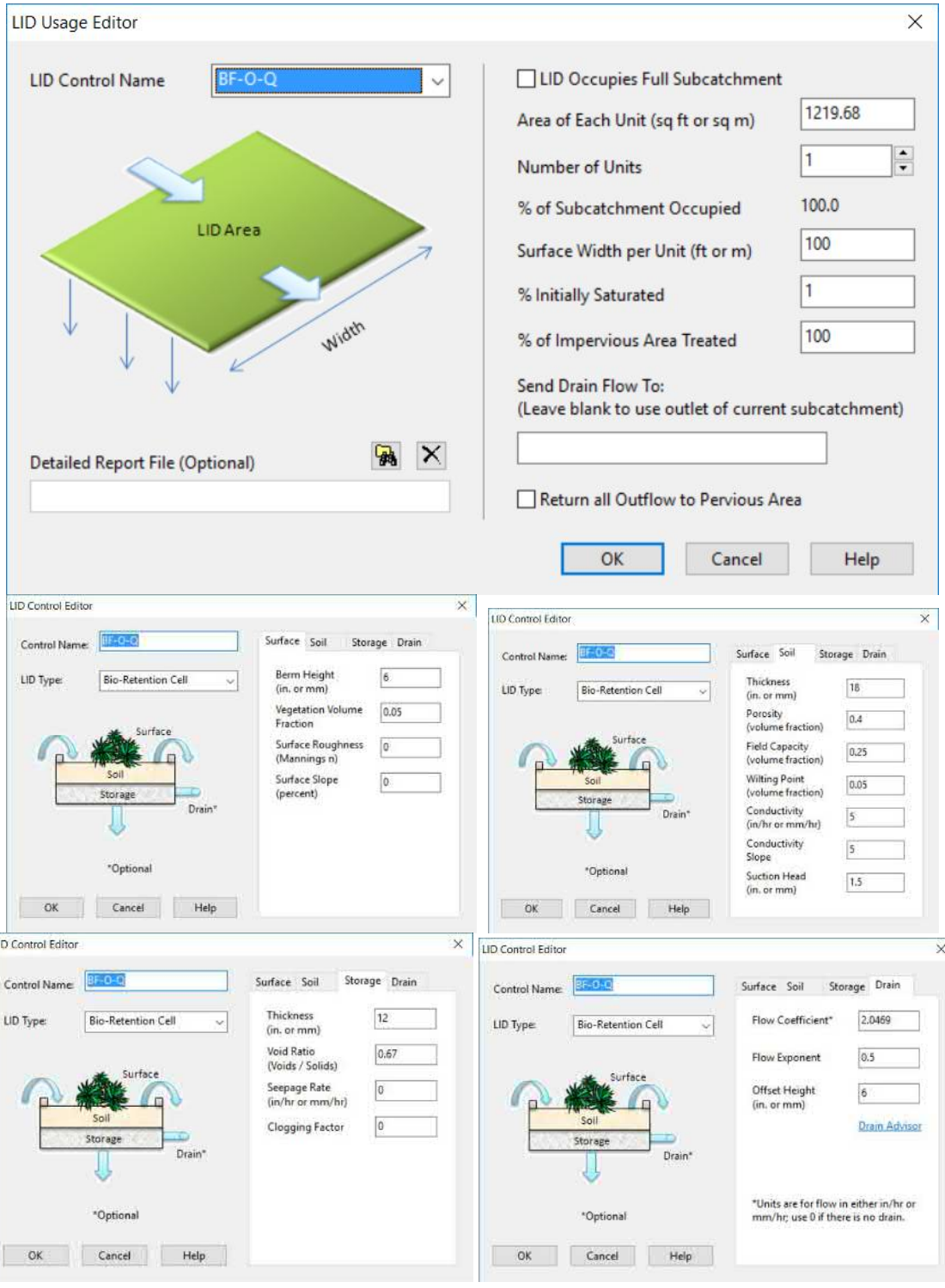
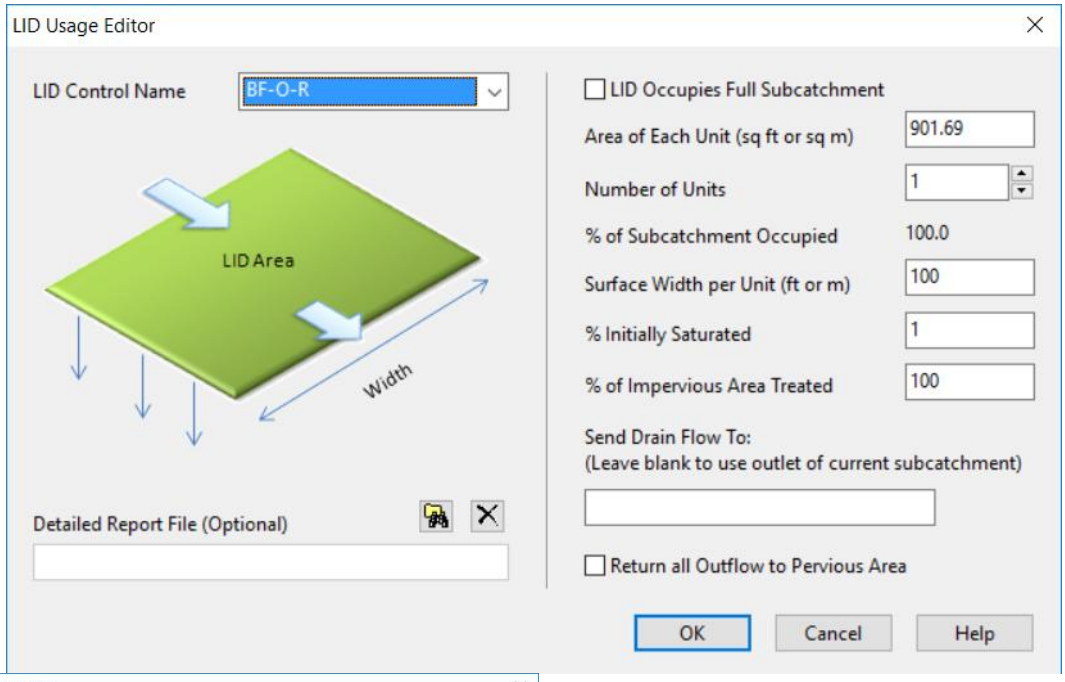
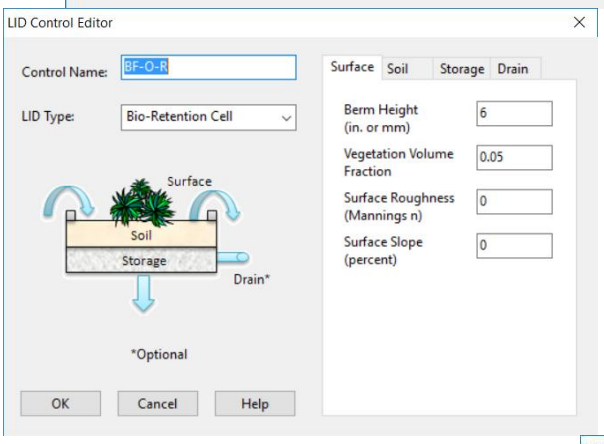
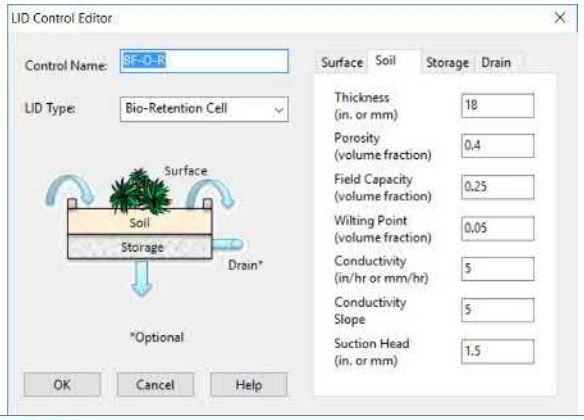
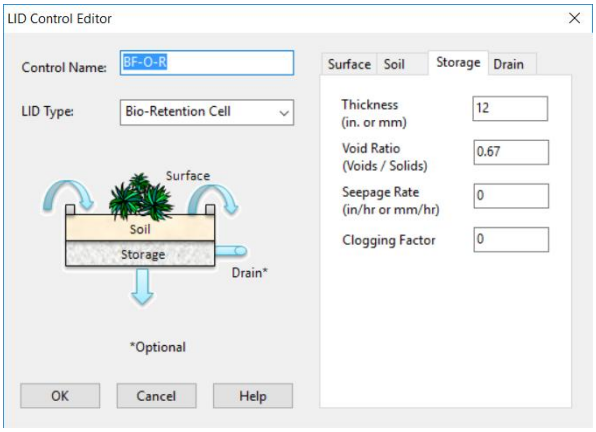


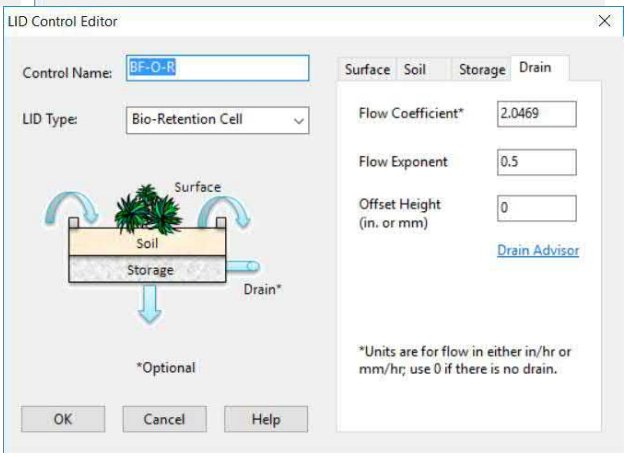
BIOFILTRATION BASIN O-R



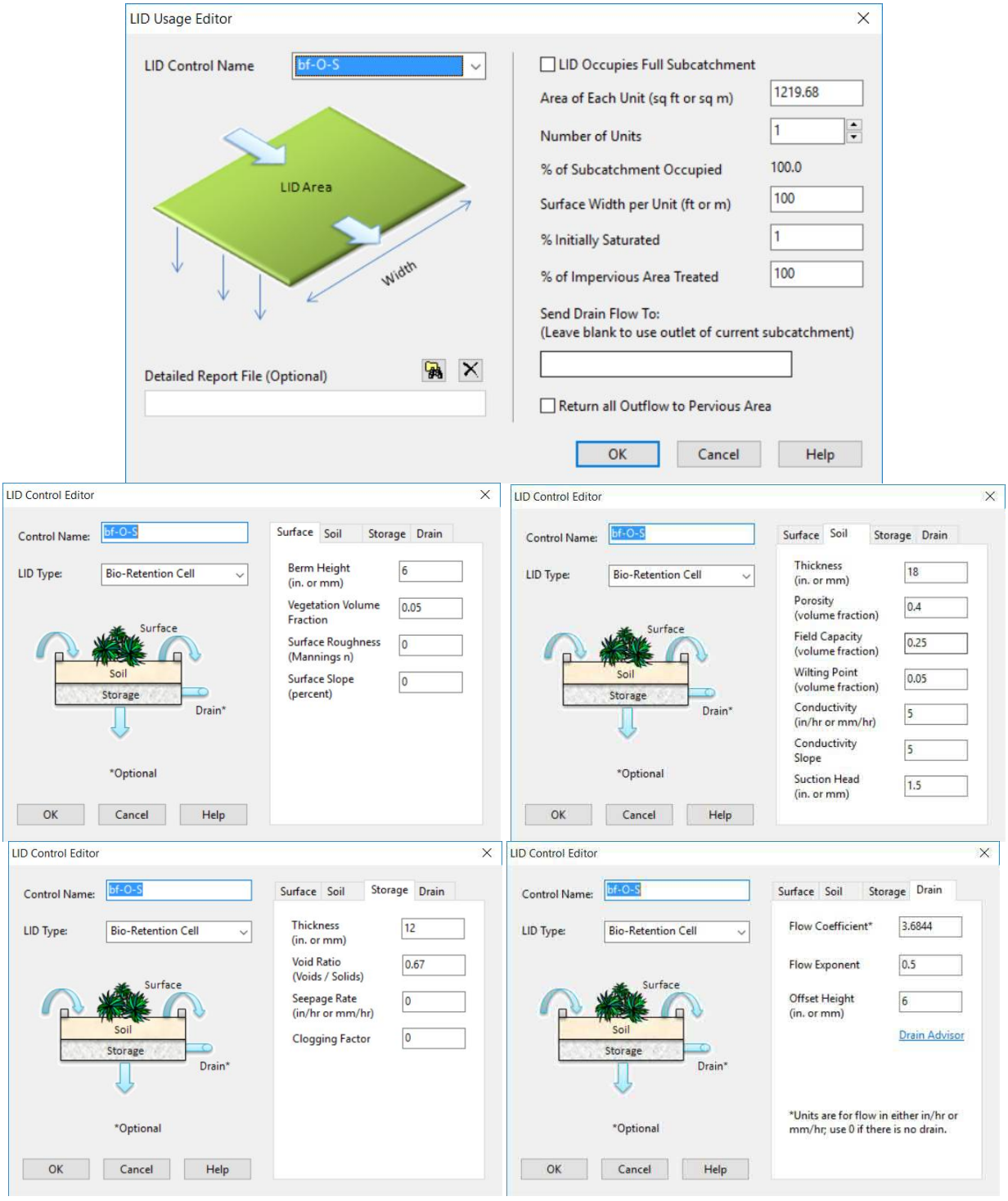








BIOFILTRATION BASIN O-S



LID Control Editor: Explanation of Significant Variables

Height:
The storage depth variable within the SWMM model is representative of the storage volume provided beneath the engineered soil and mulch components of the biofiltration facility. This storage volume is comprised of a gravel located bed beneath a layer of engineered soil.

Porosity:
A porosity value of 0.4 has been selected for the model. The amended soil is to be highly sandy in content in order to have a saturated hydraulic conductivity of approximately 5 in/hr.

H&A considers such a value to be slightly high; however, in order to comply with the HMP Permit, the value recommended by the Copermittees for the porosity of amended soil is 0.4, per Appendix A of the Final Hydromodification Management Plan by Brown & Caldwell, dated March 2011.

Void Ratio:
The ratio of the void volume divided by the soil volume is directly related to porosity as n/(1-n). As the underdrain layer is composed of gravel, a porosity value of 0.4 has been selected, which results in a void ratio of 0.4/(1-0.4) = 0.67 for the gravel detention layer.

Clogging factor:
A clogging factor was not used (0 indicates that there is no clogging assumed within the model). The reason for this is related to the fairness of a comparison with the SDHM model and the HMP sizing tables: a clogging factor was not considered, and instead, a conservative value of infiltration was recommended.

Drain (Flow) coefficient:
The flow coefficient in the SWMM Model is the coefficient needed to transform the orifice equation into a general power law equation of the form:

$$q = C(H - H_D)^n \quad (1)$$

where q is the peak flow in in/hr, n is the exponent (typically 0.5 for orifice equation), H D is the elevation of the centroid of the orifice in inches (assumed equal to the invert of the orifice for small orifices and in our design equal to 0) and H is the depth of the water in inches.

The general orifice equation can be expressed as:

$$Q = \frac{\pi}{4} c_g \frac{D^2}{144} \sqrt{2g \frac{(H - H_D)}{12}} \quad (2)$$

where Q is the peak flow in cfs, D is the diameter in inches, c g is the typical discharge coefficient for orifices (0.61-0.63 for thin walls and around 0.75-0.8 for thick walls), g is the acceleration of gravity in ft/s^2, and H and H D are defined above and are also used in inches in Equation (2).

Cutoff Flow:

This is the only significant variable in the diversion, as the type of diversion is defined by this value. Any excess of flow over this value will be diverted into a pond subroutine (the surface stage of the bio-retention basin) and routed there. The determination of this value equates to the value obtained with equation (2) above, plus 1%, when H = depth of gravel layer and H_D=0 (orifice situated at the datum). Thus, once flows exceed the maximum discharge the LID orifice experiences a head of the storage depth, ponding occurs within the biofiltration basin, routing these additional flows via the pond riser.

POC1

Divider DIV-A

Property	Value
Name	DIV-A
X-Coordinate	921.874
Y-Coordinate	4563.077
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-A
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-B

Property	Value
Name	DIV-B
X-Coordinate	1098.345
Y-Coordinate	4744.434
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-B
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Initial water depth in junction (ft)

Divider DIV-C

Property	Value
Name	DIV-C
X-Coordinate	1388.879
Y-Coordinate	4806.475
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-C
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-D

Property	Value
Name	DIV-D
X-Coordinate	1547.764
Y-Coordinate	4803.449
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-D
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.401
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

POC2

Divider DIV-K

Property	Value
Name	DIV-K
X-Coordinate	930.380
Y-Coordinate	4521.994
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-K
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.045
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-F

Property	Value
Name	DIV-F
X-Coordinate	1098.345
Y-Coordinate	4744.434
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-F
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

Divider DIV-G

Property	Value
Name	DIV-G
X-Coordinate	1388.879
Y-Coordinate	4806.475
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-G
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.707
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

Divider DIV-H

Property	Value
Name	DIV-H
X-Coordinate	1547.764
Y-Coordinate	4803.449
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-H
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

Divider DIV-I

Property	Value
Name	DIV-I
X-Coordinate	1803.495
Y-Coordinate	4745.947
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-I
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.707
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

Divider DIV-J

Property	Value
Name	DIV-J
X-Coordinate	2035.668
Y-Coordinate	4517.752
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-J
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	.045
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

POC2

Divider DIV-E

Property	Value
Name	DIV-E
X-Coordinate	930.380
Y-Coordinate	4521.994
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-E
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.707
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

User-assigned name of divider

POC3

Divider DIV-O-L

Property	Value
Name	DIV-O-L
X-Coordinate	921.874
Y-Coordinate	4563.077
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Depth	0
Ponded Area	0
Diverted Link	BYPASS-O-L
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.401
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

POC4

Divider DIV-O-N

Property	Value
Name	DIV-O-N
X-Coordinate	921.874
Y-Coordinate	4563.077
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-N
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-O-M

Property	Value
Name	DIV-O-M
X-Coordinate	1098.345
Y-Coordinate	4744.434
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-M
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

POC5

Divider DIV-O-O

Property	Value
Name	DIV-O-O
X-Coordinate	921.874
Y-Coordinate	4563.077
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-O
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-O-P

Property	Value
Name	DIV-O-P
X-Coordinate	1050.071
Y-Coordinate	4690.861
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-P
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.179
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-O-Q

Property	Value
Name	DIV-O-Q
X-Coordinate	1202.140
Y-Coordinate	4724.087
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-Q
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.101
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-O-R

Property	Value
Name	DIV-O-R
X-Coordinate	1329.929
Y-Coordinate	4750.922
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	BYPASS-O-R
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.101
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Divider DIV-O-S

Property	Value
Name	DIV-O-S
X-Coordinate	1524.169
Y-Coordinate	4743.255
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0
Initial Depth	0
Surcharge Dept	0
Ponded Area	0
Diverted Link	bypass-O-S
Type	CUTOFF
Cutoff Divider	
Cutoff Flow	0.101
Tabular Divider	
Curve Name	*
Weir Divider	
Min. Flow	0
Max. Depth	0
Coefficient	0

Discharge coefficient for a WEIR divider

Note:
The complete storage and rating curves and the respective explanation is shown at the end of this appendix. A variable area vs. elevation storage curve was used for the final model, and a discharge that is a function of the outlet structure in the surface was used also.

POC1

BASIN A

Storage Unit Stor-A

Property	Value
Name	Stor-A
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	BASIN-A

Name of storage curve to use (after specifing a curve, you can double-click to edit it)

Storage Curve Editor

Curve Name: Basin-A

Description:

	Depth (ft)	Area (ft2)
1	0	17252
2	0.05	17336
3	0.1	17420
4	0.15	17504
5	0.2	17588
6	0.25	17672
7	0.3	17756
8	0.35	17841
9	0.4	17925
10	0.45	18009
11	0.5	18093

View... Load... Save... OK Cancel Help

Outlet Outlet-A

Property	Value
Name	Outlet-A
Inlet Node	Stor-A
Outlet Node	POC1-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-A

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-A

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.01
3	0.1	0.02
4	0.15	0.05
5	0.2	0.07
6	0.25	0.09
7	0.3	0.10
8	0.35	0.11
9	0.4	0.12
10	0.45	0.13
11	0.5	0.14

View... Load... Save... OK Cancel Help

BASIN B

Storage Unit Stor-B

Property	Value
Name	Stor-B
X-Coordinate	1098.345
Y-Coordinate	4590.088
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	9748
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-B

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-B

Description:

	Depth (ft)	Area (ft2)
1	0	18667
2	0.05	18752
3	0.1	18838
4	0.15	18923
5	0.2	19008
6	0.25	19093
7	0.3	19178
8	0.35	19263
9	0.4	19348
10	0.45	19434
11	0.5	19519

View... Load... Save... OK Cancel Help

Outlet Outlet-B

Property	Value
Name	Outlet-B
Inlet Node	Stor-B
Outlet Node	POC1-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-B

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-B

Description:

	Head (ft)	Outflow (CFS)
1	0	0.000
2	0.05	0.007
3	0.1	0.024
4	0.15	0.050
5	0.2	0.073
6	0.25	0.087
7	0.3	0.099
8	0.35	0.110
9	0.4	0.120
10	0.45	0.129
11	0.5	0.138

View... Load... Save... OK Cancel Help

BASIN C

Storage Unit Stor-C

Property	Value
Name	Stor-C
X-Coordinate	1295.061
Y-Coordinate	4670.287
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-C

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-C

Description:

	Depth (ft)	Area (ft2)
1	0	15865
2	0.05	15947
3	0.1	16029
4	0.15	16111
5	0.2	16193
6	0.25	16275
7	0.3	16356
8	0.35	16438
9	0.4	16520
10	0.45	16602
11	0.5	16684

View... Load... Save... OK Cancel Help

Outlet Outlet-C

Property	Value
Name	Outlet-C
Inlet Node	Stor-C
Outlet Node	POC1-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-C

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-C

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.01
3	0.1	0.02
4	0.15	0.05
5	0.2	0.07
6	0.25	0.09
7	0.3	0.10
8	0.35	0.11
9	0.4	0.12
10	0.45	0.13
11	0.5	0.14

View... Load... Save... OK Cancel Help

BASIN D

Storage Unit Stor-D

Property	Value
Name	Stor-D
X-Coordinate	1621.911
Y-Coordinate	4658.182
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	BASIN-D

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-C

Description:

	Depth (ft)	Area (ft2)
1	0	15544
2	0.05	15626
3	0.1	15707
4	0.15	15789
5	0.2	15871
6	0.25	15953
7	0.3	16035
8	0.35	16117
9	0.4	16199
10	0.45	16280
11	0.5	16362

View... Load... Save... OK Cancel Help

Outlet Outlet-D

Property	Value
Name	Outlet-D
Inlet Node	Stor-D
Outlet Node	POC1-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-D

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-D

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.01
3	0.1	0.02
4	0.15	0.05
5	0.2	0.07
6	0.25	0.09
7	0.3	0.10
8	0.35	0.11
9	0.4	0.12
10	0.45	0.13
11	0.5	0.14

View... Load... Save... OK Cancel Help

POC2

BASIN E

Storage Unit Stor-E

Property	Value
Name	Stor-E
X-Coordinate	930.380
Y-Coordinate	4372.188
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-E

Y coordinate of storage unit on study area map

Storage Curve Editor

Curve Name: BASIN-D

Description:

	Depth (ft)	Area (ft2)
1	0	15578
2	0.05	15656
3	0.1	15735
4	0.15	15813
5	0.2	15892
6	0.25	15970
7	0.3	16049
8	0.35	16127
9	0.4	16205
10	0.45	16284
11	0.5	16362

View... Load... Save... OK Cancel Help

Outlet Outlet-E

Property	Value
Name	Outlet-E
Inlet Node	Stor-E
Outlet Node	POC1-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Dishc-E

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-E

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.00
3	0.1	0.01
4	0.15	0.02
5	0.2	0.04
6	0.25	0.04
7	0.3	0.05
8	0.35	0.06
9	0.4	0.06
10	0.45	0.06
11	0.5	0.07

View... Load... Save... OK Cancel Help

BASIN F

Storage Unit STOR-F

Property	Value
Name	STOR-F
X-Coordinate	2310.416
Y-Coordinate	4394.886
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-F

Elevation of the bottom of the storage unit (ft)

Storage Curve Editor

Curve Name: Basin-F

Description:

	Depth (ft)	Area (ft2)
1	0	9169
2	0.05	9226
3	0.1	9283
4	0.15	9339
5	0.2	9396
6	0.25	9453
7	0.3	9510
8	0.35	9567
9	0.4	9623
10	0.45	9680
11	0.5	9737

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Outlet Outlet-F

Property	Value
Name	Outlet-F
Inlet Node	Stor-F
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-F

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-F

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.04
3	0.1	0.15
4	0.15	0.30
5	0.2	0.44
6	0.25	0.52
7	0.3	0.60
8	0.35	0.66
9	0.4	0.72
10	0.45	0.78
11	0.5	0.83

View... Load... Save... OK Cancel Help

BASIN G

Storage Unit Stor-G

Property	Value
Name	Stor-G
X-Coordinate	1295.061
Y-Coordinate	4670.287
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-G

Click to specify soil properties that determine seepage loss through the bottom and sloped sides of the storage unit

Storage Curve Editor

Curve Name: Basin-G

Description:

	Depth (ft)	Area (ft2)
1	0	7458
2	0.05	7512
3	0.1	7566
4	0.15	7620
5	0.2	7674
6	0.25	7728
7	0.3	7781
8	0.35	7835
9	0.4	7889
10	0.45	7943
11	0.5	7997

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Outlet Outlet-G

Property	Value
Name	Outlet-G
Inlet Node	Stor-G
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-G

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-G

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.00
3	0.1	0.01
4	0.15	0.02
5	0.2	0.04
6	0.25	0.04
7	0.3	0.05
8	0.35	0.06
9	0.4	0.06
10	0.45	0.06
11	0.5	0.07

View... Load... Save... OK Cancel Help

BASIN H

Storage Unit Stor-H

Property	Value
Name	Stor-H
X-Coordinate	1621.911
Y-Coordinate	4658.182
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	BASIN-H

X coordinate of storage unit on study area map

Storage Curve Editor

Curve Name: BASIN-H

Description:

	Depth (ft)	Area (ft2)
1	0	34958
2	0.05	35096
3	0.1	35233
4	0.15	35371
5	0.2	35508
6	0.25	35646
7	0.3	35783
8	0.35	35920
9	0.4	36058
10	0.45	36195
11	0.5	36333

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Outlet Outlet-H

Property	Value
Name	Outlet-H
Inlet Node	Stor-H
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-H

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-H

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.04
3	0.1	0.15
4	0.15	0.30
5	0.2	0.44
6	0.25	0.52
7	0.3	0.60
8	0.35	0.66
9	0.4	0.72
10	0.45	0.78
11	0.5	0.83

View... Load... Save... OK Cancel Help

BASIN I

Storage Unit Stor-I

Property	Value
Name	Stor-I
X-Coordinate	1098.345
Y-Coordinate	4590.088
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	9748
Evap. Factor	0
Seepage Loss	NO ...
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	BASIN-I

Click to specify soil properties that determine seepage loss through the bottom and sloped sides of the storage unit

Storage Curve Editor

Curve Name: BASIN-I

Description:

	Depth (ft)	Area (ft2)
1	0	12058
2	0.05	12132
3	0.1	12205
4	0.15	12279
5	0.2	12353
6	0.25	12426
7	0.3	12500
8	0.35	12573
9	0.4	12647
10	0.45	12720
11	0.5	12794

View... Load... Save... OK Cancel Help

Outlet Outlet-I

Property	Value
Name	Outlet-I
Inlet Node	Stor-I
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Dishc-I

User-assigned name of outlet

Rating Curve Editor

Curve Name: Dishc-I

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.00
3	0.1	0.01
4	0.15	0.02
5	0.2	0.04
6	0.25	0.04
7	0.3	0.05
8	0.35	0.06
9	0.4	0.06
10	0.45	0.06
11	0.5	0.07

View... Load... Save... OK Cancel Help

BASIN J

Storage Unit Stor-J

Property	Value
Name	Stor-J
X-Coordinate	2051.659
Y-Coordinate	4376.727
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	5.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	BASIN-J

Click to specify soil properties that determine seepage loss through the bottom and sloped sides of the storage unit

Storage Curve Editor

Curve Name: BASIN-J

Description:

	Depth (ft)	Area (ft2)
1	0	32738
2	0.05	32845
3	0.1	32952
4	0.15	33059
5	0.2	33167
6	0.25	33274
7	0.3	33381
8	0.35	33488
9	0.4	33595
10	0.45	33702
11	0.5	33809

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Outlet Outlet-J

Property	Value
Name	Outlet-J
Inlet Node	Stor-J
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	disch-J

User-assigned name of outlet

Rating Curve Editor

Curve Name: disch-J

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.00
3	0.1	0.01
4	0.15	0.02
5	0.2	0.04
6	0.25	0.04
7	0.3	0.05
8	0.35	0.06
9	0.4	0.06
10	0.45	0.06
11	0.5	0.07

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Basin K

Storage Unit Stor-K

Property	Value
Name	Stor-K
X-Coordinate	1801.982
Y-Coordinate	4576.469
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	3.5
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-K

Click to specify soil properties that determine seepage loss through the bottom and sloped sides of the storage unit

Storage Curve Editor

Curve Name: Basin-K

Description:

	Depth (ft)	Area (ft2)
1	0	8383
2	0.05	8454
3	0.1	8525
4	0.15	8596
5	0.2	8667
6	0.25	8738
7	0.3	8809
8	0.35	8880
9	0.4	8951
10	0.45	9022
11	0.5	9093

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Outlet Outlet-K

Property	Value
Name	Outlet-K
Inlet Node	Stor-K
Outlet Node	POC2-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-K

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-K

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.00
3	0.1	0.01
4	0.15	0.02
5	0.2	0.04
6	0.25	0.04
7	0.3	0.05
8	0.35	0.06
9	0.4	0.06
10	0.45	0.06
11	0.5	0.07

View... Load... Save... OK Cancel Help

POC3

BASIN O-L

Storage Unit Stor-O-L

Property	Value
Name	Stor-O-L
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Cur	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-L

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-L

Description:

	Depth (ft)	Area (ft2)
1	0	2380
2	0.25	2525
3	0.5	2670
4	0.75	2832
5	1	2994
6	1.25	3155
7	1.5	3317
8	1.75	3495
9	2	3673
10	2.25	3851
11	2.5	4029

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Outlet Outlet-O-L

Property	Value
Name	Outlet-O-L
Inlet Node	Stor-O-L
Outlet Node	POC3-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Cur	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-1

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-1

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.25	0.0872
3	0.5	0.1379
4	0.75	0.1744
5	1	0.2045
6	1.25	0.2307
7	1.5	0.2542
8	1.75	4.4382
9	2	12.0690
10	2.25	21.9434
11	2.5	33.6320

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POC4

BASIN O-M

Storage Unit Stor-O-M

Property	Value
Name	Stor-O-M
X-Coordinate	1098.345
Y-Coordinate	4590.088
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	9748
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-M

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-M

Description:

	Depth (ft)	Area (ft2)
1	0	5861
2	0.05	5912
3	0.1	5964
4	0.15	6015
5	0.2	6067
6	0.25	6118
7	0.3	6170
8	0.35	6221
9	0.4	6273
10	0.45	6324
11	0.5	6376

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Outlet Outlet-O-M

Property	Value
Name	Outlet-O-M
Inlet Node	Stor-O-M
Outlet Node	POC4-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-M

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-M

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.01
3	0.1	0.02
4	0.15	0.05
5	0.2	0.07
6	0.25	0.09
7	0.3	0.10
8	0.35	0.11
9	0.4	0.12
10	0.45	0.13
11	0.5	0.14

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BASIN O-N

Storage Unit Stor-O-N

Property	Value
Name	Stor-O-N
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-N

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-N

Description:

	Depth (ft)	Area (ft2)
1	0	5211
2	0.05	5256
3	0.1	5300
4	0.15	5345
5	0.2	5389
6	0.25	5434
7	0.3	5478
8	0.35	5523
9	0.4	5567
10	0.45	5612
11	0.5	5656

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Outlet Outlet-O-N

Property	Value
Name	Outlet-O-N
Inlet Node	Stor-O-N
Outlet Node	POC4-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-N

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-N

Description:

	Head (ft)	Outflow (CFS)
1	0	0.00
2	0.05	0.01
3	0.1	0.02
4	0.15	0.05
5	0.2	0.07
6	0.25	0.09
7	0.3	0.10
8	0.35	0.11
9	0.4	0.12
10	0.45	0.13
11	0.5	0.14

View... Load... Save... OK Cancel Help

POC5

BASIN O-O

Storage Unit Stor-O-O

Property	Value
Name	Stor-O-O
X-Coordinate	921.874
Y-Coordinate	4443.450
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0.33
Initial Depth	0
Ponded Area	42385
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Cur	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-O

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-O

Description:

	Depth (ft)	Area (ft2)
1	0	2000
2	0.1	2000
3	0.2	2000
4	0.3	2000
5		
6		
7		
8		
9		
10		
11		

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Outlet Outlet-O-O

Property	Value
Name	Outlet-O-O
Inlet Node	Stor-O-O
Outlet Node	POC5-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Cur	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-O

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-O

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.1	1.0530
3	0.2	2.9784
4	0.3	5.4717
5		
6		
7		
8		
9		
10		
11		

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BASIN O-P

Storage Unit Stor-O-P

Property	Value
Name	Stor-O-P
X-Coordinate	1059.016
Y-Coordinate	4570.740
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0.33
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curv	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-P

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-P

Description:

	Depth (ft)	Area (ft2)
1	0	1200
2	0.1	1200
3	0.2	1200
4	0.3	1200
5		
6		
7		
8		
9		
10		
11		

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Outlet oUTLET-O-P

Property	Value
Name	oUTLET-O-P
Inlet Node	Stor-O-P
Outlet Node	POC5-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curv	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-P

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-P

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.1	1.0530
3	0.2	2.9784
4	0.3	5.4717
5		
6		
7		
8		
9		
10		
11		

View... Load... Save... OK Cancel Help

BASIN O-Q

Storage Unit Stor-O-Q

Property	Value
Name	Stor-O-Q
X-Coordinate	1222.586
Y-Coordinate	4589.908
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0.33
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curv	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-Q

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-Q

Description:

	Depth (ft)	Area (ft2)
1	0	900
2	0.1	900
3	0.2	900
4	0.3	900
5		
6		
7		
8		
9		
10		
11		

View... Load... Save... OK Cancel Help

Outlet OULET-O-Q

Property	Value
Name	OULET-O-Q
Inlet Node	Stor-O-Q
Outlet Node	POC5-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curv	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-Q

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-Q

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.1	1.0530
3	0.2	2.9784
4	0.3	5.4717
5		
6		
7		
8		
9		
10		
11		

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BASIN O-R

Storage Unit Stor-O-R

Property	Value
Name	Stor-O-R
X-Coordinate	1437.272
Y-Coordinate	4740.699
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0.33
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curv	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-R

User-assigned name of storage unit

Storage Curve Editor

Curve Name: Basin-O-R

Description:

	Depth (ft)	Area (ft2)
1	0	900
2	0.1	900
3	0.2	900
4	0.3	900
5		
6		
7		
8		
9		
10		
11		

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Outlet OUTLET-O-R

Property	Value
Name	OUTLET-O-R
Inlet Node	Stor-O-R
Outlet Node	POC5-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curv	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-R

User-assigned name of outlet

Rating Curve Editor

Curve Name: Disch-O-R

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.1	1.0530
3	0.2	2.9784
4	0.3	5.4717
5		
6		
7		
8		
9		
10		
11		

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BASIN O-S

Storage Unit Stor-O-S

Property	Value
Name	Stor-O-S
X-Coordinate	1645.568
Y-Coordinate	4743.255
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	0.33
Initial Depth	0
Ponded Area	0
Evap. Factor	0
Seepage Loss	NO
Storage Curve	TABULAR
Functional Curv	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	Basin-O-S

User-assigned name of storage unit

Rating Curve Editor

Curve Name: Disch-O-S

Description:

	Head (ft)	Outflow (CFS)
1	0	0.0000
2	0.1	1.0530
3	0.2	2.9784
4	0.3	5.4717
5		
6		
7		
8		
9		
10		
11		

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Outlet OUTLET-O-S

Property	Value
Name	OUTLET-O-S
Inlet Node	Stor-O-S
Outlet Node	POC5-Proposed
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curv	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	Disch-O-S

User-assigned name of outlet

Storage Curve Editor

Curve Name: Basin-O-S

Description:

	Depth (ft)	Area (ft2)
1	0	1200
2	0.1	1200
3	0.2	1200
4	0.3	1200
5		
6		
7		
8		
9		
10		
11		

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ATTACHMENT 6 - Drying Time of the Surface Layer of Biofiltration cells

The LID subroutine of the SWMM Model does not increase the discharge of the lower LID orifice once the storage layer is full (in other words, it does not consider the influence of the pressure in the amended soil layer). The discharge of the lower LID orifice when the surface layer is full is considered constant by the model and equal to the discharge of the lower orifice when the storage layer is full (equal to the cutoff flows).

The drying time interval between an elevation yi and another elevation $yi - \Delta y$ can be obtained by:

$$\Delta t_i(hours) = \frac{(Q(yi)+Q(yi-\Delta y))}{7200\ (V(yi)-V(yi-\Delta y))} = \frac{Q_{ave}}{3600\ \Delta V}$$

$$t = \sum_{i=1}^{n} \Delta t_i\ (hours)$$

Q_{ave} represents the average discharge between elevation y_i and y_{i+1} obtained by $\frac{Q(yi)+Q(yi-\Delta y)}{2}$ where ΔV represents the fraction of the volume that must be discharged at a peak flow $Q_{ave}(V(yi) - V(yi - \Delta y))$.

The volume and the discharge change as the elevation changes; the calculation takes into account this change.

POC1

BASIN A DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	104.82	131154.42	0.0
5.75	87.38	124053.70	0.0
5.50	71.11	117164.11	0.0
5.25	56.10	110485.66	0.1
5.00	42.48	104018.35	0.1
4.75	30.40	97717.00	0.2
4.50	20.13	91536.47	0.2
4.25	12.07	85476.75	0.3
4.00	7.43	79537.85	0.5
3.75	6.93	73717.75	0.7
3.50	6.38	68014.47	1.0
3.25	5.78	62427.99	1.2
3.00	5.11	56958.33	1.5
2.75	4.33	51603.54	1.8
2.50	3.35	46361.71	2.2
2.25	1.60	41232.83	2.8
2.00	0.35	36216.91	4.2
1.75	0.33	31311.98	8.2
1.50	0.30	26516.11	12.4
1.25	0.27	21829.28	16.9
1.00	0.24	17251.50	21.9
0.75	0.19	12780.85	27.8
0.50	0.10	8415.38	36.3
0.25	0.10	4155.09	48.4
0.00	0.10	0.00	60.1

BASIN B DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	104.82	139000.5	0.0
5.75	87.38	131855.6	0.0
5.50	71.11	124833.7	0.0
5.25	56.10	117934.7	0.1
5.00	42.48	111158.6	0.1
4.75	30.40	104503.8	0.2
4.50	20.13	97968.6	0.2
4.25	12.07	91553.0	0.3
4.00	7.43	85257.0	0.5
3.75	6.93	79079.0	0.8
3.50	6.38	73017.4	1.0
3.25	5.78	67072.0	1.3
3.00	5.11	61243.1	1.6
2.75	4.33	55528.7	1.9
2.50	3.35	49927.5	2.3
2.25	1.60	44439.2	2.9
2.00	0.35	39064.0	4.5
1.75	0.33	33800.2	8.8
1.50	0.30	28646.1	13.3
1.25	0.27	23601.8	1.0
1.00	0.24	18667.2	6.4
0.75	0.19	13840.7	12.7
0.50	0.10	9120.7	22.0
0.25	0.10	4507.1	35.0
0.00	0.10	0.0	1.0

BASIN C DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	104.8	121383.0	0.0
5.75	87.4	115003.7	0.0
5.50	71.1	108745.1	0.0
5.25	56.1	102607.4	0.1
5.00	42.5	96590.4	0.1
4.75	30.4	90692.4	0.1
4.50	20.1	84911.5	0.2
4.25	12.1	79247.8	0.3
4.00	7.4	73701.2	0.5
3.75	6.9	68269.8	0.7
3.50	6.4	62951.9	0.9
3.25	5.8	57747.5	1.1
3.00	5.1	52656.5	1.4
2.75	4.3	47677.1	1.7
2.50	3.4	42807.5	2.0
2.25	1.6	38047.6	2.6
2.00	0.4	33397.5	3.9
1.75	0.3	28855.3	7.6
1.50	0.3	24419.1	11.5
1.25	0.3	20089.0	15.7
1.00	0.2	15865.0	20.3
0.75	0.2	11745.2	25.7
0.50	0.1	7727.8	33.6
0.25	0.1	3812.7	44.6
0.00	0.1	0.0	55.4

BASIN D DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	104.37	139257.8	0.0
5.75	86.90	132959.6	0.0
5.50	70.60	126782.3	0.0
5.25	55.56	120725.8	0.1
5.00	41.90	114790.0	0.1
4.75	29.78	108973.2	0.1
4.50	19.45	103273.4	0.2
4.25	11.33	97690.8	0.3
4.00	6.62	92225.2	0.5
3.75	6.01	86255.7	0.7
3.50	5.34	79161.2	1.1
3.25	4.55	70941.7	1.6
3.00	3.58	61597.3	2.2
2.75	1.82	52364.4	3.1
2.50	0.57	44479.5	5.0
2.25	0.54	37942.8	8.2
2.00	0.52	32754.1	10.9
1.75	0.49	28292.5	13.4
1.50	0.45	23936.8	16.0
1.25	0.41	19687.2	18.7
1.00	0.35	15543.7	21.8
0.75	0.30	11504.2	25.3
0.50	0.21	7567.2	29.6
0.25	0.21	3732.4	34.6
0.00	0.21	0.0	39.6

POC2

BASIN E DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	66.89	205249.90	0.0
5.75	54.81	194673.56	0.0
5.50	43.56	184276.56	0.1
5.25	33.21	174058.90	0.2
5.00	23.85	164020.58	0.3
4.75	15.60	154159.82	0.4
4.50	8.63	144474.84	0.6
4.25	3.24	134965.65	1.1
4.00	0.30	125632.23	2.5
3.75	0.29	116472.81	11.3
3.50	0.28	107485.62	20.0
3.25	0.27	98670.64	28.9
3.00	0.26	90027.88	37.8
2.75	0.26	81555.56	46.9
2.50	0.25	73251.89	56.0
2.25	0.24	65116.88	65.4
2.00	0.23	57150.53	75.0
1.75	0.21	49351.06	84.9
1.50	0.20	41716.68	95.1
1.25	0.19	34247.41	105.8
1.00	0.17	26943.24	117.3
0.75	0.14	19843.07	130.1
0.50	0.10	12985.81	145.9
0.25	0.10	6371.45	164.6
0.00	0.10	0.00	182.5

BASIN F DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	112.90	69587.50	0.0
5.75	92.33	65654.14	0.0
5.50	73.34	61809.45	0.0
5.25	56.08	58053.44	0.0
5.00	40.75	54384.34	0.1
4.75	27.65	50800.37	0.1
4.50	17.32	47301.55	0.1
4.25	11.26	43887.87	0.2
4.00	10.31	40557.56	0.3
3.75	9.20	37308.87	0.4
3.50	7.42	34141.78	0.5
3.25	6.04	31056.30	0.6
3.00	5.66	28050.66	0.8
2.75	5.25	25123.09	0.9
2.50	4.81	22273.58	1.1
2.25	4.32	19502.15	1.2
2.00	3.76	16807.02	1.4
1.75	3.09	14186.44	1.6
1.50	2.12	11640.40	1.9
1.25	0.93	9168.90	2.3
1.00	0.62	6770.18	3.2
0.75	0.10	4442.45	5.0
0.50	0.10	2185.73	11.4
0.25	0.10	0.00	17.5
0.00	0.10	0.00	17.5

BASIN G DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	79.67	163076.44	0.0
5.75	67.67	159645.48	0.0
5.50	56.55	156299.57	0.0
5.25	46.39	153038.73	0.0
5.00	37.31	146607.30	0.1
4.75	29.48	133749.63	0.2
4.50	23.19	114465.73	0.4
4.25	19.29	88755.60	0.7
4.00	18.28	63125.21	1.1
3.75	17.21	44080.54	1.4
3.50	16.06	31621.58	1.6
3.25	14.80	25748.35	1.7
3.00	13.40	23205.18	1.8
2.75	11.77	20736.44	1.8
2.50	9.39	18342.11	1.9
2.25	7.61	16022.20	2.0
2.00	6.36	13774.93	2.1
1.75	4.78	11598.54	2.2
1.50	1.88	9493.01	2.3
1.25	0.42	7458.35	2.8
1.00	0.40	5492.78	4.2
0.75	0.35	3594.54	5.6
0.50	0.35	1763.61	7.0
0.25	0.35	0.00	8.4
0.00	0.35	0.00	8.4

BASIN H DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	134.94	252535.39	0.0
5.75	112.90	239899.23	0.0
5.50	92.33	227452.50	0.1
5.25	73.34	215195.21	0.1
5.00	56.08	203127.34	0.2
4.75	40.75	191247.14	0.2
4.50	27.65	179552.85	0.3
4.25	17.32	168044.46	0.5
4.00	11.26	156721.97	0.7
3.75	10.31	145583.63	1.0
3.50	9.20	134627.67	1.3
3.25	7.42	123854.09	1.6
3.00	6.04	113262.90	2.1
2.75	5.66	102852.33	2.6
2.50	5.25	92620.63	3.1
2.25	4.81	82567.78	3.6
2.00	4.32	72693.80	4.2
1.75	3.76	62996.92	4.9
1.50	3.09	53475.38	5.7
1.25	2.12	44129.17	6.7
1.00	0.93	34958.30	8.4
0.75	0.62	25961.01	11.6
0.50	0.10	17135.53	18.4
0.25	0.10	8481.86	42.8
0.00	0.10	0.00	66.7

BASIN I DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	110.23	95980.26	0.0
5.75	89.80	90784.95	0.0
5.50	70.96	85699.29	0.0
5.25	53.87	80723.25	0.1
5.00	38.72	75856.86	0.1
4.75	25.83	71098.34	0.1
4.50	15.73	66445.94	0.2
4.25	9.94	61899.64	0.3
4.00	9.33	57459.46	0.4
3.75	8.68	53123.61	0.5
3.50	7.96	48890.32	0.7
3.25	7.17	44759.59	0.8
3.00	6.26	40731.41	1.0
2.75	5.15	36804.05	1.2
2.50	3.25	32975.76	1.5
2.25	1.83	29246.55	1.9
2.00	1.61	25616.41	2.4
1.75	1.34	22083.57	3.1
1.50	0.93	18646.25	4.0
1.25	0.42	15304.45	5.3
1.00	0.40	12058.18	7.5
0.75	0.35	8905.65	9.9
0.50	0.35	5845.11	12.3
0.25	0.35	2876.56	14.6
0.00	0.35	0.00	16.9

BASIN J DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	113.00	218837.85	0.0
5.75	92.49	207724.35	0.0
5.50	73.57	196762.35	0.1
5.25	56.38	185951.85	0.1
5.00	41.14	175291.08	0.2
4.75	28.15	164778.25	0.3
4.50	17.95	154413.38	0.4
4.25	12.05	144196.45	0.6
4.00	11.34	134125.71	0.8
3.75	10.57	124199.39	1.1
3.50	9.74	114417.50	1.3
3.25	8.82	104780.03	1.6
3.00	7.77	95285.21	1.9
2.75	6.51	85931.28	2.3
2.50	4.45	76718.25	2.8
2.25	2.85	67646.10	3.5
2.00	2.42	58713.08	4.4
1.75	1.89	49917.44	5.5
1.50	1.09	41259.16	7.1
1.25	0.09	32738.25	11.2
1.00	0.07	24352.94	39.5
0.75	0.03	16101.46	87.7
0.50	0.03	7983.82	175.0
0.25	0.03	0.00	260.9
0.00	0.03	0.00	260.9

POC2

BASIN K DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
4.00	97.37	39103.69	0.0
3.75	77.37	35823.55	0.0
3.50	58.98	32643.64	0.0
3.25	42.34	29563.95	0.0
3.00	27.68	26582.59	0.1
2.75	15.29	23697.66	0.1
2.50	5.72	20909.17	0.2
2.25	0.48	18217.10	0.4
2.00	0.47	15619.56	1.9
1.75	0.45	13114.65	3.4
1.50	0.44	10702.36	4.9
1.25	0.42	8382.70	6.4
1.00	0.40	6153.77	8.0
0.75	0.35	4013.68	9.5
0.50	0.35	1962.42	11.2
0.25	0.35	0.00	12.7
0.00	0.35	0.00	12.7

POC3

BASIN O-L DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
3.00	33.73	9046.00	0.0
2.75	22.04	8061.00	0.0
2.50	12.17	7120.50	0.0
2.25	4.54	6224.50	0.1
2.00	0.35	5373.00	0.2
1.75	0.33	4563.97	0.8
1.50	0.30	3795.38	1.5
1.25	0.27	3067.22	2.2
1.00	0.24	2379.50	2.9
0.75	0.19	1730.16	3.8
0.50	0.10	1117.13	5.0
0.25	0.10	540.41	6.6
0.00	0.10	0.00	8.1

POC 4

BASIN O-M DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
4.00	77.57	27739.50	0.0
3.75	61.64	25370.50	0.0
3.50	46.99	23081.50	0.0
3.25	33.73	20872.50	0.0
3.00	22.04	18740.69	0.1
2.75	12.17	16683.25	0.1
2.50	4.54	14700.19	0.2
2.25	0.35	12791.50	0.4
2.00	0.33	10954.69	1.9
1.75	0.30	9187.25	3.4
1.50	0.27	7489.19	5.1
1.25	0.24	5860.50	6.8
1.00	0.19	4298.72	8.9
0.75	0.10	2801.38	11.8
0.50	0.10	1368.47	15.9
0.25	0.10	0.00	19.7
0.00	0.10	0.00	19.7

BASIN O-N DRAWDOWN			
Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
6.00	94.78	46157.50	0.0
5.75	77.67	43456.84	0.0
5.50	61.75	40829.38	0.0
5.25	47.10	38275.09	0.0
5.00	33.85	35794.00	0.0
4.75	22.16	33384.38	0.1
4.50	12.29	31044.50	0.1
4.25	4.67	28774.38	0.2
4.00	0.49	26574.00	0.4
3.75	0.48	24441.59	1.6
3.50	0.46	22375.38	2.9
3.25	0.45	20375.34	4.1
3.00	0.43	18441.50	5.3
2.75	0.41	16572.06	6.5
2.50	0.39	14765.25	7.8
2.25	0.37	13021.06	9.0
2.00	0.35	11339.50	10.3
1.75	0.33	9718.78	11.6
1.50	0.30	8157.13	13.0
1.25	0.27	6654.53	14.5
1.00	0.24	5211.00	16.0
0.75	0.19	3824.81	17.9
0.50	0.10	2494.25	20.5
0.25	0.10	1219.31	24.1
0.00	0.10	0.00	27.5

POC5

BASIN O-O DRAWDOWN

Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
0.50	0.10	1000.00	0.0
0.45	0.10	900.00	0.3
0.40	0.10	800.00	0.6
0.35	0.10	700.00	0.8
0.30	0.10	600.00	1.1
0.25	0.10	500.00	1.4
0.20	0.10	400.00	1.7
0.15	0.10	300.00	2.0
0.10	0.10	200.00	2.3
0.05	0.10	100.00	2.5
0.00	0.10	0.00	2.8

BASIN O-P DRAWDOWN

Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
0.50	0.10	600.00	0.0
0.45	0.10	540.00	0.2
0.40	0.10	480.00	0.3
0.35	0.10	420.00	0.5
0.30	0.10	360.00	0.7
0.25	0.10	300.00	0.8
0.20	0.10	240.00	1.0
0.15	0.10	180.00	1.2
0.10	0.10	120.00	1.4
0.05	0.10	60.00	1.5
0.00	0.10	0.00	1.7

BASIN O-Q DRAWDOWN

Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
0.50	0.10	450.00	0.0
0.45	0.10	405.00	0.1
0.40	0.10	360.00	0.3
0.35	0.10	315.00	0.4
0.30	0.10	270.00	0.5
0.25	0.10	225.00	0.6
0.20	0.10	180.00	0.8
0.15	0.10	135.00	0.9
0.10	0.10	90.00	1.0
0.05	0.10	45.00	1.1
0.00	0.10	0.00	1.3

BASIN O-R DRAWDOWN

Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
0.50	0.10	450.00	0.0
0.45	0.10	405.00	0.1
0.40	0.10	360.00	0.3
0.35	0.10	315.00	0.4
0.30	0.10	270.00	0.5
0.25	0.10	225.00	0.6
0.20	0.10	180.00	0.8
0.15	0.10	135.00	0.9
0.10	0.10	90.00	1.0
0.05	0.10	45.00	1.1
0.00	0.10	0.00	1.3

BASIN O-S DRAWDOWN

Ponding Depth (FT)	Qout Total (CFS)	V in basin (CU FT)	Total Drawdown Time (HR)
0.50	0.10	600.00	0.0
0.45	0.10	540.00	0.2
0.40	0.10	480.00	0.3
0.35	0.10	420.00	0.5
0.30	0.10	360.00	0.7
0.25	0.10	300.00	0.8
0.20	0.10	240.00	1.0
0.15	0.10	180.00	1.2
0.10	0.10	120.00	1.4
0.05	0.10	60.00	1.5
0.00	0.10	0.00	1.7

BASIN A STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	16410	-
0.05	16494	823
0.1	16578	1,649
0.15	16662	2,480
0.2	16747	3,316
0.25	16831	4,155
0.3	16915	4,999
0.35	16999	5,847
0.4	17083	6,699
0.45	17167	7,555
0.5	17252	8,415
0.55	17336	9,280
0.6	17420	10,149
0.65	17504	11,022
0.7	17588	11,899
0.75	17672	12,781
0.8	17756	13,667
0.85	17841	14,556
0.9	17925	15,451
0.95	18009	16,349
1	18093	17,252
1.05	18180	18,158
1.1	18267	19,070
1.15	18355	19,985
1.2	18442	20,905
1.25	18529	21,829
1.3	18616	22,758
1.35	18704	23,691
1.4	18791	24,628
1.45	18878	25,570
1.5	18965	26,516
1.55	19053	27,467
1.6	19140	28,421
1.65	19227	29,381
1.7	19314	30,344
1.75	19402	31,312
1.8	19489	32,284
1.85	19576	33,261
1.9	19663	34,242
1.95	19751	35,227
2	19838	36,217
2.05	19928	37,211
2.1	20019	38,210
2.15	20109	39,213
2.2	20199	40,221
2.25	20290	41,233
2.3	20380	42,250

BASIN A STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.35	20470	43,271
2.4	20561	44,297
2.45	20651	45,327
2.5	20741	46,362
2.55	20832	47,401
2.6	20922	48,445
2.65	21013	49,493
2.7	21103	50,546
2.75	21193	51,604
2.8	21284	52,665
2.85	21374	53,732
2.9	21464	54,803
2.95	21555	55,878
3	21645	56,958
3.05	21738	58,043
3.1	21832	59,132
3.15	21925	60,226
3.2	22019	61,325
3.25	22112	62,428
3.3	22206	63,536
3.35	22299	64,649
3.4	22393	65,766
3.45	22486	66,888
3.5	22580	68,014
3.55	22673	69,146
3.6	22766	70,282
3.65	22860	71,422
3.7	22953	72,568
3.75	23047	73,718
3.8	23140	74,872
3.85	23234	76,032
3.9	23327	77,196
3.95	23421	78,364
4	23514	79,538
4.05	23611	80,716
4.1	23707	81,899
4.15	23804	83,087
4.2	23901	84,279
4.25	23997	85,477
4.3	24094	86,679

BASIN A STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	24191	87,886
4.4	24287	89,098
4.45	24384	90,315
4.5	24481	91,536
4.55	24577	92,763
4.6	24674	93,994
4.65	24770	95,230
4.7	24867	96,471
4.75	24964	97,717
4.8	25060	98,968
4.85	25157	100,223
4.9	25254	101,483
4.95	25350	102,748
5	25447	104,018
5.05	25616	105,295
5.1	25785	106,580
5.15	25954	107,873
5.2	26123	109,175
5.25	26292	110,486
5.3	26460	111,804
5.35	26629	113,132
5.4	26798	114,467
5.45	26967	115,812
5.5	27136	117,164
5.55	27305	118,525
5.6	27474	119,895
5.65	27643	121,273
5.7	27812	122,659
5.75	27981	124,054
5.8	28150	125,457
5.85	28318	126,869
5.9	28487	128,289
5.95	28656	129,717
6	28825	131,154

BASIN B STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	17816	-
0.05	17901	893
0.1	17986	1,790
0.15	18071	2,692
0.2	18156	3,597
0.25	18241	4,507
0.3	18327	5,421
0.35	18412	6,340
0.4	18497	7,262
0.45	18582	8,189
0.5	18667	9,121
0.55	18752	10,056
0.6	18838	10,996
0.65	18923	11,940
0.7	19008	12,888
0.75	19093	13,841
0.8	19178	14,798
0.85	19263	15,759
0.9	19348	16,724
0.95	19434	17,693
1	19519	18,667
1.05	19607	19,645
1.1	19694	20,628
1.15	19782	21,615
1.2	19870	22,606
1.25	19958	23,602
1.3	20046	24,602
1.35	20133	25,606
1.4	20221	26,615
1.45	20309	27,628
1.5	20397	28,646
1.55	20485	29,668
1.6	20572	30,695
1.65	20660	31,725
1.7	20748	32,761
1.75	20836	33,800
1.8	20924	34,844
1.85	21011	35,893
1.9	21099	36,945
1.95	21187	38,002
2	21275	39,064
2.05	21365	40,130
2.1	21456	41,201
2.15	21546	42,276
2.2	21637	43,355
2.25	21727	44,439
2.3	21817	45,528

BASIN B STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.35	21908	46,621
2.4	21998	47,719
2.45	22089	48,821
2.5	22179	49,927
2.55	22269	51,039
2.6	22360	52,154
2.65	22450	53,275
2.7	22541	54,399
2.75	22631	55,529
2.8	22722	56,663
2.85	22812	57,801
2.9	22902	58,944
2.95	22993	60,091
3	23083	61,243
3.05	23176	62,400
3.1	23269	63,561
3.15	23362	64,726
3.2	23456	65,897
3.25	23549	67,072
3.3	23642	68,252
3.35	23735	69,436
3.4	23828	70,625
3.45	23921	71,819
3.5	24014	73,017
3.55	24107	74,220
3.6	24200	75,428
3.65	24293	76,640
3.7	24386	77,857
3.75	24479	79,079
3.8	24572	80,305
3.85	24665	81,536
3.9	24758	82,772
3.95	24852	84,012
4	24945	85,257
4.05	25040	86,507
4.1	25136	87,761
4.15	25232	89,020
4.2	25327	90,284
4.25	25423	91,553
4.3	25519	92,827

BASIN B STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	25615	94,105
4.4	25710	95,388
4.45	25806	96,676
4.5	25902	97,969
4.55	25997	99,266
4.6	26093	100,568
4.65	26189	101,875
4.7	26284	103,187
4.75	26380	104,504
4.8	26476	105,825
4.85	26572	107,151
4.9	26667	108,482
4.95	26763	109,818
5	26859	111,159
5.05	26957	112,504
5.1	27055	113,854
5.15	27154	115,210
5.2	27252	116,570
5.25	27350	117,935
5.3	27449	119,305
5.35	27547	120,680
5.4	27645	122,059
5.45	27744	123,444
5.5	27842	124,834
5.55	27940	126,228
5.6	28039	127,628
5.65	28137	129,032
5.7	28235	130,441
5.75	28334	131,856
5.8	28432	133,275
5.85	28530	134,699
5.9	28628	136,128
5.95	28727	137,562
6	28825	139,000

BASIN C STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	15046	-
0.05	15128	754
0.1	15210	1,513
0.15	15292	2,275
0.2	15374	3,042
0.25	15456	3,813
0.3	15537	4,588
0.35	15619	5,366
0.4	15701	6,149
0.45	15783	6,937
0.5	15865	7,728
0.55	15947	8,523
0.6	16029	9,322
0.65	16111	10,126
0.7	16193	10,934
0.75	16275	11,745
0.8	16356	12,561
0.85	16438	13,381
0.9	16520	14,205
0.95	16602	15,033
1	16684	15,865
1.05	16769	16,701
1.1	16854	17,542
1.15	16939	18,387
1.2	17023	19,236
1.25	17108	20,089
1.3	17193	20,947
1.35	17278	21,808
1.4	17363	22,674
1.45	17448	23,545
1.5	17533	24,419
1.55	17617	25,298
1.6	17702	26,181
1.65	17787	27,068
1.7	17872	27,960
1.75	17957	28,855
1.8	18042	29,755
1.85	18126	30,659
1.9	18211	31,568
1.95	18296	32,481
2	18381	33,398
2.05	18469	34,319
2.1	18557	35,244
2.15	18644	36,174
2.2	18732	37,109
2.25	18820	38,048
2.3	18908	38,991

BASIN C STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.35	18996	39,938
2.4	19083	40,890
2.45	19171	41,847
2.5	19259	42,808
2.55	19347	43,773
2.6	19435	44,742
2.65	19522	45,716
2.7	19610	46,694
2.75	19698	47,677
2.8	19786	48,664
2.85	19874	49,656
2.9	19961	50,652
2.95	20049	51,652
3	20137	52,657
3.05	20228	53,666
3.1	20319	54,679
3.15	20409	55,697
3.2	20500	56,720
3.25	20591	57,747
3.3	20682	58,779
3.35	20772	59,816
3.4	20863	60,857
3.45	20954	61,902
3.5	21045	62,952
3.55	21135	64,006
3.6	21226	65,065
3.65	21317	66,129
3.7	21408	67,197
3.75	21498	68,270
3.8	21589	69,347
3.85	21680	70,429
3.9	21771	71,515
3.95	21862	72,606
4	21952	73,701
4.05	22046	74,801
4.1	22140	75,906
4.15	22233	77,015
4.2	22327	78,129
4.25	22421	79,248
4.3	22514	80,371

BASIN C STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	22608	81,499
4.4	22702	82,632
4.45	22796	83,769
4.5	22889	84,912
4.55	22983	86,058
4.6	23077	87,210
4.65	23170	88,366
4.7	23264	89,527
4.75	23358	90,692
4.8	23451	91,863
4.85	23545	93,038
4.9	23639	94,217
4.95	23733	95,401
5	23826	96,590
5.05	23923	97,784
5.1	24019	98,983
5.15	24116	100,186
5.2	24213	101,394
5.25	24309	102,607
5.3	24406	103,825
5.35	24503	105,048
5.4	24599	106,276
5.45	24696	107,508
5.5	24793	108,745
5.55	24889	109,987
5.6	24986	111,234
5.65	25083	112,486
5.7	25179	113,742
5.75	25276	115,004
5.8	25372	116,270
5.85	25469	117,541
5.9	25566	118,817
5.95	25662	120,097
6	25759	121,383

BASIN D STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	14725	-
0.05	14807	738
0.1	14889	1,481
0.15	14971	2,227
0.2	15052	2,978
0.25	15134	3,732
0.3	15216	4,491
0.35	15298	5,254
0.4	15380	6,021
0.45	15462	6,792
0.5	15544	7,567
0.55	15626	8,346
0.6	15707	9,130
0.65	15789	9,917
0.7	15871	10,709
0.75	15953	11,504
0.8	16035	12,304
0.85	16117	13,108
0.9	16199	13,916
0.95	16280	14,728
1	16362	15,544
1.05	16447	16,364
1.1	16532	17,188
1.15	16617	18,017
1.2	16702	18,850
1.25	16786	19,687
1.3	16871	20,529
1.35	16956	21,374
1.4	17041	22,224
1.45	17126	23,078
1.5	17210	23,937
1.55	17295	24,799
1.6	17380	25,666
1.65	17465	26,537
1.7	17550	27,413
1.75	17635	28,292
1.8	17719	29,176
1.85	17804	30,064
1.9	17889	30,957
1.95	17974	31,853
2	18059	32,754
2.05	19137	33,684
2.1	20216	34,668
2.15	21294	35,706

BASIN D STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.2	22372	36,797
2.25	23451	37,943
2.3	24529	39,142
2.35	25608	40,396
2.4	26686	41,703
2.45	27765	43,064
2.5	28843	44,480
2.55	29922	45,949
2.6	31000	47,472
2.65	32079	49,049
2.7	33157	50,680
2.75	34235	52,364
2.8	35314	54,103
2.85	36392	55,896
2.9	37471	57,742
2.95	38549	59,643
3	39628	61,597
3.05	38728	63,556
3.1	37828	65,470
3.15	36928	67,339
3.2	36028	69,163
3.25	35128	70,942
3.3	34228	72,676
3.35	33328	74,364
3.4	32428	76,008
3.45	31528	77,607
3.5	30628	79,161
3.55	29728	80,670
3.6	28828	82,134
3.65	27928	83,553
3.7	27028	84,927
3.75	26128	86,256
3.8	25228	87,540
3.85	24328	88,778
3.9	23428	89,972
3.95	22528	91,121
4	21628	92,225
4.05	21722	93,309
4.1	21815	94,397
4.15	21909	95,490
4.2	22003	96,588
4.25	22096	97,691
4.3	22190	98,798

BASIN D STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	22284	99,910
4.4	22377	101,026
4.45	22471	102,148
4.5	22565	103,273
4.55	22658	104,404
4.6	22752	105,539
4.65	22846	106,679
4.7	22939	107,824
4.75	23033	108,973
4.8	23127	110,127
4.85	23220	111,286
4.9	23314	112,449
4.95	23408	113,617
5	23502	114,790
5.05	23598	115,967
5.1	23695	117,150
5.15	23791	118,337
5.2	23888	119,529
5.25	23985	120,726
5.3	24081	121,927
5.35	24178	123,134
5.4	24275	124,345
5.45	24371	125,561
5.5	24468	126,782
5.55	24564	128,008
5.6	24661	129,239
5.65	24758	130,474
5.7	24854	131,715
5.75	24951	132,960
5.8	25048	134,210
5.85	25144	135,464
5.9	25241	136,724
5.95	25337	137,988
6	25434	139,258

BASIN E STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	25000	-
0.05	25194	1,255
0.1	25389	2,519
0.15	25583	3,794
0.2	25777	5,078
0.25	25972	6,371
0.3	26166	7,675
0.35	26360	8,988
0.4	26555	10,311
0.45	26749	11,644
0.5	26943	12,986
0.55	27138	14,338
0.6	27332	15,700
0.65	27526	17,071
0.7	27721	18,452
0.75	27915	19,843
0.8	28109	21,244
0.85	28304	22,654
0.9	28498	24,074
0.95	28692	25,504
1	28886	26,943
1.05	29019	28,391
1.1	29151	29,845
1.15	29283	31,306
1.2	29415	32,773
1.25	29547	34,247
1.3	29679	35,728
1.35	29811	37,215
1.4	29943	38,709
1.45	30075	40,210
1.5	30207	41,717
1.55	30339	43,230
1.6	30471	44,751
1.65	30604	46,277
1.7	30736	47,811
1.75	30868	49,351
1.8	31000	50,898
1.85	31132	52,451
1.9	31264	54,011
1.95	31396	55,577
2	31528	57,151
2.05	31663	58,730
2.1	31798	60,317
2.15	31933	61,910

BASIN E STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.2	32068	63,510
2.25	32203	65,117
2.3	32338	66,730
2.35	32473	68,351
2.4	32608	69,978
2.45	32742	71,611
2.5	32877	73,252
2.55	33012	74,899
2.6	33147	76,553
2.65	33282	78,214
2.7	33417	79,881
2.75	33552	81,556
2.8	33687	83,237
2.85	33822	84,924
2.9	33957	86,619
2.95	34092	88,320
3	34227	90,028
3.05	34364	91,743
3.1	34502	93,464
3.15	34640	95,193
3.2	34778	96,928
3.25	34915	98,671
3.3	35053	100,420
3.35	35191	102,176
3.4	35329	103,939
3.45	35467	105,709
3.5	35604	107,486
3.55	35742	109,269
3.6	35880	111,060
3.65	36018	112,857
3.7	36155	114,662
3.75	36293	116,473
3.8	36431	118,291
3.85	36569	120,116
3.9	36707	121,948
3.95	36844	123,787
4	36982	125,632
4.05	37123	127,485
4.1	37263	129,345
4.15	37404	131,211
4.2	37545	133,085
4.25	37685	134,966
4.3	37826	136,853

BASIN E STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	37966	138,748
4.4	38107	140,650
4.45	38248	142,559
4.5	38388	144,475
4.55	38529	146,398
4.6	38670	148,328
4.65	38810	150,265
4.7	38951	152,209
4.75	39091	154,160
4.8	39232	156,118
4.85	39373	158,083
4.9	39513	160,055
4.95	39654	162,034
5	39795	164,021
5.05	39938	166,014
5.1	40082	168,014
5.15	40225	170,022
5.2	40368	172,037
5.25	40512	174,059
5.3	40655	176,088
5.35	40799	178,124
5.4	40942	180,168
5.45	41086	182,219
5.5	41229	184,277
5.55	41373	186,342
5.6	41516	188,414
5.65	41660	190,493
5.7	41803	192,580
5.75	41947	194,674
5.8	42090	196,774
5.85	42234	198,883
5.9	42377	200,998
5.95	42521	203,120
6	42664	205,250

BASIN F STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	8601	-
0.05	8658	431
0.1	8715	866
0.15	8771	1,303
0.2	8828	1,743
0.25	8885	2,186
0.3	8942	2,631
0.35	8999	3,080
0.4	9055	3,531
0.45	9112	3,985
0.5	9169	4,442
0.55	9226	4,902
0.6	9283	5,365
0.65	9339	5,831
0.7	9396	6,299
0.75	9453	6,770
0.8	9510	7,244
0.85	9567	7,721
0.9	9623	8,201
0.95	9680	8,683
1	9737	9,169
1.05	9797	9,657
1.1	9856	10,149
1.15	9916	10,643
1.2	9975	11,140
1.25	10035	11,640
1.3	10095	12,144
1.35	10154	12,650
1.4	10214	13,159
1.45	10274	13,671
1.5	10333	14,186
1.55	10393	14,705
1.6	10453	15,226
1.65	10512	15,750
1.7	10572	16,277
1.75	10631	16,807
1.8	10691	17,340
1.85	10751	17,876
1.9	10810	18,415
1.95	10870	18,957
2	10930	19,502
2.05	10992	20,050
2.1	11055	20,601
2.15	11117	21,156
2.2	11179	21,713
2.25	11242	22,274
2.3	11304	22,837

BASIN F STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.35	11367	23,404
2.4	11429	23,974
2.45	11492	24,547
2.5	11554	25,123
2.55	11617	25,702
2.6	11679	26,285
2.65	11742	26,870
2.7	11804	27,459
2.75	11866	28,051
2.8	11929	28,646
2.85	11991	29,244
2.9	12054	29,845
2.95	12116	30,449
3	12179	31,056
3.05	12244	31,667
3.1	12309	32,281
3.15	12375	32,898
3.2	12440	33,518
3.25	12505	34,142
3.3	12570	34,769
3.35	12636	35,399
3.4	12701	36,032
3.45	12766	36,669
3.5	12832	37,309
3.55	12897	37,952
3.6	12962	38,599
3.65	13027	39,248
3.7	13093	39,901
3.75	13158	40,558
3.8	13223	41,217
3.85	13289	41,880
3.9	13354	42,546
3.95	13419	43,215
4	13484	43,888
4.05	13553	44,564
4.1	13621	45,243
4.15	13689	45,926
4.2	13757	46,612
4.25	13825	47,302
4.3	13893	47,995
4.35	13961	48,691
4.4	14029	49,391
4.45	14097	50,094
4.5	14166	50,800
4.55	14234	51,510
4.6	14302	52,224

BASIN F STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.65	14370	52,941
4.7	14438	53,661
4.75	14506	54,384
4.8	14574	55,111
4.85	14642	55,842
4.9	14710	56,576
4.95	14779	57,313
5	14847	58,053
5.05	14918	58,798
5.1	14989	59,545
5.15	15060	60,296
5.2	15130	61,051
5.25	15201	61,809
5.3	15272	62,571
5.35	15343	63,337
5.4	15414	64,106
5.45	15485	64,878
5.5	15556	65,654
5.55	15627	66,434
5.6	15698	67,217
5.65	15769	68,004
5.7	15840	68,794
5.75	15911	69,588
5.8	15982	70,385
5.85	16053	71,186
5.9	16124	71,990
5.95	16195	72,798
6	16266	73,610

BASIN G STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	6920	-
0.05	6974	347
0.1	7028	697
0.15	7081	1,050
0.2	7135	1,406
0.25	7189	1,764
0.3	7243	2,124
0.35	7297	2,488
0.4	7351	2,854
0.45	7404	3,223
0.5	7458	3,595
0.55	7512	3,969
0.6	7566	4,346
0.65	7620	4,725
0.7	7674	5,108
0.75	7728	5,493
0.8	7781	5,881
0.85	7835	6,271
0.9	7889	6,664
0.95	7943	7,060
1	7997	7,458
1.05	8054	7,860
1.1	8110	8,264
1.15	8167	8,671
1.2	8224	9,080
1.25	8280	9,493
1.3	8337	9,908
1.35	8394	10,327
1.4	8450	10,748
1.45	8507	11,172
1.5	8564	11,599
1.55	8621	12,028
1.6	8677	12,461
1.65	8734	12,896
1.7	8791	13,334
1.75	8847	13,775
1.8	8904	14,219
1.85	8961	14,665
1.9	9017	15,115
1.95	9074	15,567
2	9131	16,022
2.05	9190	16,480
2.1	9250	16,941
2.15	9309	17,405

BASIN G STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.2	9369	17,872
2.25	9428	18,342
2.3	9488	18,815
2.35	9548	19,291
2.4	9607	19,770
2.45	9667	20,252
2.5	9726	20,736
2.55	9786	21,224
2.6	9845	21,715
2.65	9905	22,209
2.7	9964	22,705
2.75	10024	23,205
2.8	10083	23,708
2.85	10143	24,214
2.9	10202	24,722
2.95	10262	25,234
3	10322	25,748
3.05	15590	26,396
3.1	20859	27,307
3.15	26127	28,482
3.2	31396	29,920
3.25	36664	31,622
3.3	41933	33,587
3.35	47202	35,815
3.4	52470	38,307
3.45	57739	41,062
3.5	63007	44,081
3.55	68276	47,363
3.6	73544	50,908
3.65	78813	54,717
3.7	84082	58,789
3.75	89350	63,125
3.8	94619	67,724
3.85	99887	72,587
3.9	105156	77,713
3.95	110424	83,103
4	115693	88,756
4.05	110552	94,412
4.1	105411	99,811
4.15	100270	104,953
4.2	95129	109,838
4.25	89988	114,466
4.3	84847	118,837

BASIN G STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	79706	122,950
4.4	74565	126,807
4.45	69424	130,407
4.5	64283	133,750
4.55	59142	136,835
4.6	54001	139,664
4.65	48860	142,235
4.7	43719	144,550
4.75	38578	146,607
4.8	33437	148,408
4.85	28296	149,951
4.9	23155	151,237
4.95	18014	152,267
5	12873	153,039
5.05	12941	153,684
5.1	13009	154,333
5.15	13077	154,985
5.2	13145	155,641
5.25	13214	156,300
5.3	13282	156,962
5.35	13350	157,628
5.4	13418	158,297
5.45	13486	158,969
5.5	13554	159,645
5.55	13622	160,325
5.6	13690	161,008
5.65	13758	161,694
5.7	13826	162,383
5.75	13894	163,076
5.8	13962	163,773
5.85	14030	164,473
5.9	14098	165,176
5.95	14166	165,882
6	14234	166,592

BASIN H STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	33584	-
0.05	33721	1,683
0.1	33859	3,372
0.15	33996	5,068
0.2	34134	6,772
0.25	34271	8,482
0.3	34409	10,199
0.35	34546	11,923
0.4	34683	13,653
0.45	34821	15,391
0.5	34958	17,136
0.55	35096	18,887
0.6	35233	20,645
0.65	35371	22,410
0.7	35508	24,182
0.75	35646	25,961
0.8	35783	27,747
0.85	35920	29,539
0.9	36058	31,339
0.95	36195	33,145
1	36333	34,958
1.05	36473	36,778
1.1	36613	38,606
1.15	36754	40,440
1.2	36894	42,281
1.25	37034	44,129
1.3	37174	45,984
1.35	37315	47,847
1.4	37455	49,716
1.45	37595	51,592
1.5	37736	53,475
1.55	37876	55,366
1.6	38016	57,263
1.65	38156	59,167
1.7	38297	61,079
1.75	38437	62,997
1.8	38577	64,922
1.85	38717	66,855
1.9	38858	68,794
1.95	38998	70,740
2	39138	72,694
2.05	39281	74,654
2.1	39424	76,622
2.15	39567	78,597

BASIN H STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.2	39711	80,579
2.25	39854	82,568
2.3	39997	84,564
2.35	40140	86,567
2.4	40283	88,578
2.45	40426	90,596
2.5	40569	92,621
2.55	40712	94,653
2.6	40855	96,692
2.65	40998	98,738
2.7	41141	100,792
2.75	41285	102,852
2.8	41428	104,920
2.85	41571	106,995
2.9	41714	109,077
2.95	41857	111,166
3	42000	113,263
3.05	42146	115,367
3.1	42292	117,477
3.15	42438	119,596
3.2	42584	121,721
3.25	42730	123,854
3.3	42875	125,994
3.35	43021	128,142
3.4	43167	130,296
3.45	43313	132,458
3.5	43459	134,628
3.55	43605	136,804
3.6	43751	138,988
3.65	43897	141,179
3.7	44043	143,378
3.75	44189	145,584
3.8	44335	147,797
3.85	44480	150,017
3.9	44626	152,245
3.95	44772	154,480
4	44918	156,722
4.05	45067	158,972
4.1	45216	161,229
4.15	45364	163,493
4.2	45513	165,765
4.25	45662	168,044
4.3	45810	170,331

BASIN H STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	45959	172,626
4.4	46108	174,927
4.45	46257	177,236
4.5	46405	179,553
4.55	46554	181,877
4.6	46703	184,208
4.65	46852	186,547
4.7	47000	188,893
4.75	47149	191,247
4.8	47298	193,608
4.85	47446	195,977
4.9	47595	198,353
4.95	47744	200,736
5	47893	203,127
5.05	48044	205,526
5.1	48196	207,932
5.15	48347	210,345
5.2	48499	212,766
5.25	48650	215,195
5.3	48802	217,632
5.35	48953	220,075
5.4	49105	222,527
5.45	49257	224,986
5.5	49408	227,453
5.55	49560	229,927
5.6	49711	232,408
5.65	49863	234,898
5.7	50014	237,395
5.75	50166	239,899
5.8	50317	242,411
5.85	50469	244,931
5.9	50620	247,458
5.95	50772	249,993
6	50924	252,535

BASIN I STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	11322	-
0.05	11396	568
0.1	11469	1,140
0.15	11543	1,715
0.2	11617	2,294
0.25	11690	2,877
0.3	11764	3,463
0.35	11837	4,053
0.4	11911	4,647
0.45	11985	5,244
0.5	12058	5,845
0.55	12132	6,450
0.6	12205	7,058
0.65	12279	7,670
0.7	12353	8,286
0.75	12426	8,906
0.8	12500	9,529
0.85	12573	10,156
0.9	12647	10,786
0.95	12720	11,420
1	12794	12,058
1.05	12870	12,700
1.1	12947	13,345
1.15	13023	13,994
1.2	13100	14,648
1.25	13176	15,304
1.3	13253	15,965
1.35	13329	16,630
1.4	13405	17,298
1.45	13482	17,970
1.5	13558	18,646
1.55	13635	19,326
1.6	13711	20,010
1.65	13787	20,697
1.7	13864	21,388
1.75	13940	22,084
1.8	14017	22,782
1.85	14093	23,485
1.9	14170	24,192
1.95	14246	24,902
2	14322	25,616
2.05	14402	26,335
2.1	14481	27,057
2.15	14560	27,783

BASIN I STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.2	14639	28,513
2.25	14719	29,247
2.3	14798	29,984
2.35	14877	30,726
2.4	14956	31,472
2.45	15036	32,222
2.5	15115	32,976
2.55	15194	33,733
2.6	15274	34,495
2.65	15353	35,261
2.7	15432	36,030
2.75	15511	36,804
2.8	15591	37,582
2.85	15670	38,363
2.9	15749	39,149
2.95	15828	39,938
3	15908	40,731
3.05	15990	41,529
3.1	16072	42,330
3.15	16154	43,136
3.2	16236	43,946
3.25	16318	44,760
3.3	16400	45,578
3.35	16482	46,400
3.4	16564	47,226
3.45	16646	48,056
3.5	16728	48,890
3.55	16810	49,729
3.6	16892	50,571
3.65	16974	51,418
3.7	17056	52,269
3.75	17138	53,124
3.8	17220	53,983
3.85	17302	54,846
3.9	17384	55,713
3.95	17466	56,584
4	17549	57,459
4.05	17633	58,339
4.1	17718	59,223
4.15	17803	60,111
4.2	17888	61,003
4.25	17973	61,900
4.3	18058	62,800

BASIN I STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.35	18143	63,705
4.4	18228	64,615
4.45	18313	65,528
4.5	18397	66,446
4.55	18482	67,368
4.6	18567	68,294
4.65	18652	69,225
4.7	18737	70,159
4.75	18822	71,098
4.8	18907	72,042
4.85	18992	72,989
4.9	19077	73,941
4.95	19161	74,897
5	19246	75,857
5.05	19334	76,821
5.1	19422	77,790
5.15	19509	78,764
5.2	19597	79,741
5.25	19685	80,723
5.3	19773	81,710
5.35	19860	82,701
5.4	19948	83,696
5.45	20036	84,695
5.5	20123	85,699
5.55	20211	86,708
5.6	20299	87,720
5.65	20387	88,738
5.7	20474	89,759
5.75	20562	90,785
5.8	20650	91,815
5.85	20737	92,850
5.9	20825	93,889
5.95	20913	94,932
6	21001	95,980

BASIN J STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	31668	-
0.05	31775	1,586
0.1	31882	3,177
0.15	31989	4,774
0.2	32096	6,376
0.25	32203	7,984
0.3	32310	9,597
0.35	32417	11,215
0.4	32524	12,838
0.45	32631	14,467
0.5	32738	16,101
0.55	32845	17,741
0.6	32952	19,386
0.65	33059	21,036
0.7	33167	22,692
0.75	33274	24,353
0.8	33381	26,019
0.85	33488	27,691
0.9	33595	29,368
0.95	33702	31,050
1	33809	32,738
1.05	33919	34,431
1.1	34029	36,130
1.15	34139	37,834
1.2	34248	39,544
1.25	34358	41,259
1.3	34468	42,980
1.35	34578	44,706
1.4	34688	46,438
1.45	34798	48,175
1.5	34908	49,917
1.55	35018	51,666
1.6	35128	53,419
1.65	35238	55,178
1.7	35347	56,943
1.75	35457	58,713
1.8	35567	60,489
1.85	35677	62,270
1.9	35787	64,056
1.95	35897	65,849
2	36007	67,646
2.05	36120	69,449
2.1	36232	71,258
2.15	36345	73,072

BASIN J STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.15	36345	73,072
2.2	36458	74,893
2.25	36570	76,718
2.3	36683	78,550
2.35	36796	80,387
2.4	36909	82,229
2.45	37021	84,077
2.5	37134	85,931
2.55	37247	87,791
2.6	37359	89,656
2.65	37472	91,527
2.7	37585	93,403
2.75	37697	95,285
2.8	37810	97,173
2.85	37923	99,066
2.9	38036	100,965
2.95	38148	102,870
3	38261	104,780
3.05	38377	106,696
3.1	38492	108,618
3.15	38608	110,545
3.2	38723	112,478
3.25	38839	114,417
3.3	38954	116,362
3.35	39070	118,313
3.4	39185	120,269
3.45	39301	122,231
3.5	39416	124,199
3.55	39532	126,173
3.6	39648	128,153
3.65	39763	130,138
3.7	39879	132,129
3.75	39994	134,126
3.8	40110	136,128
3.85	40225	138,137
3.9	40341	140,151
3.95	40456	142,171
4	40572	144,196
4.05	40690	146,228
4.1	40809	148,265
4.15	40927	150,309
4.2	41045	152,358
4.25	41164	154,413
4.3	41282	156,475

BASIN J STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
4.3	41282	156,475
4.35	41400	158,542
4.4	41519	160,615
4.45	41637	162,693
4.5	41755	164,778
4.55	41874	166,869
4.6	41992	168,966
4.65	42110	171,068
4.7	42229	173,177
4.75	42347	175,291
4.8	42466	177,411
4.85	42584	179,538
4.9	42702	181,670
4.95	42821	183,808
5	42939	185,952
5.05	41605	188,065
5.1	40272	190,112
5.15	38938	192,093
5.2	37604	194,006
5.25	36271	195,853
5.3	34937	197,633
5.35	33603	199,347
5.4	32270	200,994
5.45	30936	202,574
5.5	29602	204,087
5.55	28269	205,534
5.6	26935	206,914
5.65	25601	208,227
5.7	24268	209,474
5.75	22934	210,654
5.8	21600	211,768
5.85	20267	212,814
5.9	18933	213,794
5.95	17599	214,707
6	16266	215,554

BASIN K STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	7672	-
0.05	7743	385
0.1	7814	774
0.15	7885	1,167
0.2	7956	1,563
0.25	8027	1,962
0.3	8098	2,366
0.35	8169	2,772
0.4	8241	3,183
0.45	8312	3,596
0.5	8383	4,014
0.55	8454	4,435
0.6	8525	4,859
0.65	8596	5,287
0.7	8667	5,719
0.75	8738	6,154
0.8	8809	6,592
0.85	8880	7,035
0.9	8951	7,480
0.95	9022	7,930
1	9093	8,383
1.05	9168	8,839
1.1	9242	9,299
1.15	9316	9,763
1.2	9390	10,231
1.25	9464	10,702
1.3	9538	11,177
1.35	9612	11,656
1.4	9686	12,139
1.45	9760	12,625
1.5	9834	13,115
1.55	9909	13,608
1.6	9983	14,106
1.65	10057	14,606
1.7	10131	15,111
1.75	10205	15,620
1.8	10279	16,132
1.85	10353	16,647
1.9	10427	17,167
1.95	10501	17,690
2	10575	18,217
2.05	10653	18,748
2.1	10730	19,282
2.15	10807	19,821

BASIN K STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)

2.15	10807	19,821
2.2	10884	20,363
2.25	10961	20,909
2.3	11038	21,459
2.35	11115	22,013
2.4	11193	22,571
2.45	11270	23,132
2.5	11347	23,698
2.55	11424	24,267
2.6	11501	24,840
2.65	11578	25,417
2.7	11655	25,998
2.75	11733	26,583
2.8	11810	27,171
2.85	11887	27,764
2.9	11964	28,360
2.95	12041	28,960
3	12118	29,564
3.05	12198	30,172
3.1	12279	30,784
3.15	12359	31,400
3.2	12439	32,020
3.25	12519	32,644
3.3	12599	33,272
3.35	12680	33,904
3.4	12760	34,540
3.45	12840	35,180
3.5	12920	35,824
3.55	13000	36,472
3.6	13080	37,124
3.65	13161	37,780
3.7	13241	38,440
3.75	13321	39,104
3.8	13401	39,772
3.85	13481	40,444
3.9	13562	41,120
3.95	13642	41,800
4	13722	42,484

BASIN O-L STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	2089	-
0.05	2118	105
0.1	2147	212
0.15	2176	320
0.2	2205	429
0.25	2234	540
0.3	2263	653
0.35	2292	767
0.4	2321	882
0.45	2350	999
0.5	2380	1,117
0.55	2409	1,237
0.6	2438	1,358
0.65	2467	1,481
0.7	2496	1,605
0.75	2525	1,730
0.8	2554	1,857
0.85	2583	1,986
0.9	2612	2,115
0.95	2641	2,247
1	2670	2,380
1.05	2702	2,514
1.1	2735	2,650
1.15	2767	2,787
1.2	2799	2,926
1.25	2832	3,067
1.3	2864	3,210
1.35	2896	3,354
1.4	2929	3,499
1.45	2961	3,647
1.5	2994	3,795
1.55	3026	3,946
1.6	3058	4,098
1.65	3091	4,252
1.7	3123	4,407
1.75	3155	4,564
1.8	3188	4,723
1.85	3220	4,883
1.9	3252	5,045
1.95	3285	5,208
2	3317	5,373
2.05	3353	5,540
2.1	3388	5,708
2.15	3424	5,879
2.2	3459	6,051
2.25	3495	6,225
2.3	3531	6,400
2.35	3566	6,578
2.4	3602	6,757
2.45	3637	6,938
2.5	3673	7,121
2.55	3709	7,305
2.6	3744	7,491
2.65	3780	7,679
2.7	3815	7,869
2.75	3851	8,061
2.8	3887	8,254
2.85	3922	8,450
2.9	3958	8,647
2.95	3993	8,845
3	4029	9,046

BASIN O-M STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	5345	-
0.05	5397	269
0.1	5448	540
0.15	5500	813
0.2	5551	1,090
0.25	5603	1,368
0.3	5654	1,650
0.35	5706	1,934
0.4	5757	2,220
0.45	5809	2,510
0.5	5861	2,801
0.55	5912	3,096
0.6	5964	3,393
0.65	6015	3,692
0.7	6067	3,994
0.75	6118	4,299
0.8	6170	4,606
0.85	6221	4,916
0.9	6273	5,228
0.95	6324	5,543
1	6376	5,861
1.05	6432	6,181
1.1	6487	6,504
1.15	6543	6,829
1.2	6598	7,158
1.25	6654	7,489
1.3	6709	7,823
1.35	6765	8,160
1.4	6820	8,500
1.45	6876	8,842
1.5	6931	9,187
1.55	6987	9,535
1.6	7042	9,886
1.65	7098	10,239
1.7	7153	10,596
1.75	7209	10,955
1.8	7264	11,317
1.85	7320	11,681
1.9	7375	12,048
1.95	7431	12,419
2	7486	12,792
2.05	7546	13,167
2.1	7605	13,546
2.15	7665	13,928
2.2	7724	14,313
2.25	7784	14,700
2.3	7843	15,091
2.35	7903	15,484
2.4	7962	15,881
2.45	8022	16,281
2.5	8081	16,683

BASIN O-M STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.55	8141	17,089
2.6	8200	17,497
2.65	8260	17,909
2.7	8319	18,323
2.75	8379	18,741
2.8	8438	19,161
2.85	8498	19,584
2.9	8557	20,011
2.95	8617	20,440
3	8676	20,873
3.05	8740	21,308
3.1	8804	21,747
3.15	8868	22,188
3.2	8932	22,633
3.25	8996	23,082
3.3	9060	23,533
3.35	9124	23,988
3.4	9188	24,445
3.45	9252	24,906
3.5	9316	25,371
3.55	9380	25,838
3.6	9444	26,309
3.65	9508	26,782
3.7	9572	27,259
3.75	9636	27,740
3.8	9700	28,223
3.85	9764	28,710
3.9	9828	29,199
3.95	9892	29,692
4	9956	30,189

BASIN O-N STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	4766	-
0.05	4811	239
0.1	4855	481
0.15	4900	725
0.2	4944	971
0.25	4989	1,219
0.3	5033	1,470
0.35	5078	1,723
0.4	5122	1,978
0.45	5167	2,235
0.5	5211	2,494
0.55	5256	2,756
0.6	5300	3,020
0.65	5345	3,286
0.7	5389	3,554
0.75	5434	3,825
0.8	5478	4,098
0.85	5523	4,373
0.9	5567	4,650
0.95	5612	4,929
1	5656	5,211
1.05	5703	5,495
1.1	5751	5,781
1.15	5798	6,070
1.2	5845	6,361
1.25	5892	6,655
1.3	5940	6,950
1.35	5987	7,248
1.4	6034	7,549
1.45	6081	7,852
1.5	6129	8,157
1.55	6176	8,465
1.6	6223	8,775
1.65	6270	9,087
1.7	6318	9,402
1.75	6365	9,719
1.8	6412	10,038
1.85	6459	10,360
1.9	6507	10,684
1.95	6554	11,011
2	6601	11,340
2.05	6651	11,671
2.1	6701	12,005
2.15	6751	12,341
2.2	6801	12,680
2.25	6852	13,021
2.3	6902	13,365
2.35	6952	13,711
2.4	7002	14,060
2.45	7052	14,411
2.5	7102	14,765

BASIN O-N STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
2.55	7152	15,122
2.6	7202	15,480
2.65	7252	15,842
2.7	7302	16,206
2.75	7353	16,572
2.8	7403	16,941
2.85	7453	17,312
2.9	7503	17,686
2.95	7553	18,063
3	7603	18,442
3.05	7656	18,823
3.1	7709	19,207
3.15	7762	19,594
3.2	7815	19,983
3.25	7868	20,375
3.3	7921	20,770
3.35	7974	21,167
3.4	8027	21,567
3.45	8080	21,970
3.5	8133	22,375
3.55	8185	22,783
3.6	8238	23,194
3.65	8291	23,607
3.7	8344	24,023
3.75	8397	24,442
3.8	8450	24,863
3.85	8503	25,287
3.9	8556	25,713
3.95	8609	26,142
4	8662	26,574
4.05	8718	27,008
4.1	8774	27,446
4.15	8829	27,886
4.2	8885	28,329
4.25	8941	28,774
4.3	8997	29,223
4.35	9053	29,674
4.4	9108	30,128
4.45	9164	30,585
4.5	9220	31,045
4.55	9276	31,507
4.6	9332	31,972
4.65	9387	32,440
4.7	9443	32,911
4.75	9499	33,384
4.8	9555	33,861
4.85	9611	34,340
4.9	9666	34,822
4.95	9722	35,306
5	9778	35,794

BASIN O-N STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
5.05	9837	36,284
5.1	9895	36,778
5.15	9954	37,274
5.2	10012	37,773
5.25	10071	38,275
5.3	10129	38,780
5.35	10188	39,288
5.4	10246	39,799
5.45	10305	40,313
5.5	10364	40,829
5.55	10422	41,349
5.6	10481	41,872
5.65	10539	42,397
5.7	10598	42,925
5.75	10656	43,457
5.8	10715	43,991
5.85	10773	44,528
5.9	10832	45,068
5.95	10890	45,612
6	10949	46,158

BASIN O-L STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	2089	-
0.05	2118	105
0.1	2147	212
0.15	2176	320
0.2	2205	429
0.25	2234	540
0.3	2263	653
0.35	2292	767
0.4	2321	882
0.45	2350	999
0.5	2380	1,117
0.55	2409	1,237
0.6	2438	1,358
0.65	2467	1,481
0.7	2496	1,605
0.75	2525	1,730
0.8	2554	1,857
0.85	2583	1,986
0.9	2612	2,115
0.95	2641	2,247
1	2670	2,380
1.05	2702	2,514
1.1	2735	2,650
1.15	2767	2,787
1.2	2799	2,926
1.25	2832	3,067
1.3	2864	3,210
1.35	2896	3,354
1.4	2929	3,499
1.45	2961	3,647
1.5	2994	3,795
1.55	3026	3,946
1.6	3058	4,098
1.65	3091	4,252
1.7	3123	4,407
1.75	3155	4,564
1.8	3188	4,723
1.85	3220	4,883
1.9	3252	5,045
1.95	3285	5,208
2	3317	5,373
2.05	3353	5,540
2.1	3388	5,708
2.15	3424	5,879
2.2	3459	6,051
2.25	3495	6,225
2.3	3531	6,400
2.35	3566	6,578
2.4	3602	6,757
2.45	3637	6,938
2.5	3673	7,121
2.55	3709	7,305
2.6	3744	7,491
2.65	3780	7,679
2.7	3815	7,869
2.75	3851	8,061
2.8	3887	8,254
2.85	3922	8,450
2.9	3958	8,647
2.95	3993	8,845
3	4029	9,046

BASIN O-M STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	5000	-
0.05	5044	251
0.1	5089	504
0.15	5133	760
0.2	5177	1,018
0.25	5222	1,278
0.3	5266	1,540
0.35	5310	1,804
0.4	5355	2,071
0.45	5399	2,340
0.5	5444	2,611
0.55	5488	2,884
0.6	5532	3,160
0.65	5577	3,437
0.7	5621	3,717
0.75	5665	3,999
0.8	5710	4,284
0.85	5754	4,570
0.9	5798	4,859
0.95	5843	5,150
1	5887	5,444
1.05	5934	5,739
1.1	5981	6,037
1.15	6028	6,337
1.2	6074	6,640
1.25	6121	6,945
1.3	6168	7,252
1.35	6215	7,561
1.4	6262	7,873
1.45	6309	8,188
1.5	6356	8,504
1.55	6402	8,823
1.6	6449	9,144
1.65	6496	9,468
1.7	6543	9,794
1.75	6590	10,122
1.8	6637	10,453
1.85	6683	10,786
1.9	6730	11,121
1.95	6777	11,459
2	6824	11,799
2.05	6874	12,141
2.1	6924	12,486
2.15	6975	12,834
2.2	7025	13,184
2.25	7075	13,536
2.3	7125	13,891
2.35	7175	14,249
2.4	7226	14,609
2.45	7276	14,971
2.5	7326	15,337
2.55	7376	15,704
2.6	7426	16,074
2.65	7477	16,447
2.7	7527	16,822
2.75	7577	17,199
2.8	7627	17,579
2.85	7677	17,962
2.9	7728	18,347
2.95	7778	18,735
3	7828	19,125

BASIN O-N STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	5000	-
0.05	5049	251
0.1	5098	505
0.15	5147	761
0.2	5197	1,020
0.25	5246	1,281
0.3	5295	1,544
0.35	5344	1,810
0.4	5393	2,079
0.45	5442	2,350
0.5	5492	2,623
0.55	5541	2,899
0.6	5590	3,177
0.65	5639	3,458
0.7	5688	3,741
0.75	5737	4,026
0.8	5786	4,315
0.85	5836	4,605
0.9	5885	4,898
0.95	5934	5,194
1	5983	5,492
1.05	6032	5,792
1.1	6080	6,095
1.15	6129	6,400
1.2	6177	6,708
1.25	6226	7,018
1.3	6274	7,330
1.35	6323	7,645
1.4	6371	7,962
1.45	6420	8,282
1.5	6469	8,604
1.55	6517	8,929
1.6	6566	9,256
1.65	6614	9,586
1.7	6663	9,917
1.75	6711	10,252
1.8	6760	10,589
1.85	6808	10,928
1.9	6857	11,269
1.95	6905	11,614
2	6954	11,960
2.05	7006	12,309
2.1	7058	12,661
2.15	7110	13,015
2.2	7162	13,372
2.25	7214	13,731
2.3	7265	14,093
2.35	7317	14,457
2.4	7369	14,825
2.45	7421	15,194
2.5	7473	15,567
2.55	7525	15,942
2.6	7577	16,319
2.65	7629	16,699
2.7	7681	17,082
2.75	7733	17,467
2.8	7784	17,855
2.85	7836	18,246
2.9	7888	18,639
2.95	7940	19,035
3	7992	19,433

BASIN O-O STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	2000	-
0.05	2000	100
0.1	2000	200
0.15	2000	300
0.2	2000	400
0.25	2000	500
0.3	2000	600
0.35	2000	700
0.4	2000	800
0.45	2000	900
0.5	2000	1,000
0.55	2000	1,100
0.6	2000	1,200
0.65	2000	1,300
0.7	2000	1,400
0.75	2000	1,500
0.8	2000	1,600
0.85	2000	1,700
0.9	2000	1,800
0.95	2000	1,900
1	2000	2,000

BASIN O-P STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	1200	-
0.05	1200	60
0.1	1200	120
0.15	1200	180
0.2	1200	240
0.25	1200	300
0.3	1200	360
0.35	1200	420
0.4	1200	480
0.45	1200	540
0.5	1200	600
0.55	1200	660
0.6	1200	720
0.65	1200	780
0.7	1200	840
0.75	1200	900
0.8	1200	960
0.85	1200	1,020
0.9	1200	1,080
0.95	1200	1,140
1	1200	1,200

BASIN O-Q STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	900	-
0.05	900	45
0.1	900	90
0.15	900	135
0.2	900	180
0.25	900	225
0.3	900	270
0.35	900	315
0.4	900	360
0.45	900	405
0.5	900	450
0.55	900	495
0.6	900	540
0.65	900	585
0.7	900	630
0.75	900	675
0.8	900	720
0.85	900	765
0.9	900	810
0.95	900	855
1	900	900

BASIN O-R STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	900	-
0.05	900	45
0.1	900	90
0.15	900	135
0.2	900	180
0.25	900	225
0.3	900	270
0.35	900	315
0.4	900	360
0.45	900	405
0.5	900	450
0.55	900	495
0.6	900	540
0.65	900	585
0.7	900	630
0.75	900	675
0.8	900	720
0.85	900	765
0.9	900	810
0.95	900	855
1	900	900

BASIN O-S STAGE STORAGE		
Depth (ft)	Area (sq ft)	Volume (cu ft)
0	1200	-
0.05	1200	60
0.1	1200	120
0.15	1200	180
0.2	1200	240
0.25	1200	300
0.3	1200	360
0.35	1200	420
0.4	1200	480
0.45	1200	540
0.5	1200	600
0.55	1200	660
0.6	1200	720
0.65	1200	780
0.7	1200	840
0.75	1200	900
0.8	1200	960
0.85	1200	1,020
0.9	1200	1,080
0.95	1200	1,140
1	1200	1,200

BASIN A Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	1.20	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	2.40	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.15	3.90	3.60	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1.2	4.20	4.80	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.25	4.50	6.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.3	4.80	7.20	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
1.35	5.10	8.40	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.4	5.40	9.60	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.45	5.70	10.80	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.5	6.00	12.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.55	6.30	13.20	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
1.6	6.60	14.40	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.65	6.90	15.60	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.7	7.20	16.80	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.75	7.50	18.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.8	7.80	19.20	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.85	8.10	20.40	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.9	8.40	21.60	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1.95	8.70	22.80	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2	9.00	24.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2.05	9.30	25.20	0.15	0.00	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.32
2.1	9.60	26.40	0.30	0.00	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.49
2.15	9.90	27.60	0.45	0.00	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.48	0.48	0.00	0.75
2.2	10.20	28.80	0.60	0.00	0.27	108.78	0.27	0.00	0.00	0.00	0.94	0.83	0.83	0.00	1.10
2.25	10.50	30.00	0.75	0.00	0.28	128.67	0.28	0.00	0.00	0.00	1.48	1.23	1.23	0.00	1.51
2.3	10.80	31.20	0.90	0.00	0.28	151.34	0.28	0.00	0.00	0.00	1.87	1.68	1.68	0.00	1.96
2.35	11.10	32.40	1.05	0.00	0.28	177.06	0.28	0.00	0.00	0.00	2.19	2.16	2.16	0.00	2.45
2.4	11.40	33.60	1.20	0.00	0.29	206.12	0.29	0.00	0.00	0.00	2.48	2.65	2.48	0.00	2.76
2.45	11.70	34.80	1.35	0.00	0.29	238.84	0.29	0.00	0.00	0.00	2.73	3.14	2.73	0.00	3.02
2.5	12.00	36.00	1.50	0.00	0.30	275.55	0.30	0.00	0.00	0.00	2.96	3.60	2.96	0.00	3.26
2.55	12.30	37.20	1.65	0.00	0.30	316.59	0.30	0.00	0.00	0.00	3.17	4.03	3.17	0.00	3.47
2.6	12.60	38.40	1.80	0.00	0.30	362.33	0.30	0.00	0.00	0.00	3.37	4.40	3.37	0.00	3.68
2.65	12.90	39.60	1.95	0.00	0.31	413.17	0.31	0.00	0.00	0.00	3.56	4.72	3.56	0.00	3.87
2.7	13.20	40.80	2.10	0.00	0.31	469.51	0.31	0.00	0.00	0.00	3.74	4.98	3.74	0.00	4.05
2.75	13.50	42.00	2.25	0.00	0.31	531.79	0.31	0.00	0.00	0.00	3.92	5.17	3.92	0.00	4.23
2.8	13.80	43.20	2.40	0.00	0.32	600.46	0.32	0.00	0.00	0.00	4.08	5.30	4.08	0.00	4.40
2.85	14.10	44.40	2.55	0.00	0.32	675.99	0.32	0.00	0.00	0.00	4.24	5.37	4.24	0.00	4.56
2.9	14.40	45.60	2.70	0.00	0.33	758.88	0.33	0.00	0.00	0.00	4.39	5.40	4.39	0.00	4.71
2.95	14.70	46.80	2.85	0.00	0.33	849.65	0.33	0.00	0.00	0.00	4.54	5.42	4.54	0.00	4.87
3	15.00	48.00	3.00	0.00	0.33	948.85	0.33	0.00	0.00	0.00	4.68	5.43	4.68	0.00	5.01
3.05	15.30	49.20	3.15	0.00	0.34	1057.04	0.34	0.00	0.00	0.00	4.82	5.49	4.82	0.00	5.15
3.1	15.60	50.40	3.30	0.00	0.34	1174.83	0.34	0.00	0.00	0.00	4.95	5.63	4.95	0.00	5.29
3.15	15.90	51.60	3.45	0.00	0.34	1302.83	0.34	0.00	0.00	0.00	5.08	5.90	5.08	0.00	5.43
3.2	16.20	52.80	3.60	0.00	0.35	1441.68	0.35	0.00	0.00	0.00	5.21	6.36	5.21	0.00	5.56
3.25	16.50	54.00	3.75	0.00	0.35	1592.07	0.35	0.00	0.00	0.00	5.34	7.09	5.34	0.00	5.68
3.3	16.80	55.20	3.90	0.00	0.35	1754.68	0.35	0.00	0.00	0.00	5.46	8.15	5.46	0.00	5.81
3.35	17.10	56.40	4.05	0.00	0.36	1930.25	0.36	0.00	0.00	0.00	5.58	9.64	5.58	0.00	5.93
3.4	17.40	57.60	4.20	0.00	0.36	2119.52	0.36	0.00	0.00	0.00	5.69	11.66	5.69	0.00	6.05
3.45	17.70	58.80	4.35	0.00	0.36	2323.30	0.36	0.00	0.00	0.00	5.81	14.33	5.81	0.00	6.17
3.5	18.00	60.00	4.50	0.00	0.36	2542.37	0.36	0.00	0.00	0.00	5.92	17.76	5.92	0.00	6.28
3.55	18.30	61.20	4.65	0.00	0.37	2777.60	0.37	0.00	0.00	0.00	6.03	22.10	6.03	0.00	6.40
3.6	18.60	62.40	4.80	0.00	0.37	3029.85	0.37	0.00	0.00	0.00	6.14	27.51	6.14	0.00	6.51
3.65	18.90	63.60	4.95	0.00	0.37	3300.02	0.37	0.00	0.00	0.00	6.24	34.13	6.24	0.00	6.62
3.7	19.20	64.80	5.10	0.00	0.38	3589.06	0.38	0.00	0.00	0.00	6.35	42.17	6.35	0.00	6.72
3.75	19.50	66.00	5.25	0.00	0.38	3897.92	0.38	0.00	0.00	0.00	6.45	51.80	6.45	0.00	6.83
3.8	19.80	67.20	5.40	0.00	0.38	4227.60	0.38	0.00	0.00	0.00	6.55	63.25	6.55	0.00	6.93
3.85	20.10	68.40	5.55	0.00	0.39	4579.14	0.39	0.00	0.00	0.00	6.65	76.74	6.65	0.00	7.04
3.9	20.40	69.60	5.70	0.00	0.39	4953.61	0.39	0.00	0.00	0.00	6.75	92.52	6.75	0.00	7.14
3.95	20.70	70.80	5.85	0.00	0.39	5352.09	0.39	0.00	0.00	0.00	6.85	110.85	6.85	0.00	7.24
4	21.00	72.00	6.00	0.00	0.39	5775.73	0.39	0.00	0.00	0.00	6.94	132.00	6.94	0.00	7.34
4.05	21.30	73.20	6.15	0.06	0.40	6225.69	0.40	0.00	0.00	0.00	7.04	156.29	7.04	0.37	7.81

BASIN A Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

4.1	21.60	74.40	6.30	0.12	0.40	6703.18	0.40	0.00	0.00	0.00	7.13	184.02	7.13	1.05	8.58
4.15	21.90	75.60	6.45	0.18	0.40	7209.43	0.40	0.00	0.00	0.00	7.22	215.54	7.22	1.93	9.56
4.2	22.20	76.80	6.60	0.24	0.41	7745.72	0.41	0.00	0.00	0.00	7.31	251.20	7.31	2.98	10.69
4.25	22.50	78.00	6.75	0.30	0.41	8313.37	0.41	0.00	0.00	0.00	7.40	291.38	7.40	4.16	11.97
4.3	22.80	79.20	6.90	0.36	0.41	8913.73	0.41	0.00	0.00	0.00	7.49	336.48	7.49	5.47	13.37
4.35	23.10	80.40	7.05	0.42	0.41	9548.18	0.41	0.00	0.00	0.00	7.57	386.93	7.57	6.90	14.88
4.4	23.40	81.60	7.20	0.48	0.42	10218.16	0.42	0.00	0.00	0.00	7.66	443.16	7.66	8.42	16.50
4.45	23.70	82.80	7.35	0.54	0.42	10925.13	0.42	0.00	0.00	0.00	7.75	505.66	7.75	10.05	18.22
4.5	24.00	84.00	7.50	0.60	0.42	11670.60	0.42	0.00	0.00	0.00	7.83	574.90	7.83	11.77	20.03
4.55	24.30	85.20	7.65	0.66	0.43	12456.12	0.43	0.00	0.00	0.00	7.91	651.41	7.91	13.58	21.92
4.6	24.60	86.40	7.80	0.72	0.43	13283.27	0.43	0.00	0.00	0.00	8.00	735.72	8.00	15.48	23.90
4.65	24.90	87.60	7.95	0.78	0.43	14153.68	0.43	0.00	0.00	0.00	8.08	828.41	8.08	17.45	25.96
4.7	25.20	88.80	8.10	0.84	0.43	15069.03	0.43	0.00	0.00	0.00	8.16	930.05	8.16	19.50	28.10
4.75	25.50	90.00	8.25	0.90	0.44	16031.02	0.44	0.00	0.00	0.00	8.24	1041.28	8.24	21.63	30.30
4.8	25.80	91.20	8.40	0.96	0.44	17041.42	0.44	0.00	0.00	0.00	8.32	1162.73	8.32	23.83	32.58
4.85	26.10	92.40	8.55	1.02	0.44	18102.02	0.44	0.00	0.00	0.00	8.40	1295.09	8.40	26.10	34.93
4.9	26.40	93.60	8.70	1.08	0.44	19214.67	0.44	0.00	0.00	0.00	8.48	1439.04	8.48	28.43	37.35
4.95	26.70	94.80	8.85	1.14	0.45	20381.26	0.45	0.00	0.00	0.00	8.55	1595.32	8.55	30.83	39.83
5	27.00	96.00	9.00	1.20	0.45	21603.72	0.45	0.00	0.00	0.00	8.63	1764.69	8.63	33.30	42.38
5.05	27.30	97.20	9.15	1.26	0.45	22884.03	0.45	0.00	0.00	0.00	8.70	1947.94	8.70	35.83	44.98
5.1	27.60	98.40	9.30	1.32	0.45	24224.21	0.45	0.00	0.00	0.00	8.78	2145.89	8.78	38.42	47.65
5.15	27.90	99.60	9.45	1.38	0.46	25626.34	0.46	0.00	0.00	0.00	8.85	2359.38	8.85	41.07	50.38
5.2	28.20	100.80	9.60	1.44	0.46	27092.54	0.46	0.00	0.00	0.00	8.93	2589.30	8.93	43.77	53.16
5.25	28.50	102.00	9.75	1.50	0.46	28624.96	0.46	0.00	0.00	0.00	9.00	2836.56	9.00	46.54	56.00
5.3	28.80	103.20	9.90	1.56	0.46	30225.83	0.46	0.00	0.00	0.00	9.07	3102.10	9.07	49.36	58.90
5.35	29.10	104.40	10.05	1.62	0.47	31897.42	0.47	0.00	0.00	0.00	9.15	3386.92	9.15	52.23	61.85
5.4	29.40	105.60	10.20	1.68	0.47	33642.02	0.47	0.00	0.00	0.00	9.22	3692.01	9.22	55.16	64.85
5.45	29.70	106.80	10.35	1.74	0.47	35462.01	0.47	0.00	0.00	0.00	9.29	4018.44	9.29	58.14	67.90
5.5	30.00	108.00	10.50	1.80	0.47	37359.80	0.47	0.00	0.00	0.00	9.36	4367.27	9.36	61.18	71.01
5.55	30.30	109.20	10.65	1.86	0.48	39337.85	0.48	0.00	0.00	0.00	9.43	4739.63	9.43	64.26	74.17
5.6	30.60	110.40	10.80	1.92	0.48	41398.68	0.48	0.00	0.00	0.00	9.50	5136.68	9.50	67.39	77.37
5.65	30.90	111.60	10.95	1.98	0.48	43544.86	0.48	0.00	0.00	0.00	9.57	5559.59	9.57	70.58	80.63
5.7	31.20	112.80	11.10	2.04	0.48	45778.99	0.48	0.00	0.00	0.00	9.64	6009.61	9.64	73.81	83.93
5.75	31.50	114.00	11.25	2.10	0.49	48103.77	0.49	0.00	0.00	0.00	9.70	6487.99	9.70	77.09	87.28
5.8	31.80	115.20	11.40	2.16	0.49	50521.91	0.49	0.00	0.00	0.00	9.77	6996.03	9.77	80.42	90.68
5.85	32.10	116.40	11.55	2.22	0.49	53036.19	0.49	0.00	0.00	0.00	9.84	7535.09	9.84	83.79	94.12
5.9	32.40	117.60	11.70	2.28	0.49	55649.44	0.49	0.00	0.00	0.00	9.90	8106.54	9.90	87.21	97.61
5.95	32.70	118.80	11.85	2.34	0.49	58364.57	0.49	0.00	0.00	0.00	9.97	8711.81	9.97	90.68	101.14
6	33.00	120.00	12.00	2.40	0.50	61184.51	0.50	0.00	0.00	0.00	10.04	9352.35	10.04	94.19	104.72

BASIN B Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.007
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.024
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.050
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.073
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.087
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.099
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.110
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.120
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.129
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.138
1.05	3.30	0.60	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.146
1.1	3.60	1.20	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.154
1.15	3.90	1.80	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.161
1.2	4.20	2.40	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.168
1.25	4.50	3.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.174
1.3	4.80	3.60	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.181
1.35	5.10	4.20	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.187
1.4	5.40	4.80	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.193
1.45	5.70	5.40	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.199
1.5	6.00	6.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.205
1.55	6.30	6.60	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.210
1.6	6.60	7.20	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.215
1.65	6.90	7.80	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.221
1.7	7.20	8.40	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.226
1.75	7.50	9.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.231
1.8	7.80	9.60	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.236
1.85	8.10	10.20	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.240
1.9	8.40	10.80	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.245
1.95	8.70	11.40	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.250
2	9.00	12.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.254
2.05	9.30	12.60	0.15	0.00	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.317
2.1	9.60	13.20	0.30	0.00	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.487
2.15	9.90	13.80	0.45	0.00	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.48	0.48	0.00	0.752
2.2	10.20	14.40	0.60	0.00	0.27	108.78	0.27	0.00	0.00	0.00	0.94	0.83	0.83	0.00	1.097
2.25	10.50	15.00	0.75	0.00	0.28	128.67	0.28	0.00	0.00	0.00	1.48	1.23	1.23	0.00	1.506
2.3	10.80	15.60	0.90	0.00	0.28	151.34	0.28	0.00	0.00	0.00	1.87	1.68	1.68	0.00	1.961
2.35	11.10	16.20	1.05	0.00	0.28	177.06	0.28	0.00	0.00	0.00	2.19	2.16	2.16	0.00	2.445
2.4	11.40	16.80	1.20	0.00	0.29	206.12	0.29	0.00	0.00	0.00	2.48	2.65	2.48	0.00	2.764
2.45	11.70	17.40	1.35	0.00	0.29	238.84	0.29	0.00	0.00	0.00	2.73	3.14	2.73	0.00	3.020
2.5	12.00	18.00	1.50	0.00	0.30	275.55	0.30	0.00	0.00	0.00	2.96	3.60	2.96	0.00	3.255
2.55	12.30	18.60	1.65	0.00	0.30	316.59	0.30	0.00	0.00	0.00	3.17	4.03	3.17	0.00	3.473
2.6	12.60	19.20	1.80	0.00	0.30	362.33	0.30	0.00	0.00	0.00	3.37	4.40	3.37	0.00	3.678
2.65	12.90	19.80	1.95	0.00	0.31	413.17	0.31	0.00	0.00	0.00	3.56	4.72	3.56	0.00	3.871
2.7	13.20	20.40	2.10	0.00	0.31	469.51	0.31	0.00	0.00	0.00	3.74	4.98	3.74	0.00	4.054
2.75	13.50	21.00	2.25	0.00	0.31	531.79	0.31	0.00	0.00	0.00	3.92	5.17	3.92	0.00	4.230
2.8	13.80	21.60	2.40	0.00	0.32	600.46	0.32	0.00	0.00	0.00	4.08	5.30	4.08	0.00	4.398
2.85	14.10	22.20	2.55	0.00	0.32	675.99	0.32	0.00	0.00	0.00	4.24	5.37	4.24	0.00	4.559
2.9	14.40	22.80	2.70	0.00	0.33	758.88	0.33	0.00	0.00	0.00	4.39	5.40	4.39	0.00	4.715
2.95	14.70	23.40	2.85	0.00	0.33	849.65	0.33	0.00	0.00	0.00	4.54	5.42	4.54	0.00	4.866
3	15.00	24.00	3.00	0.00	0.33	948.85	0.33	0.00	0.00	0.00	4.68	5.43	4.68	0.00	5.012
3.05	15.30	24.60	3.15	0.00	0.34	1057.04	0.34	0.00	0.00	0.00	4.82	5.49	4.82	0.00	5.153
3.1	15.60	25.20	3.30	0.00	0.34	1174.83	0.34	0.00	0.00	0.00	4.95	5.63	4.95	0.00	5.291
3.15	15.90	25.80	3.45	0.00	0.34	1302.83	0.34	0.00	0.00	0.00	5.08	5.90	5.08	0.00	5.426
3.2	16.20	26.40	3.60	0.00	0.35	1441.68	0.35	0.00	0.00	0.00	5.21	6.36	5.21	0.00	5.557
3.25	16.50	27.00	3.75	0.00	0.35	1592.07	0.35	0.00	0.00	0.00	5.34	7.09	5.34	0.00	5.684
3.3	16.80	27.60	3.90	0.00	0.35	1754.68	0.35	0.00	0.00	0.00	5.46	8.15	5.46	0.00	5.809
3.35	17.10	28.20	4.05	0.00	0.36	1930.25	0.36	0.00	0.00	0.00	5.58	9.64	5.58	0.00	5.932
3.4	17.40	28.80	4.20	0.00	0.36	2119.52	0.36	0.00	0.00	0.00	5.69	11.66	5.69	0.00	6.051
3.45	17.70	29.40	4.35	0.00	0.36	2323.30	0.36	0.00	0.00	0.00	5.81	14.33	5.81	0.00	6.169
3.5	18.00	30.00	4.50	0.00	0.36	2542.37	0.36	0.00	0.00	0.00	5.92	17.76	5.92	0.00	6.284
3.55	18.30	30.60	4.65	0.00	0.37	2777.60	0.37	0.00	0.00	0.00	6.03	22.10	6.03	0.00	6.397
3.6	18.60	31.20	4.80	0.00	0.37	3029.85	0.37	0.00	0.00	0.00	6.14	27.51	6.14	0.00	6.508
3.65	18.90	31.80	4.95	0.00	0.37	3300.02	0.37	0.00	0.00	0.00	6.24	34.13	6.24	0.00	6.617
3.7	19.20	32.40	5.10	0.00	0.38	3589.06	0.38	0.00	0.00	0.00	6.35	42.17	6.35	0.00	6.725

BASIN B Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

3.75	19.50	33.00	5.25	0.00	0.38	3897.92	0.38	0.00	0.00	0.00	6.45	51.80	6.45	0.00	6.831
3.8	19.80	33.60	5.40	0.00	0.38	4227.60	0.38	0.00	0.00	0.00	6.55	63.25	6.55	0.00	6.935
3.85	20.10	34.20	5.55	0.00	0.39	4579.14	0.39	0.00	0.00	0.00	6.65	76.74	6.65	0.00	7.037
3.9	20.40	34.80	5.70	0.00	0.39	4953.61	0.39	0.00	0.00	0.00	6.75	92.52	6.75	0.00	7.138
3.95	20.70	35.40	5.85	0.00	0.39	5352.09	0.39	0.00	0.00	0.00	6.85	110.85	6.85	0.00	7.238
4	21.00	36.00	6.00	0.00	0.39	5775.73	0.39	0.00	0.00	0.00	6.94	132.00	6.94	0.00	7.336
4.05	21.30	36.60	6.15	0.06	0.40	6225.69	0.40	0.00	0.00	0.00	7.04	156.29	7.04	0.37	7.805
4.1	21.60	37.20	6.30	0.12	0.40	6703.18	0.40	0.00	0.00	0.00	7.13	184.02	7.13	1.05	8.581
4.15	21.90	37.80	6.45	0.18	0.40	7209.43	0.40	0.00	0.00	0.00	7.22	215.54	7.22	1.93	9.557
4.2	22.20	38.40	6.60	0.24	0.41	7745.72	0.41	0.00	0.00	0.00	7.31	251.20	7.31	2.98	10.694
4.25	22.50	39.00	6.75	0.30	0.41	8313.37	0.41	0.00	0.00	0.00	7.40	291.38	7.40	4.16	11.971
4.3	22.80	39.60	6.90	0.36	0.41	8913.73	0.41	0.00	0.00	0.00	7.49	336.48	7.49	5.47	13.371
4.35	23.10	40.20	7.05	0.42	0.41	9548.18	0.41	0.00	0.00	0.00	7.57	386.93	7.57	6.90	14.884
4.4	23.40	40.80	7.20	0.48	0.42	10218.16	0.42	0.00	0.00	0.00	7.66	443.16	7.66	8.42	16.502
4.45	23.70	41.40	7.35	0.54	0.42	10925.13	0.42	0.00	0.00	0.00	7.75	505.66	7.75	10.05	18.218
4.5	24.00	42.00	7.50	0.60	0.42	11670.60	0.42	0.00	0.00	0.00	7.83	574.90	7.83	11.77	20.027
4.55	24.30	42.60	7.65	0.66	0.43	12456.12	0.43	0.00	0.00	0.00	7.91	651.41	7.91	13.58	21.922
4.6	24.60	43.20	7.80	0.72	0.43	13283.27	0.43	0.00	0.00	0.00	8.00	735.72	8.00	15.48	23.901
4.65	24.90	43.80	7.95	0.78	0.43	14153.68	0.43	0.00	0.00	0.00	8.08	828.41	8.08	17.45	25.960
4.7	25.20	44.40	8.10	0.84	0.43	15069.03	0.43	0.00	0.00	0.00	8.16	930.05	8.16	19.50	28.095
4.75	25.50	45.00	8.25	0.90	0.44	16031.02	0.44	0.00	0.00	0.00	8.24	1041.28	8.24	21.63	30.304
4.8	25.80	45.60	8.40	0.96	0.44	17041.42	0.44	0.00	0.00	0.00	8.32	1162.73	8.32	23.83	32.585
4.85	26.10	46.20	8.55	1.02	0.44	18102.02	0.44	0.00	0.00	0.00	8.40	1295.09	8.40	26.10	34.934
4.9	26.40	46.80	8.70	1.08	0.44	19214.67	0.44	0.00	0.00	0.00	8.48	1439.04	8.48	28.43	37.351
4.95	26.70	47.40	8.85	1.14	0.45	20381.26	0.45	0.00	0.00	0.00	8.55	1595.32	8.55	30.83	39.833
5	27.00	48.00	9.00	1.20	0.45	21603.72	0.45	0.00	0.00	0.00	8.63	1764.69	8.63	33.30	42.378
5.05	27.30	48.60	9.15	1.26	0.45	22884.03	0.45	0.00	0.00	0.00	8.70	1947.94	8.70	35.83	44.984
5.1	27.60	49.20	9.30	1.32	0.45	24224.21	0.45	0.00	0.00	0.00	8.78	2145.89	8.78	38.42	47.652
5.15	27.90	49.80	9.45	1.38	0.46	25626.34	0.46	0.00	0.00	0.00	8.85	2359.38	8.85	41.07	50.378
5.2	28.20	50.40	9.60	1.44	0.46	27092.54	0.46	0.00	0.00	0.00	8.93	2589.30	8.93	43.77	53.161
5.25	28.50	51.00	9.75	1.50	0.46	28624.96	0.46	0.00	0.00	0.00	9.00	2836.56	9.00	46.54	56.001
5.3	28.80	51.60	9.90	1.56	0.46	30225.83	0.46	0.00	0.00	0.00	9.07	3102.10	9.07	49.36	58.896
5.35	29.10	52.20	10.05	1.62	0.47	31897.42	0.47	0.00	0.00	0.00	9.15	3386.92	9.15	52.23	61.846
5.4	29.40	52.80	10.20	1.68	0.47	33642.02	0.47	0.00	0.00	0.00	9.22	3692.01	9.22	55.16	64.848
5.45	29.70	53.40	10.35	1.74	0.47	35462.01	0.47	0.00	0.00	0.00	9.29	4018.44	9.29	58.14	67.903
5.5	30.00	54.00	10.50	1.80	0.47	37359.80	0.47	0.00	0.00	0.00	9.36	4367.27	9.36	61.18	71.009
5.55	30.30	54.60	10.65	1.86	0.48	39337.85	0.48	0.00	0.00	0.00	9.43	4739.63	9.43	64.26	74.165
5.6	30.60	55.20	10.80	1.92	0.48	41398.68	0.48	0.00	0.00	0.00	9.50	5136.68	9.50	67.39	77.371
5.65	30.90	55.80	10.95	1.98	0.48	43544.86	0.48	0.00	0.00	0.00	9.57	5559.59	9.57	70.58	80.626
5.7	31.20	56.40	11.10	2.04	0.48	45778.99	0.48	0.00	0.00	0.00	9.64	6009.61	9.64	73.81	83.929
5.75	31.50	57.00	11.25	2.10	0.49	48103.77	0.49	0.00	0.00	0.00	9.70	6487.99	9.70	77.09	87.280
5.8	31.80	57.60	11.40	2.16	0.49	50521.91	0.49	0.00	0.00	0.00	9.77	6996.03	9.77	80.42	90.677
5.85	32.10	58.20	11.55	2.22	0.49	53036.19	0.49	0.00	0.00	0.00	9.84	7535.09	9.84	83.79	94.120
5.9	32.40	58.80	11.70	2.28	0.49	55649.44	0.49	0.00	0.00	0.00	9.90	8106.54	9.90	87.21	97.609
5.95	32.70	59.40	11.85	2.34	0.49	58364.57	0.49	0.00	0.00	0.00	9.97	8711.81	9.97	90.68	101.143
6	33.00	60.00	12.00	2.40	0.50	61184.51	0.50	0.00	0.00	0.00	10.04	9352.35	10.04	94.19	104.720

BASIN C Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	0.60	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	1.20	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.15	3.90	1.80	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1.2	4.20	2.40	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.25	4.50	3.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.3	4.80	3.60	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
1.35	5.10	4.20	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.4	5.40	4.80	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.45	5.70	5.40	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.5	6.00	6.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.55	6.30	6.60	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
1.6	6.60	7.20	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.65	6.90	7.80	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.7	7.20	8.40	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.75	7.50	9.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.8	7.80	9.60	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.85	8.10	10.20	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.9	8.40	10.80	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1.95	8.70	11.40	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2	9.00	12.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2.05	9.30	12.60	0.15	0.00	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.32
2.1	9.60	13.20	0.30	0.00	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.49
2.15	9.90	13.80	0.45	0.00	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.48	0.48	0.00	0.75
2.2	10.20	14.40	0.60	0.00	0.27	108.78	0.27	0.00	0.00	0.00	0.94	0.83	0.83	0.00	1.10
2.25	10.50	15.00	0.75	0.00	0.28	128.67	0.28	0.00	0.00	0.00	1.48	1.23	1.23	0.00	1.51
2.3	10.80	15.60	0.90	0.00	0.28	151.34	0.28	0.00	0.00	0.00	1.87	1.68	1.68	0.00	1.96
2.35	11.10	16.20	1.05	0.00	0.28	177.06	0.28	0.00	0.00	0.00	2.19	2.16	2.16	0.00	2.45
2.4	11.40	16.80	1.20	0.00	0.29	206.12	0.29	0.00	0.00	0.00	2.48	2.65	2.48	0.00	2.76
2.45	11.70	17.40	1.35	0.00	0.29	238.84	0.29	0.00	0.00	0.00	2.73	3.14	2.73	0.00	3.02
2.5	12.00	18.00	1.50	0.00	0.30	275.55	0.30	0.00	0.00	0.00	2.96	3.60	2.96	0.00	3.26
2.55	12.30	18.60	1.65	0.00	0.30	316.59	0.30	0.00	0.00	0.00	3.17	4.03	3.17	0.00	3.47
2.6	12.60	19.20	1.80	0.00	0.30	362.33	0.30	0.00	0.00	0.00	3.37	4.40	3.37	0.00	3.68
2.65	12.90	19.80	1.95	0.00	0.31	413.17	0.31	0.00	0.00	0.00	3.56	4.72	3.56	0.00	3.87
2.7	13.20	20.40	2.10	0.00	0.31	469.51	0.31	0.00	0.00	0.00	3.74	4.98	3.74	0.00	4.05
2.75	13.50	21.00	2.25	0.00	0.31	531.79	0.31	0.00	0.00	0.00	3.92	5.17	3.92	0.00	4.23
2.8	13.80	21.60	2.40	0.00	0.32	600.46	0.32	0.00	0.00	0.00	4.08	5.30	4.08	0.00	4.40
2.85	14.10	22.20	2.55	0.00	0.32	675.99	0.32	0.00	0.00	0.00	4.24	5.37	4.24	0.00	4.56
2.9	14.40	22.80	2.70	0.00	0.33	758.88	0.33	0.00	0.00	0.00	4.39	5.40	4.39	0.00	4.71
2.95	14.70	23.40	2.85	0.00	0.33	849.65	0.33	0.00	0.00	0.00	4.54	5.42	4.54	0.00	4.87
3	15.00	24.00	3.00	0.00	0.33	948.85	0.33	0.00	0.00	0.00	4.68	5.43	4.68	0.00	5.01
3.05	15.30	24.60	3.15	0.00	0.34	1057.04	0.34	0.00	0.00	0.00	4.82	5.49	4.82	0.00	5.15
3.1	15.60	25.20	3.30	0.00	0.34	1174.83	0.34	0.00	0.00	0.00	4.95	5.63	4.95	0.00	5.29
3.15	15.90	25.80	3.45	0.00	0.34	1302.83	0.34	0.00	0.00	0.00	5.08	5.90	5.08	0.00	5.43
3.2	16.20	26.40	3.60	0.00	0.35	1441.68	0.35	0.00	0.00	0.00	5.21	6.36	5.21	0.00	5.56
3.25	16.50	27.00	3.75	0.00	0.35	1592.07	0.35	0.00	0.00	0.00	5.34	7.09	5.34	0.00	5.68
3.3	16.80	27.60	3.90	0.00	0.35	1754.68	0.35	0.00	0.00	0.00	5.46	8.15	5.46	0.00	5.81
3.35	17.10	28.20	4.05	0.00	0.36	1930.25	0.36	0.00	0.00	0.00	5.58	9.64	5.58	0.00	5.93
3.4	17.40	28.80	4.20	0.00	0.36	2119.52	0.36	0.00	0.00	0.00	5.69	11.66	5.69	0.00	6.05
3.45	17.70	29.40	4.35	0.00	0.36	2323.30	0.36	0.00	0.00	0.00	5.81	14.33	5.81	0.00	6.17
3.5	18.00	30.00	4.50	0.00	0.36	2542.37	0.36	0.00	0.00	0.00	5.92	17.76	5.92	0.00	6.28
3.55	18.30	30.60	4.65	0.00	0.37	2777.60	0.37	0.00	0.00	0.00	6.03	22.10	6.03	0.00	6.40
3.6	18.60	31.20	4.80	0.00	0.37	3029.85	0.37	0.00	0.00	0.00	6.14	27.51	6.14	0.00	6.51

BASIN C Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

3.65	18.90	31.80	4.95	0.00	0.37	3300.02	0.37	0.00	0.00	0.00	6.24	34.13	6.24	0.00	6.62
3.7	19.20	32.40	5.10	0.00	0.38	3589.06	0.38	0.00	0.00	0.00	6.35	42.17	6.35	0.00	6.72
3.75	19.50	33.00	5.25	0.00	0.38	3897.92	0.38	0.00	0.00	0.00	6.45	51.80	6.45	0.00	6.83
3.8	19.80	33.60	5.40	0.00	0.38	4227.60	0.38	0.00	0.00	0.00	6.55	63.25	6.55	0.00	6.93
3.85	20.10	34.20	5.55	0.00	0.39	4579.14	0.39	0.00	0.00	0.00	6.65	76.74	6.65	0.00	7.04
3.9	20.40	34.80	5.70	0.00	0.39	4953.61	0.39	0.00	0.00	0.00	6.75	92.52	6.75	0.00	7.14
3.95	20.70	35.40	5.85	0.00	0.39	5352.09	0.39	0.00	0.00	0.00	6.85	110.85	6.85	0.00	7.24
4	21.00	36.00	6.00	0.00	0.39	5775.73	0.39	0.00	0.00	0.00	6.94	132.00	6.94	0.00	7.34
4.05	21.30	36.60	6.15	0.06	0.40	6225.69	0.40	0.00	0.00	0.00	7.04	156.29	7.04	0.37	7.81
4.1	21.60	37.20	6.30	0.12	0.40	6703.18	0.40	0.00	0.00	0.00	7.13	184.02	7.13	1.05	8.58
4.15	21.90	37.80	6.45	0.18	0.40	7209.43	0.40	0.00	0.00	0.00	7.22	215.54	7.22	1.93	9.56
4.2	22.20	38.40	6.60	0.24	0.41	7745.72	0.41	0.00	0.00	0.00	7.31	251.20	7.31	2.98	10.69
4.25	22.50	39.00	6.75	0.30	0.41	8313.37	0.41	0.00	0.00	0.00	7.40	291.38	7.40	4.16	11.97
4.3	22.80	39.60	6.90	0.36	0.41	8913.73	0.41	0.00	0.00	0.00	7.49	336.48	7.49	5.47	13.37
4.35	23.10	40.20	7.05	0.42	0.41	9548.18	0.41	0.00	0.00	0.00	7.57	386.93	7.57	6.90	14.88
4.4	23.40	40.80	7.20	0.48	0.42	10218.16	0.42	0.00	0.00	0.00	7.66	443.16	7.66	8.42	16.50
4.45	23.70	41.40	7.35	0.54	0.42	10925.13	0.42	0.00	0.00	0.00	7.75	505.66	7.75	10.05	18.22
4.5	24.00	42.00	7.50	0.60	0.42	11670.60	0.42	0.00	0.00	0.00	7.83	574.90	7.83	11.77	20.03
4.55	24.30	42.60	7.65	0.66	0.43	12456.12	0.43	0.00	0.00	0.00	7.91	651.41	7.91	13.58	21.92
4.6	24.60	43.20	7.80	0.72	0.43	13283.27	0.43	0.00	0.00	0.00	8.00	735.72	8.00	15.48	23.90
4.65	24.90	43.80	7.95	0.78	0.43	14153.68	0.43	0.00	0.00	0.00	8.08	828.41	8.08	17.45	25.96
4.7	25.20	44.40	8.10	0.84	0.43	15069.03	0.43	0.00	0.00	0.00	8.16	930.05	8.16	19.50	28.10
4.75	25.50	45.00	8.25	0.90	0.44	16031.02	0.44	0.00	0.00	0.00	8.24	1041.28	8.24	21.63	30.30
4.8	25.80	45.60	8.40	0.96	0.44	17041.42	0.44	0.00	0.00	0.00	8.32	1162.73	8.32	23.83	32.58
4.85	26.10	46.20	8.55	1.02	0.44	18102.02	0.44	0.00	0.00	0.00	8.40	1295.09	8.40	26.10	34.93
4.9	26.40	46.80	8.70	1.08	0.44	19214.67	0.44	0.00	0.00	0.00	8.48	1439.04	8.48	28.43	37.35
4.95	26.70	47.40	8.85	1.14	0.45	20381.26	0.45	0.00	0.00	0.00	8.55	1595.32	8.55	30.83	39.83
5	27.00	48.00	9.00	1.20	0.45	21603.72	0.45	0.00	0.00	0.00	8.63	1764.69	8.63	33.30	42.38
5.05	27.30	48.60	9.15	1.26	0.45	22884.03	0.45	0.00	0.00	0.00	8.70	1947.94	8.70	35.83	44.98
5.1	27.60	49.20	9.30	1.32	0.45	24224.21	0.45	0.00	0.00	0.00	8.78	2145.89	8.78	38.42	47.65
5.15	27.90	49.80	9.45	1.38	0.46	25626.34	0.46	0.00	0.00	0.00	8.85	2359.38	8.85	41.07	50.38
5.2	28.20	50.40	9.60	1.44	0.46	27092.54	0.46	0.00	0.00	0.00	8.93	2589.30	8.93	43.77	53.16
5.25	28.50	51.00	9.75	1.50	0.46	28624.96	0.46	0.00	0.00	0.00	9.00	2836.56	9.00	46.54	56.00
5.3	28.80	51.60	9.90	1.56	0.46	30225.83	0.46	0.00	0.00	0.00	9.07	3102.10	9.07	49.36	58.90
5.35	29.10	52.20	10.05	1.62	0.47	31897.42	0.47	0.00	0.00	0.00	9.15	3386.92	9.15	52.23	61.85
5.4	29.40	52.80	10.20	1.68	0.47	33642.02	0.47	0.00	0.00	0.00	9.22	3692.01	9.22	55.16	64.85
5.45	29.70	53.40	10.35	1.74	0.47	35462.01	0.47	0.00	0.00	0.00	9.29	4018.44	9.29	58.14	67.90
5.5	30.00	54.00	10.50	1.80	0.47	37359.80	0.47	0.00	0.00	0.00	9.36	4367.27	9.36	61.18	71.01
5.55	30.30	54.60	10.65	1.86	0.48	39337.85	0.48	0.00	0.00	0.00	9.43	4739.63	9.43	64.26	74.17
5.6	30.60	55.20	10.80	1.92	0.48	41398.68	0.48	0.00	0.00	0.00	9.50	5136.68	9.50	67.39	77.37
5.65	30.90	55.80	10.95	1.98	0.48	43544.86	0.48	0.00	0.00	0.00	9.57	5559.59	9.57	70.58	80.63
5.7	31.20	56.40	11.10	2.04	0.48	45778.99	0.48	0.00	0.00	0.00	9.64	6009.61	9.64	73.81	83.93
5.75	31.50	57.00	11.25	2.10	0.49	48103.77	0.49	0.00	0.00	0.00	9.70	6487.99	9.70	77.09	87.28
5.8	31.80	57.60	11.40	2.16	0.49	50521.91	0.49	0.00	0.00	0.00	9.77	6996.03	9.77	80.42	90.68
5.85	32.10	58.20	11.55	2.22	0.49	53036.19	0.49	0.00	0.00	0.00	9.84	7535.09	9.84	83.79	94.12
5.9	32.40	58.80	11.70	2.28	0.49	55649.44	0.49	0.00	0.00	0.00	9.90	8106.54	9.90	87.21	97.61
5.95	32.70	59.40	11.85	2.34	0.49	58364.57	0.49	0.00	0.00	0.00	9.97	8711.81	9.97	90.68	101.14
6	33.00	60.00	12.00	2.40	0.50	61184.51	0.50	0.00	0.00	0.00	10.04	9352.35	10.04	94.19	104.72

BASIN D Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.50 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	2	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	0.60	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	1.20	0.00	0.00	0.15	0.19	0.15	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.17
1.15	3.90	1.80	0.00	0.00	0.16	0.24	0.16	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.18
1.2	4.20	2.40	0.00	0.00	0.17	0.34	0.17	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.19
1.25	4.50	3.00	0.00	0.00	0.17	0.52	0.17	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.20
1.3	4.80	3.60	0.00	0.00	0.18	0.81	0.18	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.21
1.35	5.10	4.20	0.00	0.00	0.19	1.24	0.19	0.03	0.06	0.03	0.00	0.00	0.00	0.00	0.22
1.4	5.40	4.80	0.00	0.00	0.19	1.86	0.19	0.03	0.14	0.03	0.00	0.00	0.00	0.00	0.22
1.45	5.70	5.40	0.00	0.00	0.20	2.73	0.20	0.03	0.33	0.03	0.00	0.00	0.00	0.00	0.23
1.5	6.00	6.00	0.00	0.00	0.20	3.89	0.20	0.04	0.69	0.04	0.00	0.00	0.00	0.00	0.24
1.55	6.30	6.60	0.00	0.00	0.21	5.42	0.21	0.04	1.31	0.04	0.00	0.00	0.00	0.00	0.25
1.6	6.60	7.20	0.00	0.00	0.22	7.40	0.22	0.04	2.31	0.04	0.00	0.00	0.00	0.00	0.26
1.65	6.90	7.80	0.00	0.00	0.22	9.91	0.22	0.04	3.83	0.04	0.00	0.00	0.00	0.00	0.26
1.7	7.20	8.40	0.00	0.00	0.23	13.06	0.23	0.04	6.06	0.04	0.00	0.00	0.00	0.00	0.27
1.75	7.50	9.00	0.00	0.00	0.23	16.94	0.23	0.04	9.19	0.04	0.00	0.00	0.00	0.00	0.28
1.8	7.80	9.60	0.00	0.00	0.24	21.68	0.24	0.05	13.49	0.05	0.00	0.00	0.00	0.00	0.28
1.85	8.10	10.20	0.00	0.00	0.24	27.40	0.24	0.05	19.23	0.05	0.00	0.00	0.00	0.00	0.29
1.9	8.40	10.80	0.00	0.00	0.25	34.26	0.25	0.05	26.75	0.05	0.00	0.00	0.00	0.00	0.29
1.95	8.70	11.40	0.00	0.00	0.25	42.40	0.25	0.05	36.44	0.05	0.00	0.00	0.00	0.00	0.30
2	9.00	12.00	0.00	0.00	0.25	51.99	0.25	0.05	48.71	0.05	0.00	0.00	0.00	0.00	0.31
2.05	9.30	12.60	0.00	0.00	0.26	63.22	0.26	0.05	64.05	0.05	0.00	0.00	0.00	0.00	0.31
2.1	9.60	13.20	0.00	0.00	0.26	76.29	0.26	0.05	83.00	0.05	0.00	0.00	0.00	0.00	0.32
2.15	9.90	13.80	0.00	0.00	0.27	91.40	0.27	0.06	106.15	0.06	0.00	0.00	0.00	0.00	0.32
2.2	10.20	14.40	0.00	0.00	0.27	108.78	0.27	0.06	134.15	0.06	0.00	0.00	0.00	0.00	0.33
2.25	10.50	15.00	0.00	0.00	0.28	128.67	0.28	0.06	167.73	0.06	0.00	0.00	0.00	0.00	0.33
2.3	10.80	15.60	0.00	0.00	0.28	151.34	0.28	0.06	207.68	0.06	0.00	0.00	0.00	0.00	0.34
2.35	11.10	16.20	0.00	0.00	0.28	177.06	0.28	0.06	254.86	0.06	0.00	0.00	0.00	0.00	0.34
2.4	11.40	16.80	0.00	0.00	0.29	206.12	0.29	0.06	310.19	0.06	0.00	0.00	0.00	0.00	0.35
2.45	11.70	17.40	0.00	0.00	0.29	238.84	0.29	0.06	374.68	0.06	0.00	0.00	0.00	0.00	0.36
2.5	12.00	18.00	0.00	0.00	0.30	275.55	0.30	0.06	449.43	0.06	0.00	0.00	0.00	0.00	0.36
2.55	12.30	18.60	0.15	0.00	0.30	316.59	0.30	0.07	535.61	0.07	0.00	0.06	0.06	0.00	0.42
2.6	12.60	19.20	0.30	0.00	0.30	362.33	0.30	0.07	634.46	0.07	0.00	0.22	0.22	0.00	0.59
2.65	12.90	19.80	0.45	0.00	0.31	413.17	0.31	0.07	747.34	0.07	0.00	0.48	0.48	0.00	0.86
2.7	13.20	20.40	0.60	0.00	0.31	469.51	0.31	0.07	875.68	0.07	0.94	0.83	0.83	0.00	1.20
2.75	13.50	21.00	0.75	0.00	0.31	531.79	0.31	0.07	1021.01	0.07	1.48	1.23	1.23	0.00	1.61
2.8	13.80	21.60	0.90	0.00	0.32	600.46	0.32	0.07	1184.97	0.07	1.87	1.68	1.68	0.00	2.07
2.85	14.10	22.20	1.05	0.00	0.32	675.99	0.32	0.07	1369.26	0.07	2.19	2.16	2.16	0.00	2.55
2.9	14.40	22.80	1.20	0.00	0.33	758.88	0.33	0.07	1575.74	0.07	2.48	2.65	2.48	0.00	2.87
2.95	14.70	23.40	1.35	0.00	0.33	849.65	0.33	0.07	1806.33	0.07	2.73	3.14	2.73	0.00	3.13
3	15.00	24.00	1.50	0.00	0.33	948.85	0.33	0.07	2063.09	0.07	2.96	3.60	2.96	0.00	3.37
3.05	15.30	24.60	1.65	0.00	0.34	1057.04	0.34	0.08	2348.17	0.08	3.17	4.03	3.17	0.00	3.59
3.1	15.60	25.20	1.80	0.00	0.34	1174.83	0.34	0.08	2663.85	0.08	3.37	4.40	3.37	0.00	3.79
3.15	15.90	25.80	1.95	0.00	0.34	1302.83	0.34	0.08	3012.53	0.08	3.56	4.72	3.56	0.00	3.98
3.2	16.20	26.40	2.10	0.00	0.35	1441.68	0.35	0.08	3396.71	0.08	3.74	4.98	3.74	0.00	4.17
3.25	16.50	27.00	2.25	0.00	0.35	1592.07	0.35	0.08	3819.03	0.08	3.92	5.17	3.92	0.00	4.34
3.3	16.80	27.60	2.40	0.00	0.35	1754.68	0.35	0.08	4282.28	0.08	4.08	5.30	4.08	0.00	4.51
3.35	17.10	28.20	2.55	0.00	0.36	1930.25	0.36	0.08	4789.33	0.08	4.24	5.37	4.24	0.00	4.67
3.4	17.40	28.80	2.70	0.00	0.36	2119.52	0.36	0.08	5343.22	0.08	4.39	5.40	4.39	0.00	4.83
3.45	17.70	29.40	2.85	0.00	0.36	2323.30	0.36	0.08	5947.13	0.08	4.54	5.42	4.54	0.00	4.98
3.5	18.00	30.00	3.00	0.00	0.36	2542.37	0.36	0.08	6604.34	0.08	4.68	5.43	4.68	0.00	5.13
3.55	18.30	30.60	3.15	0.00	0.37	2777.60	0.37	0.08	7318.32	0.08	4.82	5.49	4.82	0.00	5.27
3.6	18.60	31.20	3.30	0.00	0.37	3029.85	0.37	0.09	8092.66	0.09	4.95	5.63	4.95	0.00	5.41
3.65	18.90	31.80	3.45	0.00	0.37	3300.02	0.37	0.09	8931.10	0.09	5.08	5.90	5.08	0.00	5.54
3.7	19.20	32.40	3.60	0.00	0.38	3589.06	0.38	0.09	9837.52	0.09	5.21	6.36	5.21	0.00	5.68
3.75	19.50	33.00	3.75	0.00	0.38	3897.92	0.38	0.09	10815.99	0.09	5.34	7.09	5.34	0.00	5.80
3.8	19.80	33.60	3.90	0.00	0.38	4227.60	0.38	0.09	11870.71	0.09	5.46	8.15	5.46	0.00	5.93
3.85	20.10	34.20	4.05	0.00	0.39	4579.14	0.39	0.09	13006.04	0.09	5.58	9.64	5.58	0.00	6.05
3.9	20.40	34.80	4.20	0.00	0.39	4953.61	0.39	0.09	14226.51	0.09	5.69	11.66	5.69	0.00	6.17

BASIN D Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.50 ft
Middle orifice diameter:	1 "	Emergency weir:	
number of orif:	2	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

3.95	20.70	35.40	4.35	0.00	0.39	5352.09	0.39	0.09	15536.81	0.09	5.81	14.33	5.81	0.00	6.29
4	21.00	36.00	4.50	0.00	0.39	5775.73	0.39	0.09	16941.82	0.09	5.92	17.76	5.92	0.00	6.41
4.05	21.30	36.60	4.65	0.06	0.40	6225.69	0.40	0.09	18446.56	0.09	6.03	22.10	6.03	0.37	6.89
4.1	21.60	37.20	4.80	0.12	0.40	6703.18	0.40	0.09	20056.25	0.09	6.14	27.51	6.14	1.05	7.68
4.15	21.90	37.80	4.95	0.18	0.40	7209.43	0.40	0.09	21776.28	0.09	6.24	34.13	6.24	1.93	8.68
4.2	22.20	38.40	5.10	0.24	0.41	7745.72	0.41	0.09	23612.23	0.09	6.35	42.17	6.35	2.98	9.83
4.25	22.50	39.00	5.25	0.30	0.41	8313.37	0.41	0.10	25569.84	0.10	6.45	51.80	6.45	4.16	11.12
4.3	22.80	39.60	5.40	0.36	0.41	8913.73	0.41	0.10	27655.07	0.10	6.55	63.25	6.55	5.47	12.53
4.35	23.10	40.20	5.55	0.42	0.41	9548.18	0.41	0.10	29874.03	0.10	6.65	76.74	6.65	6.90	14.06
4.4	23.40	40.80	5.70	0.48	0.42	10218.16	0.42	0.10	32233.08	0.10	6.75	92.52	6.75	8.42	15.69
4.45	23.70	41.40	5.85	0.54	0.42	10925.13	0.42	0.10	34738.71	0.10	6.85	110.85	6.85	10.05	17.42
4.5	24.00	42.00	6.00	0.60	0.42	11670.60	0.42	0.10	37397.67	0.10	6.94	132.00	6.94	11.77	19.24
4.55	24.30	42.60	6.15	0.66	0.43	12456.12	0.43	0.10	40216.86	0.10	7.04	156.29	7.04	13.58	21.14
4.6	24.60	43.20	6.30	0.72	0.43	13283.27	0.43	0.10	43203.43	0.10	7.13	184.02	7.13	15.48	23.13
4.65	24.90	43.80	6.45	0.78	0.43	14153.68	0.43	0.10	46364.71	0.10	7.22	215.54	7.22	17.45	25.20
4.7	25.20	44.40	6.60	0.84	0.43	15069.03	0.43	0.10	49708.25	0.10	7.31	251.20	7.31	19.50	27.35
4.75	25.50	45.00	6.75	0.90	0.44	16031.02	0.44	0.10	53241.82	0.10	7.40	291.38	7.40	21.63	29.57
4.8	25.80	45.60	6.90	0.96	0.44	17041.42	0.44	0.10	56973.39	0.10	7.49	336.48	7.49	23.83	31.86
4.85	26.10	46.20	7.05	1.02	0.44	18102.02	0.44	0.10	60911.16	0.10	7.57	386.93	7.57	26.10	34.22
4.9	26.40	46.80	7.20	1.08	0.44	19214.67	0.44	0.10	65063.57	0.10	7.66	443.16	7.66	28.43	36.64
4.95	26.70	47.40	7.35	1.14	0.45	20381.26	0.45	0.11	69439.26	0.11	7.75	505.66	7.75	30.83	39.13
5	27.00	48.00	7.50	1.20	0.45	21603.72	0.45	0.11	74047.11	0.11	7.83	574.90	7.83	33.30	41.69
5.05	27.30	48.60	7.65	1.26	0.45	22884.03	0.45	0.11	78896.24	0.11	7.91	651.41	7.91	35.83	44.30
5.1	27.60	49.20	7.80	1.32	0.45	24224.21	0.45	0.11	83995.98	0.11	8.00	735.72	8.00	38.42	46.98
5.15	27.90	49.80	7.95	1.38	0.46	25626.34	0.46	0.11	89355.94	0.11	8.08	828.41	8.08	41.07	49.71
5.2	28.20	50.40	8.10	1.44	0.46	27092.54	0.46	0.11	94985.92	0.11	8.16	930.05	8.16	43.77	52.50
5.25	28.50	51.00	8.25	1.50	0.46	28624.96	0.46	0.11	100896.01	0.11	8.24	1041.28	8.24	46.54	55.35
5.3	28.80	51.60	8.40	1.56	0.46	30225.83	0.46	0.11	107096.53	0.11	8.32	1162.73	8.32	49.36	58.25
5.35	29.10	52.20	8.55	1.62	0.47	31897.42	0.47	0.11	113598.03	0.11	8.40	1295.09	8.40	52.23	61.21
5.4	29.40	52.80	8.70	1.68	0.47	33642.02	0.47	0.11	120411.35	0.11	8.48	1439.04	8.48	55.16	64.22
5.45	29.70	53.40	8.85	1.74	0.47	35462.01	0.47	0.11	127547.56	0.11	8.55	1595.32	8.55	58.14	67.28
5.5	30.00	54.00	9.00	1.80	0.47	37359.80	0.47	0.11	135018.00	0.11	8.63	1764.69	8.63	61.18	70.39
5.55	30.30	54.60	9.15	1.86	0.48	39337.85	0.48	0.11	142834.26	0.11	8.70	1947.94	8.70	64.26	73.55
5.6	30.60	55.20	9.30	1.92	0.48	41398.68	0.48	0.11	151008.22	0.11	8.78	2145.89	8.78	67.39	76.77
5.65	30.90	55.80	9.45	1.98	0.48	43544.86	0.48	0.11	159552.00	0.11	8.85	2359.38	8.85	70.58	80.03
5.7	31.20	56.40	9.60	2.04	0.48	45778.99	0.48	0.12	168478.00	0.12	8.93	2589.30	8.93	73.81	83.34
5.75	31.50	57.00	9.75	2.10	0.49	48103.77	0.49	0.12	177798.92	0.12	9.00	2836.56	9.00	77.09	86.69
5.8	31.80	57.60	9.90	2.16	0.49	50521.91	0.49	0.12	187527.69	0.12	9.07	3102.10	9.07	80.42	90.10
5.85	32.10	58.20	10.05	2.22	0.49	53036.19	0.49	0.12	197677.55	0.12	9.15	3386.92	9.15	83.79	93.55
5.9	32.40	58.80	10.20	2.28	0.49	55649.44	0.49	0.12	208262.04	0.12	9.22	3692.01	9.22	87.21	97.04
5.95	32.70	59.40	10.35	2.34	0.49	58364.57	0.49	0.12	219294.93	0.12	9.29	4018.44	9.29	90.68	100.58
6	33.00	60.00	10.50	2.40	0.50	61184.51	0.50	0.12	230790.34	0.12	9.36	4367.27	9.36	94.19	104.16

BASIN E Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	2 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	9.4 ft
invert elev:	1.00 ft	Riser Box diameter	3

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.6	0.60	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.65	0.90	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.7	1.20	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.75	1.50	0.00	0.00	0.00	0.04	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.8	1.80	0.00	0.00	0.00	0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.85	2.10	0.00	0.00	0.00	0.06	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.9	2.40	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.95	2.70	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1	3.00	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.05	3.30	0.30	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.1	3.60	0.60	0.00	0.00	0.08	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.15	3.90	0.90	0.00	0.00	0.08	0.12	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.2	4.20	1.20	0.00	0.00	0.08	0.17	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.25	4.50	1.50	0.00	0.00	0.09	0.26	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.3	4.80	1.80	0.00	0.00	0.09	0.41	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.35	5.10	2.10	0.00	0.00	0.09	0.62	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.4	5.40	2.40	0.00	0.00	0.10	0.93	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.45	5.70	2.70	0.00	0.00	0.10	1.36	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.5	6.00	3.00	0.00	0.00	0.10	1.94	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.55	6.30	3.30	0.00	0.00	0.11	2.71	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.6	6.60	3.60	0.00	0.00	0.11	3.70	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.65	6.90	3.90	0.00	0.00	0.11	4.96	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.7	7.20	4.20	0.00	0.00	0.11	6.53	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.75	7.50	4.50	0.00	0.00	0.12	8.47	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.8	7.80	4.80	0.00	0.00	0.12	10.84	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.85	8.10	5.10	0.00	0.00	0.12	13.70	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.9	8.40	5.40	0.00	0.00	0.12	17.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.95	8.70	5.70	0.00	0.00	0.12	21.20	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
2	9.00	6.00	0.00	0.00	0.13	26.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
2.05	9.30	6.30	0.00	0.00	0.13	31.61	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
2.1	9.60	6.60	0.00	0.00	0.13	38.14	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
2.15	9.90	6.90	0.00	0.00	0.13	45.70	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
2.2	10.20	7.20	0.00	0.00	0.14	54.39	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
2.25	10.50	7.50	0.00	0.00	0.14	64.34	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
2.3	10.80	7.80	0.00	0.00	0.14	75.67	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
2.35	11.10	8.10	0.00	0.00	0.14	88.53	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
2.4	11.40	8.40	0.00	0.00	0.14	103.06	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
2.45	11.70	8.70	0.00	0.00	0.15	119.42	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
2.5	12.00	9.00	0.00	0.00	0.15	137.77	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
2.55	12.30	9.30	0.00	0.00	0.15	158.29	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
2.6	12.60	9.60	0.00	0.00	0.15	181.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
2.65	12.90	9.90	0.00	0.00	0.15	206.59	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
2.7	13.20	10.20	0.00	0.00	0.16	234.76	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
2.75	13.50	10.50	0.00	0.00	0.16	265.90	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
2.8	13.80	10.80	0.00	0.00	0.16	300.23	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
2.85	14.10	11.10	0.00	0.00	0.16	337.99	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
2.9	14.40	11.40	0.00	0.00	0.16	379.44	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
2.95	14.70	11.70	0.00	0.00	0.16	424.82	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
3	15.00	12.00	0.00	0.00	0.17	474.42	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.05	15.30	12.30	0.15	0.00	0.17	528.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.1	15.60	12.60	0.30	0.00	0.17	587.42	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.15	15.90	12.90	0.45	0.00	0.17	651.41	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.2	16.20	13.20	0.60	0.00	0.17	720.84	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.25	16.50	13.50	0.75	0.00	0.17	796.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
3.3	16.80	13.80	0.90	0.00	0.18	877.34	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.35	17.10	14.10	1.05	0.00	0.18	965.12	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.4	17.40	14.40	1.20	0.00	0.18	1059.76	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.45	17.70	14.70	1.35	0.00	0.18	1161.65	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.5	18.00	15.00	1.50	0.00	0.18	1271.19	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.55	18.30	15.30	1.65	0.00	0.18	1388.80	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3.6	18.60	15.60	1.80	0.00	0.19	1514.93	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.65	18.90	15.90	1.95	0.00	0.19	1650.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.7	19.20	16.20	2.10	0.00	0.19	1794.53	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.75	19.50	16.50	2.25	0.00	0.19	1948.96	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.8	19.80	16.80	2.40	0.00	0.19	2113.80	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.85	20.10	17.10	2.55	0.00	0.19	2289.57	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19

BASIN E Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	2 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	9.4 ft
invert elev:	1.00 ft	Riser Box diameter	3

3.9	20.40	17.40	2.70	0.00	0.19	2476.80	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
3.95	20.70	17.70	2.85	0.00	0.20	2676.05	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
4	21.00	18.00	3.00	0.00	0.20	2887.86	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
4.05	21.30	18.30	3.15	0.06	0.20	3112.84	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.55
4.1	21.60	18.60	3.30	0.13	0.20	3351.59	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.99	1.19
4.15	21.90	18.90	3.45	0.19	0.20	3604.71	0.20	0.00	0.00	0.00	0.00	0.00	0.00	1.82	2.02
4.2	22.20	19.20	3.60	0.25	0.20	3872.86	0.20	0.00	0.00	0.00	0.00	0.00	0.00	2.81	3.01
4.25	22.50	19.50	3.75	0.32	0.20	4156.69	0.20	0.00	0.00	0.00	0.00	0.00	0.00	3.92	4.13
4.3	22.80	19.80	3.90	0.38	0.21	4456.87	0.21	0.00	0.00	0.00	0.00	0.00	0.00	5.15	5.36
4.35	23.10	20.10	4.05	0.45	0.21	4774.09	0.21	0.00	0.00	0.00	0.00	0.00	0.00	6.50	6.70
4.4	23.40	20.40	4.20	0.51	0.21	5109.08	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.94	8.14
4.45	23.70	20.70	4.35	0.57	0.21	5462.57	0.21	0.00	0.00	0.00	0.00	0.00	0.00	9.47	9.68
4.5	24.00	21.00	4.50	0.64	0.21	5835.30	0.21	0.00	0.00	0.00	0.00	0.00	0.00	11.09	11.30
4.55	24.30	21.30	4.65	0.70	0.21	6228.06	0.21	0.00	0.00	0.00	0.00	0.00	0.00	12.79	13.01
4.6	24.60	21.60	4.80	0.76	0.21	6641.63	0.21	0.00	0.00	0.00	0.00	0.00	0.00	14.58	14.79
4.65	24.90	21.90	4.95	0.83	0.22	7076.84	0.22	0.00	0.00	0.00	0.00	0.00	0.00	16.44	16.65
4.7	25.20	22.20	5.10	0.89	0.22	7534.51	0.22	0.00	0.00	0.00	0.00	0.00	0.00	18.37	18.59
4.75	25.50	22.50	5.25	0.96	0.22	8015.51	0.22	0.00	0.00	0.00	0.00	0.00	0.00	20.37	20.59
4.8	25.80	22.80	5.40	1.02	0.22	8520.71	0.22	0.00	0.00	0.00	0.00	0.00	0.00	22.45	22.66
4.85	26.10	23.10	5.55	1.08	0.22	9051.01	0.22	0.00	0.00	0.00	0.00	0.00	0.00	24.58	24.80
4.9	26.40	23.40	5.70	1.15	0.22	9607.34	0.22	0.00	0.00	0.00	0.00	0.00	0.00	26.78	27.00
4.95	26.70	23.70	5.85	1.21	0.22	10190.63	0.22	0.00	0.00	0.00	0.00	0.00	0.00	29.05	29.27
5	27.00	24.00	6.00	1.27	0.22	10801.86	0.22	0.00	0.00	0.00	0.00	0.00	0.00	31.37	31.59
5.05	27.30	24.30	6.15	1.34	0.23	11442.02	0.23	0.00	0.00	0.00	0.00	0.00	0.00	33.75	33.98
5.1	27.60	24.60	6.30	1.40	0.23	12112.11	0.23	0.00	0.00	0.00	0.00	0.00	0.00	36.19	36.42
5.15	27.90	24.90	6.45	1.46	0.23	12813.17	0.23	0.00	0.00	0.00	0.00	0.00	0.00	38.68	38.91
5.2	28.20	25.20	6.60	1.53	0.23	13546.27	0.23	0.00	0.00	0.00	0.00	0.00	0.00	41.24	41.46
5.25	28.50	25.50	6.75	1.59	0.23	14312.48	0.23	0.00	0.00	0.00	0.00	0.00	0.00	43.84	44.07
5.3	28.80	25.80	6.90	1.66	0.23	15112.92	0.23	0.00	0.00	0.00	0.00	0.00	0.00	46.50	46.73
5.35	29.10	26.10	7.05	1.72	0.23	15948.71	0.23	0.00	0.00	0.00	0.00	0.00	0.00	49.20	49.44
5.4	29.40	26.40	7.20	1.78	0.23	16821.01	0.23	0.00	0.00	0.00	0.00	0.00	0.00	51.96	52.20
5.45	29.70	26.70	7.35	1.85	0.24	17731.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	54.77	55.01
5.5	30.00	27.00	7.50	1.91	0.24	18679.90	0.24	0.00	0.00	0.00	0.00	0.00	0.00	57.63	57.86
5.55	30.30	27.30	7.65	1.97	0.24	19668.93	0.24	0.00	0.00	0.00	0.00	0.00	0.00	60.53	60.77
5.6	30.60	27.60	7.80	2.04	0.24	20699.34	0.24	0.00	0.00	0.00	0.00	0.00	0.00	63.49	63.72
5.65	30.90	27.90	7.95	2.10	0.24	21772.43	0.24	0.00	0.00	0.00	0.00	0.00	0.00	66.48	66.72
5.7	31.20	28.20	8.10	2.17	0.24	22889.50	0.24	0.00	0.00	0.00	0.00	0.00	0.00	69.53	69.77
5.75	31.50	28.50	8.25	2.23	0.24	24051.88	0.24	0.00	0.00	0.00	0.00	0.00	0.00	72.62	72.86
5.8	31.80	28.80	8.40	2.29	0.24	25260.95	0.24	0.00	0.00	0.00	0.00	0.00	0.00	75.75	76.00
5.85	32.10	29.10	8.55	2.36	0.25	26518.09	0.25	0.00	0.00	0.00	0.00	0.00	0.00	78.93	79.18
5.9	32.40	29.40	8.70	2.42	0.25	27824.72	0.25	0.00	0.00	0.00	0.00	0.00	0.00	82.15	82.40
5.95	32.70	29.70	8.85	2.48	0.25	29182.28	0.25	0.00	0.00	0.00	0.00	0.00	0.00	85.42	85.66
6	33.00	30.00	9.00	2.55	0.25	30592.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	88.72	88.97

BASIN F Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	12	Number:	10
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.6	0.60	0.00	0.00	0.00	0.17	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
0.65	0.90	0.00	0.00	0.00	0.33	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
0.7	1.20	0.00	0.00	0.00	0.44	0.47	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
0.75	1.50	0.00	0.00	0.00	0.52	0.64	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
0.8	1.80	0.00	0.00	0.00	0.60	0.78	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
0.85	2.10	0.00	0.00	0.00	0.66	0.88	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
0.9	2.40	0.00	0.00	0.00	0.72	0.94	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
0.95	2.70	0.00	0.00	0.00	0.78	0.96	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78
1	3.00	0.00	0.00	0.00	0.83	0.96	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
1.05	3.30	0.20	0.00	0.00	0.88	1.00	0.88	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.93
1.1	3.60	0.40	0.00	0.00	0.92	1.12	0.92	0.00	0.19	0.19	0.00	0.00	0.00	0.00	1.11
1.15	3.90	0.60	0.00	0.00	0.96	1.44	0.96	0.46	0.40	0.40	0.00	0.00	0.00	0.00	1.37
1.2	4.20	0.80	0.00	0.00	1.01	2.06	1.01	0.79	0.67	0.67	0.00	0.00	0.00	0.00	1.68
1.25	4.50	1.00	0.00	0.00	1.05	3.14	1.05	1.02	0.97	0.97	0.00	0.00	0.00	0.00	2.02
1.3	4.80	1.20	0.00	0.00	1.08	4.86	1.08	1.21	1.29	1.21	0.00	0.00	0.00	0.00	2.29
1.35	5.10	1.40	0.00	0.00	1.12	7.45	1.12	1.37	1.60	1.37	0.00	0.00	0.00	0.00	2.49
1.4	5.40	1.60	0.00	0.00	1.16	11.18	1.16	1.51	1.89	1.51	0.00	0.00	0.00	0.00	2.67
1.45	5.70	1.80	0.00	0.00	1.19	16.36	1.19	1.64	2.14	1.64	0.00	0.00	0.00	0.00	2.84
1.5	6.00	2.00	0.00	0.00	1.23	23.34	1.23	1.77	2.35	1.77	0.00	0.00	0.00	0.00	2.99
1.55	6.30	2.20	0.00	0.00	1.26	32.53	1.26	1.88	2.49	1.88	0.00	0.00	0.00	0.00	3.14
1.6	6.60	2.40	0.00	0.00	1.29	44.41	1.29	1.99	2.58	1.99	0.00	0.00	0.00	0.00	3.28
1.65	6.90	2.60	0.00	0.00	1.32	59.48	1.32	2.09	2.62	2.09	0.00	0.00	0.00	0.00	3.41
1.7	7.20	2.80	0.00	0.00	1.35	78.34	1.35	2.19	2.64	2.19	0.00	0.00	0.00	0.00	3.54
1.75	7.50	3.00	0.00	0.00	1.38	101.63	1.38	2.28	2.65	2.28	0.00	0.00	0.00	0.00	3.66
1.8	7.80	3.20	0.00	0.00	1.41	130.06	1.41	2.37	2.69	2.37	0.00	0.00	0.00	0.00	3.78
1.85	8.10	3.40	0.00	0.00	1.44	164.41	1.44	2.46	2.82	2.46	0.00	0.00	0.00	0.00	3.90
1.9	8.40	3.60	0.00	0.00	1.47	205.54	1.47	2.54	3.10	2.54	0.00	0.00	0.00	0.00	4.01
1.95	8.70	3.80	0.00	0.00	1.50	254.39	1.50	2.62	3.60	2.62	0.00	0.00	0.00	0.00	4.12
2	9.00	4.00	0.00	0.00	1.53	311.96	1.53	2.70	4.43	2.70	0.00	0.00	0.00	0.00	4.22
2.05	9.30	4.20	0.00	0.00	1.55	379.34	1.55	2.77	5.68	2.77	0.00	0.00	0.00	0.00	4.33
2.1	9.60	4.40	0.00	0.00	1.58	457.73	1.58	2.85	7.49	2.85	0.00	0.00	0.00	0.00	4.43
2.15	9.90	4.60	0.00	0.00	1.60	548.38	1.60	2.92	10.01	2.92	0.00	0.00	0.00	0.00	4.52
2.2	10.20	4.80	0.00	0.00	1.63	652.66	1.63	2.99	13.40	2.99	0.00	0.00	0.00	0.00	4.62
2.25	10.50	5.00	0.00	0.00	1.65	772.03	1.65	3.06	17.85	3.06	0.00	0.00	0.00	0.00	4.71
2.3	10.80	5.20	0.00	0.00	1.68	908.04	1.68	3.13	23.58	3.13	0.00	0.00	0.00	0.00	4.80
2.35	11.10	5.40	0.00	0.00	1.70	1062.36	1.70	3.19	30.81	3.19	0.00	0.00	0.00	0.00	4.89
2.4	11.40	5.60	0.00	0.00	1.73	1236.74	1.73	3.26	39.82	3.26	0.00	0.00	0.00	0.00	4.98
2.45	11.70	5.80	0.00	0.00	1.75	1433.05	1.75	3.32	50.88	3.32	0.00	0.00	0.00	0.00	5.07
2.5	12.00	6.00	0.00	0.00	1.77	1653.28	1.77	3.38	64.30	3.38	0.00	0.00	0.00	0.00	5.16
2.55	12.30	6.20	0.00	0.00	1.80	1899.52	1.80	3.44	80.44	3.44	0.00	0.00	0.00	0.00	5.24
2.6	12.60	6.40	0.00	0.00	1.82	2173.99	1.82	3.50	99.66	3.50	0.00	0.00	0.00	0.00	5.32
2.65	12.90	6.60	0.00	0.00	1.84	2479.03	1.84	3.56	122.37	3.56	0.00	0.00	0.00	0.00	5.40
2.7	13.20	6.80	0.00	0.00	1.86	2817.09	1.86	3.62	148.99	3.62	0.00	0.00	0.00	0.00	5.48
2.75	13.50	7.00	0.00	0.00	1.89	3190.75	1.89	3.68	179.99	3.68	0.00	0.00	0.00	0.00	5.56
2.8	13.80	7.20	0.00	0.00	1.91	3602.75	1.91	3.73	215.88	3.73	0.00	0.00	0.00	0.00	5.64
2.85	14.10	7.40	0.00	0.00	1.93	4055.92	1.93	3.79	257.19	3.79	0.00	0.00	0.00	0.00	5.72
2.9	14.40	7.60	0.00	0.00	1.95	4553.26	1.95	3.84	304.49	3.84	0.00	0.00	0.00	0.00	5.79
2.95	14.70	7.80	0.00	0.00	1.97	5097.89	1.97	3.90	358.40	3.90	0.00	0.00	0.00	0.00	5.87
3	15.00	8.00	0.00	0.00	1.99	5693.09	1.99	3.95	419.55	3.95	0.00	0.00	0.00	0.00	5.94
3.05	15.30	8.20	0.15	0.00	2.01	6342.26	2.01	4.00	488.65	4.00	0.00	0.05	0.05	0.00	6.06
3.1	15.60	8.40	0.30	0.00	2.03	7048.99	2.03	4.05	566.41	4.05	0.00	0.19	0.19	0.00	6.27
3.15	15.90	8.60	0.45	0.00	2.05	7816.97	2.05	4.10	653.62	4.10	0.00	0.40	0.40	0.00	6.56
3.2	16.20	8.80	0.60	0.00	2.07	8650.10	2.07	4.15	751.08	4.15	0.78	0.69	0.69	0.00	6.91
3.25	16.50	9.00	0.75	0.00	2.09	9552.40	2.09	4.20	859.65	4.20	1.23	1.03	1.03	0.00	7.32
3.3	16.80	9.20	0.90	0.00	2.11	10528.08	2.11	4.25	980.25	4.25	1.56	1.40	1.40	0.00	7.77
3.35	17.10	9.40	1.05	0.00	2.13	11581.48	2.13	4.30	1113.81	4.30	1.83	1.80	1.80	0.00	8.23
3.4	17.40	9.60	1.20	0.00	2.15	12717.15	2.15	4.35	1261.35	4.35	2.06	2.21	2.06	0.00	8.56
3.45	17.70	9.80	1.35	0.00	2.17	13939.77	2.17	4.40	1423.90	4.40	2.27	2.61	2.27	0.00	8.84
3.5	18.00	10.00	1.50	0.00	2.19	15254.24	2.19	4.44	1602.58	4.44	2.47	3.00	2.47	0.00	9.10
3.55	18.30	10.20	1.65	0.00	2.21	16665.61	2.21	4.49	1798.53	4.49	2.64	3.35	2.64	0.00	9.34
3.6	18.60	10.40	1.80	0.00	2.23	18179.10	2.23	4.54	2012.94	4.54	2.81	3.67	2.81	0.00	9.57
3.65	18.90	10.60	1.95	0.00	2.24	19800.14	2.24	4.58	2247.09	4.58	2.97	3.93	2.97	0.00	9.80
3.7	19.20	10.80	2.10	0.00	2.26	21534.35	2.26	4.63	2502.28	4.63	3.12	4.15	3.12	0.00	10.01
3.75	19.50	11.00	2.25	0.00	2.28	23387.51	2.28	4.67	2779.87	4.67	3.26	4.31	3.26	0.00	10.22
3.8	19.80	11.20	2.40	0.00	2.30	25365.62	2.30	4.72	3081.30	4.72	3.40	4.41	3.40	0.00	10.41
3.85	20.10	11.40	2.55	0.00	2.32	27474.87	2.32	4.76	3408.04	4.76	3.53	4.48	3.53	0.00	10.61

BASIN F Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	12	Number:	10
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

3.9	20.40	11.60	2.70	0.00	2.33	29721.65	2.33	4.80	3761.64	4.80	3.66	4.50	3.66	0.00	10.80
3.95	20.70	11.80	2.85	0.00	2.35	32112.55	2.35	4.85	4143.71	4.85	3.78	4.51	3.78	0.00	10.98
4	21.00	12.00	3.00	0.00	2.37	34654.37	2.37	4.89	4555.90	4.89	3.90	4.53	3.90	0.00	11.16
4.05	21.30	12.20	3.15	0.05	2.39	37354.13	2.39	4.93	4999.94	4.93	4.01	4.58	4.01	0.47	11.80
4.1	21.60	12.40	3.30	0.10	2.40	40219.05	2.40	4.97	5477.63	4.97	4.13	4.69	4.13	1.32	12.83
4.15	21.90	12.60	3.45	0.14	2.42	43256.56	2.42	5.02	5990.82	5.02	4.24	4.92	4.24	2.43	14.10
4.2	22.20	12.80	3.60	0.19	2.44	46474.33	2.44	5.06	6541.43	5.06	4.34	5.30	4.34	3.74	15.58
4.25	22.50	13.00	3.75	0.24	2.45	49880.24	2.45	5.10	7131.47	5.10	4.45	5.91	4.45	5.23	17.23
4.3	22.80	13.20	3.90	0.29	2.47	53482.38	2.47	5.14	7762.98	5.14	4.55	6.79	4.55	6.87	19.03
4.35	23.10	13.40	4.05	0.33	2.49	57289.11	2.49	5.18	8438.09	5.18	4.65	8.03	4.65	8.66	20.97
4.4	23.40	13.60	4.20	0.38	2.50	61308.98	2.50	5.22	9159.01	5.22	4.74	9.72	4.74	10.58	23.05
4.45	23.70	13.80	4.35	0.43	2.52	65550.80	2.52	5.26	9928.01	5.26	4.84	11.94	4.84	12.63	25.24
4.5	24.00	14.00	4.50	0.48	2.54	70023.62	2.54	5.30	10747.44	5.30	4.93	14.80	4.93	14.79	27.55
4.55	24.30	14.20	4.65	0.53	2.55	74736.71	2.55	5.34	11619.70	5.34	5.02	18.42	5.02	17.06	29.97
4.6	24.60	14.40	4.80	0.57	2.57	79699.60	2.57	5.38	12547.32	5.38	5.11	22.92	5.11	19.44	32.50
4.65	24.90	14.60	4.95	0.62	2.58	84922.07	2.58	5.41	13532.84	5.41	5.20	28.44	5.20	21.92	35.12
4.7	25.20	14.80	5.10	0.67	2.60	90414.15	2.60	5.45	14578.93	5.45	5.29	35.14	5.29	24.50	37.84
4.75	25.50	15.00	5.25	0.72	2.62	96186.12	2.62	5.49	15688.31	5.49	5.38	43.17	5.38	27.17	40.65
4.8	25.80	15.20	5.40	0.76	2.63	102248.51	2.63	5.53	16863.79	5.53	5.46	52.71	5.46	29.93	43.55
4.85	26.10	15.40	5.55	0.81	2.65	108612.13	2.65	5.57	18108.27	5.57	5.54	63.95	5.54	32.78	46.53
4.9	26.40	15.60	5.70	0.86	2.66	115288.05	2.66	5.60	19424.72	5.60	5.62	77.10	5.62	35.71	49.60
4.95	26.70	15.80	5.85	0.91	2.68	122287.58	2.68	5.64	20816.20	5.64	5.70	92.37	5.70	38.73	52.75
5	27.00	16.00	6.00	0.96	2.69	129622.33	2.69	5.68	22285.84	5.68	5.78	110.00	5.78	41.82	55.98
5.05	27.30	16.20	6.15	1.00	2.71	137304.18	2.71	5.71	23836.88	5.71	5.86	130.24	5.86	45.00	59.28
5.1	27.60	16.40	6.30	1.05	2.72	145345.28	2.72	5.75	25472.63	5.75	5.94	153.35	5.94	48.25	62.67
5.15	27.90	16.60	6.45	1.10	2.74	153758.05	2.74	5.79	27196.49	5.79	6.02	179.61	6.02	51.58	66.12
5.2	28.20	16.80	6.60	1.15	2.75	162555.22	2.75	5.82	29011.97	5.82	6.09	209.33	6.09	54.98	69.65
5.25	28.50	17.00	6.75	1.19	2.77	171749.77	2.77	5.86	30922.63	5.86	6.17	242.81	6.17	58.45	73.24
5.3	28.80	17.20	6.90	1.24	2.78	181355.01	2.78	5.89	32932.16	5.89	6.24	280.40	6.24	61.99	76.91
5.35	29.10	17.40	7.05	1.29	2.80	191384.50	2.80	5.93	35044.33	5.93	6.31	322.44	6.31	65.60	80.64
5.4	29.40	17.60	7.20	1.34	2.81	201852.14	2.81	5.96	37263.00	5.96	6.38	369.30	6.38	69.28	84.44
5.45	29.70	17.80	7.35	1.39	2.83	212772.08	2.83	6.00	39592.12	6.00	6.46	421.38	6.46	73.03	88.31
5.5	30.00	18.00	7.50	1.43	2.84	224158.82	2.84	6.03	42035.75	6.03	6.53	479.08	6.53	76.84	92.24
5.55	30.30	18.20	7.65	1.48	2.86	236027.13	2.86	6.07	44598.04	6.07	6.59	542.84	6.59	80.71	96.23
5.6	30.60	18.40	7.80	1.53	2.87	248392.10	2.87	6.10	47283.25	6.10	6.66	613.10	6.66	84.65	100.28
5.65	30.90	18.60	7.95	1.58	2.88	261269.14	2.88	6.13	50095.71	6.13	6.73	690.34	6.73	88.65	104.40
5.7	31.20	18.80	8.10	1.62	2.90	274673.97	2.90	6.17	53039.89	6.17	6.80	775.04	6.80	92.71	108.57
5.75	31.50	19.00	8.25	1.67	2.91	288622.62	2.91	6.20	56120.32	6.20	6.87	867.73	6.87	96.83	112.81
5.8	31.80	19.20	8.40	1.72	2.93	303131.44	2.93	6.23	59341.68	6.23	6.93	968.95	6.93	101.00	117.10
5.85	32.10	19.40	8.55	1.77	2.94	318217.12	2.94	6.27	62708.72	6.27	7.00	1079.24	7.00	105.24	121.45
5.9	32.40	19.60	8.70	1.82	2.96	333896.67	2.96	6.30	66226.31	6.30	7.06	1199.20	7.06	109.54	125.86
5.95	32.70	19.80	8.85	1.86	2.97	350187.42	2.97	6.33	69899.42	6.33	7.13	1329.44	7.13	113.89	130.32
6	33.00	20.00	9.00	1.91	2.98	367107.04	2.98	6.37	73733.13	6.37	7.19	1470.58	7.19	118.30	134.84

BASIN G Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	5 "
Number:	1	Number:	6
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	5 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	9.4 ft
invert elev:	1.00 ft	Riser Box LxW	3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.6	0.60	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.65	0.90	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.7	1.20	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.75	1.50	0.00	0.00	0.00	0.04	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.8	1.80	0.00	0.00	0.00	0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.85	2.10	0.00	0.00	0.00	0.06	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.9	2.40	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.95	2.70	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1	3.00	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.05	3.30	0.12	0.00	0.00	0.07	0.08	0.07	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.14
1.1	3.60	0.24	0.00	0.00	0.08	0.09	0.08	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.33
1.15	3.90	0.36	0.00	0.00	0.08	0.12	0.08	0.00	0.55	0.55	0.00	0.00	0.00	0.00	0.64
1.2	4.20	0.48	0.00	0.00	0.08	0.17	0.08	0.00	0.96	0.96	0.00	0.00	0.00	0.00	1.04
1.25	4.50	0.60	0.00	0.00	0.09	0.26	0.09	1.63	1.44	1.44	0.00	0.00	0.00	0.00	1.53
1.3	4.80	0.72	0.00	0.00	0.09	0.41	0.09	2.43	2.00	2.00	0.00	0.00	0.00	0.00	2.09
1.35	5.10	0.84	0.00	0.00	0.09	0.62	0.09	3.01	2.61	2.61	0.00	0.00	0.00	0.00	2.71
1.4	5.40	0.96	0.00	0.00	0.10	0.93	0.10	3.51	3.27	3.27	0.00	0.00	0.00	0.00	3.37
1.45	5.70	1.08	0.00	0.00	0.10	1.36	0.10	3.94	3.95	3.95	0.00	0.00	0.00	0.00	4.05
1.5	6.00	1.20	0.00	0.00	0.10	1.94	0.10	4.33	4.63	4.33	0.00	0.00	0.00	0.00	4.43
1.55	6.30	1.32	0.00	0.00	0.11	2.71	0.11	4.68	5.31	4.68	0.00	0.00	0.00	0.00	4.79
1.6	6.60	1.44	0.00	0.00	0.11	3.70	0.11	5.01	5.97	5.01	0.00	0.00	0.00	0.00	5.12
1.65	6.90	1.56	0.00	0.00	0.11	4.96	0.11	5.32	6.59	5.32	0.00	0.00	0.00	0.00	5.43
1.7	7.20	1.68	0.00	0.00	0.11	6.53	0.11	5.62	7.17	5.62	0.00	0.00	0.00	0.00	5.73
1.75	7.50	1.80	0.00	0.00	0.12	8.47	0.12	5.90	7.69	5.90	0.00	0.00	0.00	0.00	6.01
1.8	7.80	1.92	0.00	0.00	0.12	10.84	0.12	6.16	8.15	6.16	0.00	0.00	0.00	0.00	6.28
1.85	8.10	2.04	0.00	0.00	0.12	13.70	0.12	6.42	8.53	6.42	0.00	0.00	0.00	0.00	6.54
1.9	8.40	2.16	0.00	0.00	0.12	17.13	0.12	6.66	8.84	6.66	0.00	0.00	0.00	0.00	6.78
1.95	8.70	2.28	0.00	0.00	0.12	21.20	0.12	6.90	9.08	6.90	0.00	0.00	0.00	0.00	7.02
2	9.00	2.40	0.00	0.00	0.13	26.00	0.13	7.13	9.25	7.13	0.00	0.00	0.00	0.00	7.25
2.05	9.30	2.52	0.12	0.00	0.13	31.61	0.13	7.35	9.36	7.35	0.00	0.03	0.03	0.00	7.51
2.1	9.60	2.64	0.24	0.00	0.13	38.14	0.13	7.56	9.42	7.56	0.00	0.13	0.13	0.00	7.82
2.15	9.90	2.76	0.36	0.00	0.13	45.70	0.13	7.77	9.45	7.77	0.00	0.28	0.28	0.00	8.18
2.2	10.20	2.88	0.48	0.00	0.14	54.39	0.14	7.98	9.47	7.98	0.00	0.48	0.48	0.00	8.59
2.25	10.50	3.00	0.60	0.00	0.14	64.34	0.14	8.17	9.49	8.17	0.82	0.72	0.72	0.00	9.03
2.3	10.80	3.12	0.72	0.00	0.14	75.67	0.14	8.37	9.56	8.37	1.21	1.00	1.00	0.00	9.51
2.35	11.10	3.24	0.84	0.00	0.14	88.53	0.14	8.56	9.72	8.56	1.51	1.31	1.31	0.00	10.01
2.4	11.40	3.36	0.96	0.00	0.14	103.06	0.14	8.74	9.99	8.74	1.75	1.63	1.63	0.00	10.52
2.45	11.70	3.48	1.08	0.00	0.15	119.42	0.15	8.93	10.44	8.93	1.97	1.97	1.97	0.00	11.04
2.5	12.00	3.60	1.20	0.00	0.15	137.77	0.15	9.10	11.12	9.10	2.16	2.32	2.16	0.00	11.41
2.55	12.30	3.72	1.32	0.00	0.15	158.29	0.15	9.28	12.08	9.28	2.34	2.66	2.34	0.00	11.77
2.6	12.60	3.84	1.44	0.00	0.15	181.17	0.15	9.45	13.41	9.45	2.51	2.99	2.51	0.00	12.11
2.65	12.90	3.96	1.56	0.00	0.15	206.59	0.15	9.62	15.18	9.62	2.66	3.30	2.66	0.00	12.43
2.7	13.20	4.08	1.68	0.00	0.16	234.76	0.16	9.78	17.47	9.78	2.81	3.59	2.81	0.00	12.75
2.75	13.50	4.20	1.80	0.00	0.16	265.90	0.16	9.95	20.37	9.95	2.95	3.85	2.95	0.00	13.05
2.8	13.80	4.32	1.92	0.00	0.16	300.23	0.16	10.11	24.00	10.11	3.08	4.07	3.08	0.00	13.34
2.85	14.10	4.44	2.04	0.00	0.16	337.99	0.16	10.26	28.45	10.26	3.21	4.27	3.21	0.00	13.63
2.9	14.40	4.56	2.16	0.00	0.16	379.44	0.16	10.42	33.86	10.42	3.33	4.42	3.33	0.00	13.91
2.95	14.70	4.68	2.28	0.00	0.16	424.82	0.16	10.57	40.34	10.57	3.45	4.54	3.45	0.00	14.18
3	15.00	4.80	2.40	0.00	0.17	474.42	0.17	10.72	48.05	10.72	3.56	4.63	3.56	0.00	14.45
3.05	15.30	4.92	2.52	0.00	0.17	528.52	0.17	10.87	57.13	10.87	3.67	4.68	3.67	0.00	14.71
3.1	15.60	5.04	2.64	0.00	0.17	587.42	0.17	11.02	67.73	11.02	3.78	4.71	3.78	0.00	14.97
3.15	15.90	5.16	2.76	0.00	0.17	651.41	0.17	11.16	80.04	11.16	3.89	4.73	3.89	0.00	15.22
3.2	16.20	5.28	2.88	0.00	0.17	720.84	0.17	11.30	94.23	11.30	3.99	4.73	3.99	0.00	15.46
3.25	16.50	5.40	3.00	0.00	0.17	796.03	0.17	11.44	110.50	11.44	4.09	4.75	4.09	0.00	15.71
3.3	16.80	5.52	3.12	0.00	0.18	877.34	0.18	11.58	129.04	11.58	4.18	4.78	4.18	0.00	15.94
3.35	17.10	5.64	3.24	0.00	0.18	965.12	0.18	11.72	150.09	11.72	4.28	4.86	4.28	0.00	16.18
3.4	17.40	5.76	3.36	0.00	0.18	1059.76	0.18	11.86	173.87	11.86	4.37	5.00	4.37	0.00	16.41
3.45	17.70	5.88	3.48	0.00	0.18	1161.65	0.18	11.99	200.62	11.99	4.46	5.22	4.46	0.00	16.64
3.5	18.00	6.00	3.60	0.00	0.18	1271.19	0.18	12.13	230.60	12.13	4.55	5.56	4.55	0.00	16.86
3.55	18.30	6.12	3.72	0.00	0.18	1388.80	0.18	12.26	264.08	12.26	4.64	6.04	4.64	0.00	17.08
3.6	18.60	6.24	3.84	0.00	0.19	1514.93	0.19	12.39	301.33	12.39	4.72	6.71	4.72	0.00	17.30
3.65	18.90	6.36	3.96	0.00	0.19	1650.01	0.19	12.52	342.67	12.52	4.81	7.59	4.81	0.00	17.51
3.7	19.20	6.48	4.08	0.00	0.19	1794.53	0.19	12.64	388.39	12.64	4.89	8.73	4.89	0.00	17.72
3.75	19.50	6.60	4.20	0.00	0.19	1948.96	0.19	12.77	438.82	12.77	4.97	10.19	4.97	0.00	17.93
3.8	19.80	6.72	4.32	0.00	0.19	2113.80	0.19	12.89	494.31	12.89	5.05	12.00	5.05	0.00	18.14
3.85	20.10	6.84	4.44	0.00	0.19	2289.57	0.19	13.02	555.21	13.02	5.13	14.23	5.13	0.00	18.34

BASIN G Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	5 "
Number:	1	Number:	6
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	5 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	9.4 ft
invert elev:	1.00 ft	Riser Box LxW	3

3.9	20.40	6.96	4.56	0.00	0.19	2476.80	0.19	13.14	621.89	13.14	5.21	16.93	5.21	0.00	18.54
3.95	20.70	7.08	4.68	0.00	0.20	2676.05	0.20	13.26	694.75	13.26	5.29	20.17	5.29	0.00	18.74
4	21.00	7.20	4.80	0.00	0.20	2887.86	0.20	13.38	774.18	13.38	5.36	24.03	5.36	0.00	18.94
4.05	21.30	7.32	4.92	0.06	0.20	3112.84	0.20	13.50	860.60	13.50	5.43	28.56	5.43	0.35	19.49
4.1	21.60	7.44	5.04	0.13	0.20	3351.59	0.20	13.62	954.46	13.62	5.51	33.87	5.51	0.99	20.32
4.15	21.90	7.56	5.16	0.19	0.20	3604.71	0.20	13.74	1056.20	13.74	5.58	40.02	5.58	1.82	21.34
4.2	22.20	7.68	5.28	0.25	0.20	3872.86	0.20	13.85	1166.30	13.85	5.65	47.11	5.65	2.81	22.51
4.25	22.50	7.80	5.40	0.32	0.20	4156.69	0.20	13.97	1285.25	13.97	5.72	55.25	5.72	3.92	23.82
4.3	22.80	7.92	5.52	0.38	0.21	4456.87	0.21	14.08	1413.56	14.08	5.79	64.52	5.79	5.15	25.24
4.35	23.10	8.04	5.64	0.45	0.21	4774.09	0.21	14.20	1551.76	14.20	5.86	75.05	5.86	6.50	26.76
4.4	23.40	8.16	5.76	0.51	0.21	5109.08	0.21	14.31	1700.39	14.31	5.93	86.94	5.93	7.94	28.38
4.45	23.70	8.28	5.88	0.57	0.21	5462.57	0.21	14.42	1860.01	14.42	6.00	100.31	6.00	9.47	30.10
4.5	24.00	8.40	6.00	0.64	0.21	5835.30	0.21	14.53	2031.21	14.53	6.06	115.30	6.06	11.09	31.90
4.55	24.30	8.52	6.12	0.70	0.21	6228.06	0.21	14.64	2214.60	14.64	6.13	132.04	6.13	12.79	33.78
4.6	24.60	8.64	6.24	0.76	0.21	6641.63	0.21	14.75	2410.80	14.75	6.19	150.67	6.19	14.58	35.74
4.65	24.90	8.76	6.36	0.83	0.22	7076.84	0.22	14.86	2620.45	14.86	6.26	171.33	6.26	16.44	37.77
4.7	25.20	8.88	6.48	0.89	0.22	7534.51	0.22	14.97	2844.22	14.97	6.32	194.19	6.32	18.37	39.88
4.75	25.50	9.00	6.60	0.96	0.22	8015.51	0.22	15.07	3082.79	15.07	6.38	219.41	6.38	20.37	42.05
4.8	25.80	9.12	6.72	1.02	0.22	8520.71	0.22	15.18	3336.88	15.18	6.45	247.16	6.45	22.45	44.29
4.85	26.10	9.24	6.84	1.08	0.22	9051.01	0.22	15.29	3607.22	15.29	6.51	277.61	6.51	24.58	46.60
4.9	26.40	9.36	6.96	1.15	0.22	9607.34	0.22	15.39	3894.55	15.39	6.57	310.95	6.57	26.78	48.97
4.95	26.70	9.48	7.08	1.21	0.22	10190.63	0.22	15.49	4199.65	15.49	6.63	347.37	6.63	29.05	51.39
5	27.00	9.60	7.20	1.27	0.22	10801.86	0.22	15.60	4523.31	15.60	6.69	387.09	6.69	31.37	53.88
5.05	27.30	9.72	7.32	1.34	0.23	11442.02	0.23	15.70	4866.37	15.70	6.75	430.30	6.75	33.75	56.43
5.1	27.60	9.84	7.44	1.40	0.23	12112.11	0.23	15.80	5229.65	15.80	6.81	477.23	6.81	36.19	59.03
5.15	27.90	9.96	7.56	1.46	0.23	12813.17	0.23	15.90	5614.04	15.90	6.87	528.10	6.87	38.68	61.68
5.2	28.20	10.08	7.68	1.53	0.23	13546.27	0.23	16.00	6020.41	16.00	6.93	583.15	6.93	41.24	64.39
5.25	28.50	10.20	7.80	1.59	0.23	14312.48	0.23	16.10	6449.68	16.10	6.98	642.63	6.98	43.84	67.16
5.3	28.80	10.32	7.92	1.66	0.23	15112.92	0.23	16.20	6902.80	16.20	7.04	706.78	7.04	46.50	69.97
5.35	29.10	10.44	8.04	1.72	0.23	15948.71	0.23	16.30	7380.73	16.30	7.10	775.88	7.10	49.20	72.84
5.4	29.40	10.56	8.16	1.78	0.23	16821.01	0.23	16.40	7884.46	16.40	7.15	850.19	7.15	51.96	75.75
5.45	29.70	10.68	8.28	1.85	0.24	17731.01	0.24	16.50	8415.00	16.50	7.21	930.00	7.21	54.77	78.71
5.5	30.00	10.80	8.40	1.91	0.24	18679.90	0.24	16.59	8973.40	16.59	7.27	1015.61	7.27	57.63	81.72
5.55	30.30	10.92	8.52	1.97	0.24	19668.93	0.24	16.69	9560.73	16.69	7.32	1107.30	7.32	60.53	84.78
5.6	30.60	11.04	8.64	2.04	0.24	20699.34	0.24	16.79	10178.07	16.79	7.38	1205.40	7.38	63.49	87.89
5.65	30.90	11.16	8.76	2.10	0.24	21772.43	0.24	16.88	10826.56	16.88	7.43	1310.22	7.43	66.48	91.04
5.7	31.20	11.28	8.88	2.17	0.24	22889.50	0.24	16.98	11507.33	16.98	7.48	1422.11	7.48	69.53	94.23
5.75	31.50	11.40	9.00	2.23	0.24	24051.88	0.24	17.07	12221.57	17.07	7.54	1541.40	7.54	72.62	97.47
5.8	31.80	11.52	9.12	2.29	0.24	25260.95	0.24	17.16	12970.48	17.16	7.59	1668.44	7.59	75.75	100.75
5.85	32.10	11.64	9.24	2.36	0.25	26518.09	0.25	17.26	13755.29	17.26	7.64	1803.61	7.64	78.93	104.08
5.9	32.40	11.76	9.36	2.42	0.25	27824.72	0.25	17.35	14577.26	17.35	7.69	1947.27	7.69	82.15	107.44
5.95	32.70	11.88	9.48	2.48	0.25	29182.28	0.25	17.44	15437.69	17.44	7.75	2099.82	7.75	85.42	110.85
6	33.00	12.00	9.60	2.55	0.25	30592.25	0.25	17.53	16337.88	17.53	7.80	2261.66	7.80	88.72	114.30

BASIN H Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	12	Number:	10
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.6	0.60	0.00	0.00	0.00	0.17	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
0.65	0.90	0.00	0.00	0.00	0.33	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
0.7	1.20	0.00	0.00	0.00	0.44	0.47	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
0.75	1.50	0.00	0.00	0.00	0.52	0.64	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
0.8	1.80	0.00	0.00	0.00	0.60	0.78	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
0.85	2.10	0.00	0.00	0.00	0.66	0.88	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
0.9	2.40	0.00	0.00	0.00	0.72	0.94	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
0.95	2.70	0.00	0.00	0.00	0.78	0.96	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78
1	3.00	0.00	0.00	0.00	0.83	0.96	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
1.05	3.30	0.20	0.00	0.00	0.88	1.00	0.88	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.93
1.1	3.60	0.40	0.00	0.00	0.92	1.12	0.92	0.00	0.19	0.19	0.00	0.00	0.00	0.00	1.11
1.15	3.90	0.60	0.00	0.00	0.96	1.44	0.96	0.46	0.40	0.40	0.00	0.00	0.00	0.00	1.37
1.2	4.20	0.80	0.00	0.00	1.01	2.06	1.01	0.79	0.67	0.67	0.00	0.00	0.00	0.00	1.68
1.25	4.50	1.00	0.00	0.00	1.05	3.14	1.05	1.02	0.97	0.97	0.00	0.00	0.00	0.00	2.02
1.3	4.80	1.20	0.00	0.00	1.08	4.86	1.08	1.21	1.29	1.21	0.00	0.00	0.00	0.00	2.29
1.35	5.10	1.40	0.00	0.00	1.12	7.45	1.12	1.37	1.60	1.37	0.00	0.00	0.00	0.00	2.49
1.4	5.40	1.60	0.00	0.00	1.16	11.18	1.16	1.51	1.89	1.51	0.00	0.00	0.00	0.00	2.67
1.45	5.70	1.80	0.00	0.00	1.19	16.36	1.19	1.64	2.14	1.64	0.00	0.00	0.00	0.00	2.84
1.5	6.00	2.00	0.00	0.00	1.23	23.34	1.23	1.77	2.35	1.77	0.00	0.00	0.00	0.00	2.99
1.55	6.30	2.20	0.00	0.00	1.26	32.53	1.26	1.88	2.49	1.88	0.00	0.00	0.00	0.00	3.14
1.6	6.60	2.40	0.00	0.00	1.29	44.41	1.29	1.99	2.58	1.99	0.00	0.00	0.00	0.00	3.28
1.65	6.90	2.60	0.00	0.00	1.32	59.48	1.32	2.09	2.62	2.09	0.00	0.00	0.00	0.00	3.41
1.7	7.20	2.80	0.00	0.00	1.35	78.34	1.35	2.19	2.64	2.19	0.00	0.00	0.00	0.00	3.54
1.75	7.50	3.00	0.00	0.00	1.38	101.63	1.38	2.28	2.65	2.28	0.00	0.00	0.00	0.00	3.66
1.8	7.80	3.20	0.00	0.00	1.41	130.06	1.41	2.37	2.69	2.37	0.00	0.00	0.00	0.00	3.78
1.85	8.10	3.40	0.00	0.00	1.44	164.41	1.44	2.46	2.82	2.46	0.00	0.00	0.00	0.00	3.90
1.9	8.40	3.60	0.00	0.00	1.47	205.54	1.47	2.54	3.10	2.54	0.00	0.00	0.00	0.00	4.01
1.95	8.70	3.80	0.00	0.00	1.50	254.39	1.50	2.62	3.60	2.62	0.00	0.00	0.00	0.00	4.12
2	9.00	4.00	0.00	0.00	1.53	311.96	1.53	2.70	4.43	2.70	0.00	0.00	0.00	0.00	4.22
2.05	9.30	4.20	0.00	0.00	1.55	379.34	1.55	2.77	5.68	2.77	0.00	0.00	0.00	0.00	4.33
2.1	9.60	4.40	0.00	0.00	1.58	457.73	1.58	2.85	7.49	2.85	0.00	0.00	0.00	0.00	4.43
2.15	9.90	4.60	0.00	0.00	1.60	548.38	1.60	2.92	10.01	2.92	0.00	0.00	0.00	0.00	4.52
2.2	10.20	4.80	0.00	0.00	1.63	652.66	1.63	2.99	13.40	2.99	0.00	0.00	0.00	0.00	4.62
2.25	10.50	5.00	0.00	0.00	1.65	772.03	1.65	3.06	17.85	3.06	0.00	0.00	0.00	0.00	4.71
2.3	10.80	5.20	0.00	0.00	1.68	908.04	1.68	3.13	23.58	3.13	0.00	0.00	0.00	0.00	4.80
2.35	11.10	5.40	0.00	0.00	1.70	1062.36	1.70	3.19	30.81	3.19	0.00	0.00	0.00	0.00	4.89
2.4	11.40	5.60	0.00	0.00	1.73	1236.74	1.73	3.26	39.82	3.26	0.00	0.00	0.00	0.00	4.98
2.45	11.70	5.80	0.00	0.00	1.75	1433.05	1.75	3.32	50.88	3.32	0.00	0.00	0.00	0.00	5.07
2.5	12.00	6.00	0.00	0.00	1.77	1653.28	1.77	3.38	64.30	3.38	0.00	0.00	0.00	0.00	5.16
2.55	12.30	6.20	0.00	0.00	1.80	1899.52	1.80	3.44	80.44	3.44	0.00	0.00	0.00	0.00	5.24
2.6	12.60	6.40	0.00	0.00	1.82	2173.99	1.82	3.50	99.66	3.50	0.00	0.00	0.00	0.00	5.32
2.65	12.90	6.60	0.00	0.00	1.84	2479.03	1.84	3.56	122.37	3.56	0.00	0.00	0.00	0.00	5.40
2.7	13.20	6.80	0.00	0.00	1.86	2817.09	1.86	3.62	148.99	3.62	0.00	0.00	0.00	0.00	5.48
2.75	13.50	7.00	0.00	0.00	1.89	3190.75	1.89	3.68	179.99	3.68	0.00	0.00	0.00	0.00	5.56
2.8	13.80	7.20	0.00	0.00	1.91	3602.75	1.91	3.73	215.88	3.73	0.00	0.00	0.00	0.00	5.64
2.85	14.10	7.40	0.00	0.00	1.93	4055.92	1.93	3.79	257.19	3.79	0.00	0.00	0.00	0.00	5.72
2.9	14.40	7.60	0.00	0.00	1.95	4553.26	1.95	3.84	304.49	3.84	0.00	0.00	0.00	0.00	5.79
2.95	14.70	7.80	0.00	0.00	1.97	5097.89	1.97	3.90	358.40	3.90	0.00	0.00	0.00	0.00	5.87
3	15.00	8.00	0.00	0.00	1.99	5693.09	1.99	3.95	419.55	3.95	0.00	0.00	0.00	0.00	5.94
3.05	15.30	8.20	0.15	0.00	2.01	6342.26	2.01	4.00	488.65	4.00	0.00	0.05	0.05	0.00	6.06
3.1	15.60	8.40	0.30	0.00	2.03	7048.99	2.03	4.05	566.41	4.05	0.00	0.19	0.19	0.00	6.27
3.15	15.90	8.60	0.45	0.00	2.05	7816.97	2.05	4.10	653.62	4.10	0.00	0.40	0.40	0.00	6.56
3.2	16.20	8.80	0.60	0.00	2.07	8650.10	2.07	4.15	751.08	4.15	0.78	0.69	0.69	0.00	6.91
3.25	16.50	9.00	0.75	0.00	2.09	9552.40	2.09	4.20	859.65	4.20	1.23	1.03	1.03	0.00	7.32
3.3	16.80	9.20	0.90	0.00	2.11	10528.08	2.11	4.25	980.25	4.25	1.56	1.40	1.40	0.00	7.77
3.35	17.10	9.40	1.05	0.00	2.13	11581.48	2.13	4.30	1113.81	4.30	1.83	1.80	1.80	0.00	8.23
3.4	17.40	9.60	1.20	0.00	2.15	12717.15	2.15	4.35	1261.35	4.35	2.06	2.21	2.06	0.00	8.56
3.45	17.70	9.80	1.35	0.00	2.17	13939.77	2.17	4.40	1423.90	4.40	2.27	2.61	2.27	0.00	8.84
3.5	18.00	10.00	1.50	0.00	2.19	15254.24	2.19	4.44	1602.58	4.44	2.47	3.00	2.47	0.00	9.10
3.55	18.30	10.20	1.65	0.00	2.21	16665.61	2.21	4.49	1798.53	4.49	2.64	3.35	2.64	0.00	9.34
3.6	18.60	10.40	1.80	0.00	2.23	18179.10	2.23	4.54	2012.94	4.54	2.81	3.67	2.81	0.00	9.57
3.65	18.90	10.60	1.95	0.00	2.24	19800.14	2.24	4.58	2247.09	4.58	2.97	3.93	2.97	0.00	9.80
3.7	19.20	10.80	2.10	0.00	2.26	21534.35	2.26	4.63	2502.28	4.63	3.12	4.15	3.12	0.00	10.01
3.75	19.50	11.00	2.25	0.00	2.28	23387.51	2.28	4.67	2779.87	4.67	3.26	4.31	3.26	0.00	10.22
3.8	19.80	11.20	2.40	0.00	2.30	25365.62	2.30	4.72	3081.30	4.72	3.40	4.41	3.40	0.00	10.41
3.85	20.10	11.40	2.55	0.00	2.32	27474.87	2.32	4.76	3408.04	4.76	3.53	4.48	3.53	0.00	10.61

BASIN H Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	12	Number:	10
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

3.9	20.40	11.60	2.70	0.00	2.33	29721.65	2.33	4.80	3761.64	4.80	3.66	4.50	3.66	0.00	10.80
3.95	20.70	11.80	2.85	0.00	2.35	32112.55	2.35	4.85	4143.71	4.85	3.78	4.51	3.78	0.00	10.98
4	21.00	12.00	3.00	0.00	2.37	34654.37	2.37	4.89	4555.90	4.89	3.90	4.53	3.90	0.00	11.16
4.05	21.30	12.20	3.15	0.05	2.39	37354.13	2.39	4.93	4999.94	4.93	4.01	4.58	4.01	0.47	11.80
4.1	21.60	12.40	3.30	0.10	2.40	40219.05	2.40	4.97	5477.63	4.97	4.13	4.69	4.13	1.32	12.83
4.15	21.90	12.60	3.45	0.14	2.42	43256.56	2.42	5.02	5990.82	5.02	4.24	4.92	4.24	2.43	14.10
4.2	22.20	12.80	3.60	0.19	2.44	46474.33	2.44	5.06	6541.43	5.06	4.34	5.30	4.34	3.74	15.58
4.25	22.50	13.00	3.75	0.24	2.45	49880.24	2.45	5.10	7131.47	5.10	4.45	5.91	4.45	5.23	17.23
4.3	22.80	13.20	3.90	0.29	2.47	53482.38	2.47	5.14	7762.98	5.14	4.55	6.79	4.55	6.87	19.03
4.35	23.10	13.40	4.05	0.33	2.49	57289.11	2.49	5.18	8438.09	5.18	4.65	8.03	4.65	8.66	20.97
4.4	23.40	13.60	4.20	0.38	2.50	61308.98	2.50	5.22	9159.01	5.22	4.74	9.72	4.74	10.58	23.05
4.45	23.70	13.80	4.35	0.43	2.52	65550.80	2.52	5.26	9928.01	5.26	4.84	11.94	4.84	12.63	25.24
4.5	24.00	14.00	4.50	0.48	2.54	70023.62	2.54	5.30	10747.44	5.30	4.93	14.80	4.93	14.79	27.55
4.55	24.30	14.20	4.65	0.53	2.55	74736.71	2.55	5.34	11619.70	5.34	5.02	18.42	5.02	17.06	29.97
4.6	24.60	14.40	4.80	0.57	2.57	79699.60	2.57	5.38	12547.32	5.38	5.11	22.92	5.11	19.44	32.50
4.65	24.90	14.60	4.95	0.62	2.58	84922.07	2.58	5.41	13532.84	5.41	5.20	28.44	5.20	21.92	35.12
4.7	25.20	14.80	5.10	0.67	2.60	90414.15	2.60	5.45	14578.93	5.45	5.29	35.14	5.29	24.50	37.84
4.75	25.50	15.00	5.25	0.72	2.62	96186.12	2.62	5.49	15688.31	5.49	5.38	43.17	5.38	27.17	40.65
4.8	25.80	15.20	5.40	0.76	2.63	102248.51	2.63	5.53	16863.79	5.53	5.46	52.71	5.46	29.93	43.55
4.85	26.10	15.40	5.55	0.81	2.65	108612.13	2.65	5.57	18108.27	5.57	5.54	63.95	5.54	32.78	46.53
4.9	26.40	15.60	5.70	0.86	2.66	115288.05	2.66	5.60	19424.72	5.60	5.62	77.10	5.62	35.71	49.60
4.95	26.70	15.80	5.85	0.91	2.68	122287.58	2.68	5.64	20816.20	5.64	5.70	92.37	5.70	38.73	52.75
5	27.00	16.00	6.00	0.96	2.69	129622.33	2.69	5.68	22285.84	5.68	5.78	110.00	5.78	41.82	55.98
5.05	27.30	16.20	6.15	1.00	2.71	137304.18	2.71	5.71	23836.88	5.71	5.86	130.24	5.86	45.00	59.28
5.1	27.60	16.40	6.30	1.05	2.72	145345.28	2.72	5.75	25472.63	5.75	5.94	153.35	5.94	48.25	62.67
5.15	27.90	16.60	6.45	1.10	2.74	153758.05	2.74	5.79	27196.49	5.79	6.02	179.61	6.02	51.58	66.12
5.2	28.20	16.80	6.60	1.15	2.75	162555.22	2.75	5.82	29011.97	5.82	6.09	209.33	6.09	54.98	69.65
5.25	28.50	17.00	6.75	1.19	2.77	171749.77	2.77	5.86	30922.63	5.86	6.17	242.81	6.17	58.45	73.24
5.3	28.80	17.20	6.90	1.24	2.78	181355.01	2.78	5.89	32932.16	5.89	6.24	280.40	6.24	61.99	76.91
5.35	29.10	17.40	7.05	1.29	2.80	191384.50	2.80	5.93	35044.33	5.93	6.31	322.44	6.31	65.60	80.64
5.4	29.40	17.60	7.20	1.34	2.81	201852.14	2.81	5.96	37263.00	5.96	6.38	369.30	6.38	69.28	84.44
5.45	29.70	17.80	7.35	1.39	2.83	212772.08	2.83	6.00	39592.12	6.00	6.46	421.38	6.46	73.03	88.31
5.5	30.00	18.00	7.50	1.43	2.84	224158.82	2.84	6.03	42035.75	6.03	6.53	479.08	6.53	76.84	92.24
5.55	30.30	18.20	7.65	1.48	2.86	236027.13	2.86	6.07	44598.04	6.07	6.59	542.84	6.59	80.71	96.23
5.6	30.60	18.40	7.80	1.53	2.87	248392.10	2.87	6.10	47283.25	6.10	6.66	613.10	6.66	84.65	100.28
5.65	30.90	18.60	7.95	1.58	2.88	261269.14	2.88	6.13	50095.71	6.13	6.73	690.34	6.73	88.65	104.40
5.7	31.20	18.80	8.10	1.62	2.90	274673.97	2.90	6.17	53039.89	6.17	6.80	775.04	6.80	92.71	108.57
5.75	31.50	19.00	8.25	1.67	2.91	288622.62	2.91	6.20	56120.32	6.20	6.87	867.73	6.87	96.83	112.81
5.8	31.80	19.20	8.40	1.72	2.93	303131.44	2.93	6.23	59341.68	6.23	6.93	968.95	6.93	101.00	117.10
5.85	32.10	19.40	8.55	1.77	2.94	318217.12	2.94	6.27	62708.72	6.27	7.00	1079.24	7.00	105.24	121.45
5.9	32.40	19.60	8.70	1.82	2.96	333896.67	2.96	6.30	66226.31	6.30	7.06	1199.20	7.06	109.54	125.86
5.95	32.70	19.80	8.85	1.86	2.97	350187.42	2.97	6.33	69899.42	6.33	7.13	1329.44	7.13	113.89	130.32
6	33.00	20.00	9.00	1.91	2.98	367107.04	2.98	6.37	73733.13	6.37	7.19	1470.58	7.19	118.30	134.84

BASIN I Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	6	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

h	H/D-low	H/D-mid	H/D-top	H/D-peak	Qlow-orif	Qlow-weir	Qtot-low	Qmid-orif	Qmid-weir	Qtot-med	Qtop-orif	Qtop-weir	Qtot-top	Qpeak-top	Qtot
(ft)	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.6	0.60	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.65	0.90	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.7	1.20	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.75	1.50	0.00	0.00	0.00	0.04	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.8	1.80	0.00	0.00	0.00	0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.85	2.10	0.00	0.00	0.00	0.06	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.9	2.40	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.95	2.70	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1	3.00	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.05	3.30	0.20	0.00	0.00	0.07	0.08	0.07	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.10
1.1	3.60	0.40	0.00	0.00	0.08	0.09	0.08	0.00	0.09	0.09	0.00	0.00	0.00	0.00	0.17
1.15	3.90	0.60	0.00	0.00	0.08	0.12	0.08	0.23	0.20	0.20	0.00	0.00	0.00	0.00	0.28
1.2	4.20	0.80	0.00	0.00	0.08	0.17	0.08	0.39	0.34	0.34	0.00	0.00	0.00	0.00	0.42
1.25	4.50	1.00	0.00	0.00	0.09	0.26	0.09	0.51	0.49	0.49	0.00	0.00	0.00	0.00	0.57
1.3	4.80	1.20	0.00	0.00	0.09	0.41	0.09	0.60	0.65	0.60	0.00	0.00	0.00	0.00	0.69
1.35	5.10	1.40	0.00	0.00	0.09	0.62	0.09	0.68	0.80	0.68	0.00	0.00	0.00	0.00	0.78
1.4	5.40	1.60	0.00	0.00	0.10	0.93	0.10	0.76	0.95	0.76	0.00	0.00	0.00	0.00	0.85
1.45	5.70	1.80	0.00	0.00	0.10	1.36	0.10	0.82	1.07	0.82	0.00	0.00	0.00	0.00	0.92
1.5	6.00	2.00	0.00	0.00	0.10	1.94	0.10	0.88	1.17	0.88	0.00	0.00	0.00	0.00	0.99
1.55	6.30	2.20	0.00	0.00	0.11	2.71	0.11	0.94	1.25	0.94	0.00	0.00	0.00	0.00	1.04
1.6	6.60	2.40	0.00	0.00	0.11	3.70	0.11	0.99	1.29	0.99	0.00	0.00	0.00	0.00	1.10
1.65	6.90	2.60	0.00	0.00	0.11	4.96	0.11	1.04	1.31	1.04	0.00	0.00	0.00	0.00	1.15
1.7	7.20	2.80	0.00	0.00	0.11	6.53	0.11	1.09	1.32	1.09	0.00	0.00	0.00	0.00	1.21
1.75	7.50	3.00	0.00	0.00	0.12	8.47	0.12	1.14	1.32	1.14	0.00	0.00	0.00	0.00	1.26
1.8	7.80	3.20	0.00	0.00	0.12	10.84	0.12	1.18	1.35	1.18	0.00	0.00	0.00	0.00	1.30
1.85	8.10	3.40	0.00	0.00	0.12	13.70	0.12	1.23	1.41	1.23	0.00	0.00	0.00	0.00	1.35
1.9	8.40	3.60	0.00	0.00	0.12	17.13	0.12	1.27	1.55	1.27	0.00	0.00	0.00	0.00	1.39
1.95	8.70	3.80	0.00	0.00	0.12	21.20	0.12	1.31	1.80	1.31	0.00	0.00	0.00	0.00	1.43
2	9.00	4.00	0.00	0.00	0.13	26.00	0.13	1.35	2.21	1.35	0.00	0.00	0.00	0.00	1.48
2.05	9.30	4.20	0.15	0.00	0.13	31.61	0.13	1.39	2.84	1.39	0.00	0.06	0.06	0.00	1.57
2.1	9.60	4.40	0.30	0.00	0.13	38.14	0.13	1.42	3.75	1.42	0.00	0.22	0.22	0.00	1.78
2.15	9.90	4.60	0.45	0.00	0.13	45.70	0.13	1.46	5.00	1.46	0.00	0.48	0.48	0.00	2.08
2.2	10.20	4.80	0.60	0.00	0.14	54.39	0.14	1.49	6.70	1.49	0.94	0.83	0.83	0.00	2.46
2.25	10.50	5.00	0.75	0.00	0.14	64.34	0.14	1.53	8.93	1.53	1.48	1.23	1.23	0.00	2.90
2.3	10.80	5.20	0.90	0.00	0.14	75.67	0.14	1.56	11.79	1.56	1.87	1.68	1.68	0.00	3.38
2.35	11.10	5.40	1.05	0.00	0.14	88.53	0.14	1.60	15.41	1.60	2.19	2.16	2.16	0.00	3.90
2.4	11.40	5.60	1.20	0.00	0.14	103.06	0.14	1.63	19.91	1.63	2.48	2.65	2.48	0.00	4.25
2.45	11.70	5.80	1.35	0.00	0.15	119.42	0.15	1.66	25.44	1.66	2.73	3.14	2.73	0.00	4.53
2.5	12.00	6.00	1.50	0.00	0.15	137.77	0.15	1.69	32.15	1.69	2.96	3.60	2.96	0.00	4.80
2.55	12.30	6.20	1.65	0.00	0.15	158.29	0.15	1.72	40.22	1.72	3.17	4.03	3.17	0.00	5.04
2.6	12.60	6.40	1.80	0.00	0.15	181.17	0.15	1.75	49.83	1.75	3.37	4.40	3.37	0.00	5.28
2.65	12.90	6.60	1.95	0.00	0.15	206.59	0.15	1.78	61.18	1.78	3.56	4.72	3.56	0.00	5.50
2.7	13.20	6.80	2.10	0.00	0.16	234.76	0.16	1.81	74.49	1.81	3.74	4.98	3.74	0.00	5.71
2.75	13.50	7.00	2.25	0.00	0.16	265.90	0.16	1.84	90.00	1.84	3.92	5.17	3.92	0.00	5.91
2.8	13.80	7.20	2.40	0.00	0.16	300.23	0.16	1.87	107.94	1.87	4.08	5.30	4.08	0.00	6.10
2.85	14.10	7.40	2.55	0.00	0.16	337.99	0.16	1.89	128.60	1.89	4.24	5.37	4.24	0.00	6.29
2.9	14.40	7.60	2.70	0.00	0.16	379.44	0.16	1.92	152.25	1.92	4.39	5.40	4.39	0.00	6.47
2.95	14.70	7.80	2.85	0.00	0.16	424.82	0.16	1.95	179.20	1.95	4.54	5.42	4.54	0.00	6.65
3	15.00	8.00	3.00	0.00	0.17	474.42	0.17	1.97	209.78	1.97	4.68	5.43	4.68	0.00	6.82
3.05	15.30	8.20	3.15	0.00	0.17	528.52	0.17	2.00	244.32	2.00	4.82	5.49	4.82	0.00	6.99
3.1	15.60	8.40	3.30	0.00	0.17	587.42	0.17	2.03	283.21	2.03	4.95	5.63	4.95	0.00	7.15
3.15	15.90	8.60	3.45	0.00	0.17	651.41	0.17	2.05	326.81	2.05	5.08	5.90	5.08	0.00	7.31
3.2	16.20	8.80	3.60	0.00	0.17	720.84	0.17	2.08	375.54	2.08	5.21	6.36	5.21	0.00	7.46
3.25	16.50	9.00	3.75	0.00	0.17	796.03	0.17	2.10	429.83	2.10	5.34	7.09	5.34	0.00	7.61
3.3	16.80	9.20	3.90	0.00	0.18	877.34	0.18	2.13	490.12	2.13	5.46	8.15	5.46	0.00	7.76
3.35	17.10	9.40	4.05	0.00	0.18	965.12	0.18	2.15	556.91	2.15	5.58	9.64	5.58	0.00	7.90
3.4	17.40	9.60	4.20	0.00	0.18	1059.76	0.18	2.17	630.67	2.17	5.69	11.66	5.69	0.00	8.05
3.45	17.70	9.80	4.35	0.00	0.18	1161.65	0.18	2.20	711.95	2.20	5.81	14.33	5.81	0.00	8.19
3.5	18.00	10.00	4.50	0.00	0.18	1271.19	0.18	2.22	801.29	2.22	5.92	17.76	5.92	0.00	8.32
3.55	18.30	10.20	4.65	0.00	0.18	1388.80	0.18	2.25	899.26	2.25	6.03	22.10	6.03	0.00	8.46
3.6	18.60	10.40	4.80	0.00	0.19	1514.93	0.19	2.27	1006.47	2.27	6.14	27.51	6.14	0.00	8.59
3.65	18.90	10.60	4.95	0.00	0.19	1650.01	0.19	2.29	1123.54	2.29	6.24	34.13	6.24	0.00	8.72
3.7	19.20	10.80	5.10	0.00	0.19	1794.53	0.19	2.31	1251.14	2.31	6.35	42.17	6.35	0.00	8.85
3.75	19.50	11.00	5.25	0.00	0.19	1948.96	0.19	2.34	1389.94	2.34	6.45	51.80	6.45	0.00	8.98
3.8	19.80	11.20	5.40	0.00	0.19	2113.80	0.19	2.36	1540.65	2.36	6.55	63.25	6.55	0.00	9.10
3.85	20.10	11.40	5.55	0.00	0.19	2289.57	0.19	2.38	1704.02	2.38	6.65	76.74	6.65	0.00	9.22

BASIN I Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	6	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box LxW	4

3.9	20.40	11.60	5.70	0.00	0.19	2476.80	0.19	2.40	1880.82	2.40	6.75	92.52	6.75	0.00	9.35
3.95	20.70	11.80	5.85	0.00	0.20	2676.05	0.20	2.42	2071.85	2.42	6.85	110.85	6.85	0.00	9.46
4	21.00	12.00	6.00	0.00	0.20	2887.86	0.20	2.44	2277.95	2.44	6.94	132.00	6.94	0.00	9.58
4.05	21.30	12.20	6.15	0.05	0.20	3112.84	0.20	2.47	2499.97	2.47	7.04	156.29	7.04	0.47	10.17
4.1	21.60	12.40	6.30	0.10	0.20	3351.59	0.20	2.49	2738.81	2.49	7.13	184.02	7.13	1.32	11.14
4.15	21.90	12.60	6.45	0.14	0.20	3604.71	0.20	2.51	2995.41	2.51	7.22	215.54	7.22	2.43	12.36
4.2	22.20	12.80	6.60	0.19	0.20	3872.86	0.20	2.53	3270.72	2.53	7.31	251.20	7.31	3.74	13.78
4.25	22.50	13.00	6.75	0.24	0.20	4156.69	0.20	2.55	3565.73	2.55	7.40	291.38	7.40	5.23	15.38
4.3	22.80	13.20	6.90	0.29	0.21	4456.87	0.21	2.57	3881.49	2.57	7.49	336.48	7.49	6.87	17.13
4.35	23.10	13.40	7.05	0.33	0.21	4774.09	0.21	2.59	4219.05	2.59	7.57	386.93	7.57	8.66	19.03
4.4	23.40	13.60	7.20	0.38	0.21	5109.08	0.21	2.61	4579.51	2.61	7.66	443.16	7.66	10.58	21.06
4.45	23.70	13.80	7.35	0.43	0.21	5462.57	0.21	2.63	4964.01	2.63	7.75	505.66	7.75	12.63	23.21
4.5	24.00	14.00	7.50	0.48	0.21	5835.30	0.21	2.65	5373.72	2.65	7.83	574.90	7.83	14.79	25.48
4.55	24.30	14.20	7.65	0.53	0.21	6228.06	0.21	2.67	5809.85	2.67	7.91	651.41	7.91	17.06	27.85
4.6	24.60	14.40	7.80	0.57	0.21	6641.63	0.21	2.69	6273.66	2.69	8.00	735.72	8.00	19.44	30.34
4.65	24.90	14.60	7.95	0.62	0.22	7076.84	0.22	2.71	6766.42	2.71	8.08	828.41	8.08	21.92	32.92
4.7	25.20	14.80	8.10	0.67	0.22	7534.51	0.22	2.73	7289.46	2.73	8.16	930.05	8.16	24.50	35.60
4.75	25.50	15.00	8.25	0.72	0.22	8015.51	0.22	2.75	7844.15	2.75	8.24	1041.28	8.24	27.17	38.37
4.8	25.80	15.20	8.40	0.76	0.22	8520.71	0.22	2.76	8431.90	2.76	8.32	1162.73	8.32	29.93	41.23
4.85	26.10	15.40	8.55	0.81	0.22	9051.01	0.22	2.78	9054.14	2.78	8.40	1295.09	8.40	32.78	44.18
4.9	26.40	15.60	8.70	0.86	0.22	9607.34	0.22	2.80	9712.36	2.80	8.48	1439.04	8.48	35.71	47.21
4.95	26.70	15.80	8.85	0.91	0.22	10190.63	0.22	2.82	10408.10	2.82	8.55	1595.32	8.55	38.73	50.32
5	27.00	16.00	9.00	0.96	0.22	10801.86	0.22	2.84	11142.92	2.84	8.63	1764.69	8.63	41.82	53.52
5.05	27.30	16.20	9.15	1.00	0.23	11442.02	0.23	2.86	11918.44	2.86	8.70	1947.94	8.70	45.00	56.79
5.1	27.60	16.40	9.30	1.05	0.23	12112.11	0.23	2.87	12736.31	2.87	8.78	2145.89	8.78	48.25	60.13
5.15	27.90	16.60	9.45	1.10	0.23	12813.17	0.23	2.89	13598.25	2.89	8.85	2359.38	8.85	51.58	63.55
5.2	28.20	16.80	9.60	1.15	0.23	13546.27	0.23	2.91	14505.98	2.91	8.93	2589.30	8.93	54.98	67.05
5.25	28.50	17.00	9.75	1.19	0.23	14312.48	0.23	2.93	15461.32	2.93	9.00	2836.56	9.00	58.45	70.61
5.3	28.80	17.20	9.90	1.24	0.23	15112.92	0.23	2.95	16466.08	2.95	9.07	3102.10	9.07	61.99	74.25
5.35	29.10	17.40	10.05	1.29	0.23	15948.71	0.23	2.96	17522.17	2.96	9.15	3386.92	9.15	65.60	77.95
5.4	29.40	17.60	10.20	1.34	0.23	16821.01	0.23	2.98	18631.50	2.98	9.22	3692.01	9.22	69.28	81.72
5.45	29.70	17.80	10.35	1.39	0.24	17731.01	0.24	3.00	19796.06	3.00	9.29	4018.44	9.29	73.03	85.55
5.5	30.00	18.00	10.50	1.43	0.24	18679.90	0.24	3.02	21017.88	3.02	9.36	4367.27	9.36	76.84	89.45
5.55	30.30	18.20	10.65	1.48	0.24	19668.93	0.24	3.03	22299.02	3.03	9.43	4739.63	9.43	80.71	93.41
5.6	30.60	18.40	10.80	1.53	0.24	20699.34	0.24	3.05	23641.62	3.05	9.50	5136.68	9.50	84.65	97.44
5.65	30.90	18.60	10.95	1.58	0.24	21772.43	0.24	3.07	25047.86	3.07	9.57	5559.59	9.57	88.65	101.52
5.7	31.20	18.80	11.10	1.62	0.24	22889.50	0.24	3.08	26519.94	3.08	9.64	6009.61	9.64	92.71	105.67
5.75	31.50	19.00	11.25	1.67	0.24	24051.88	0.24	3.10	28060.16	3.10	9.70	6487.99	9.70	96.83	109.87
5.8	31.80	19.20	11.40	1.72	0.24	25260.95	0.24	3.12	29670.84	3.12	9.77	6996.03	9.77	101.00	114.14
5.85	32.10	19.40	11.55	1.77	0.25	26518.09	0.25	3.13	31354.36	3.13	9.84	7535.09	9.84	105.24	118.46
5.9	32.40	19.60	11.70	1.82	0.25	27824.72	0.25	3.15	33113.16	3.15	9.90	8106.54	9.90	109.54	122.84
5.95	32.70	19.80	11.85	1.86	0.25	29182.28	0.25	3.17	34949.71	3.17	9.97	8711.81	9.97	113.89	127.28
6	33.00	20.00	12.00	1.91	0.25	30592.25	0.25	3.18	36866.57	3.18	10.04	9352.35	10.04	118.30	131.77

BASIN J Discharge - Basin J

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box diameter	4

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.6	0.60	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.65	0.90	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.7	1.20	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.75	1.50	0.00	0.00	0.00	0.04	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.8	1.80	0.00	0.00	0.00	0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.85	2.10	0.00	0.00	0.00	0.06	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.9	2.40	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.95	2.70	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1	3.00	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.05	3.30	0.20	0.00	0.00	0.07	0.08	0.07	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.12
1.1	3.60	0.40	0.00	0.00	0.08	0.09	0.08	0.00	0.19	0.19	0.00	0.00	0.00	0.00	0.27
1.15	3.90	0.60	0.00	0.00	0.08	0.12	0.08	0.46	0.40	0.40	0.00	0.00	0.00	0.00	0.48
1.2	4.20	0.80	0.00	0.00	0.08	0.17	0.08	0.79	0.67	0.67	0.00	0.00	0.00	0.00	0.75
1.25	4.50	1.00	0.00	0.00	0.09	0.26	0.09	1.02	0.97	0.97	0.00	0.00	0.00	0.00	1.06
1.3	4.80	1.20	0.00	0.00	0.09	0.41	0.09	1.21	1.29	1.21	0.00	0.00	0.00	0.00	1.30
1.35	5.10	1.40	0.00	0.00	0.09	0.62	0.09	1.37	1.60	1.37	0.00	0.00	0.00	0.00	1.46
1.4	5.40	1.60	0.00	0.00	0.10	0.93	0.10	1.51	1.89	1.51	0.00	0.00	0.00	0.00	1.61
1.45	5.70	1.80	0.00	0.00	0.10	1.36	0.10	1.64	2.14	1.64	0.00	0.00	0.00	0.00	1.74
1.5	6.00	2.00	0.00	0.00	0.10	1.94	0.10	1.77	2.35	1.77	0.00	0.00	0.00	0.00	1.87
1.55	6.30	2.20	0.00	0.00	0.11	2.71	0.11	1.88	2.49	1.88	0.00	0.00	0.00	0.00	1.98
1.6	6.60	2.40	0.00	0.00	0.11	3.70	0.11	1.99	2.58	1.99	0.00	0.00	0.00	0.00	2.10
1.65	6.90	2.60	0.00	0.00	0.11	4.96	0.11	2.09	2.62	2.09	0.00	0.00	0.00	0.00	2.20
1.7	7.20	2.80	0.00	0.00	0.11	6.53	0.11	2.19	2.64	2.19	0.00	0.00	0.00	0.00	2.30
1.75	7.50	3.00	0.00	0.00	0.12	8.47	0.12	2.28	2.65	2.28	0.00	0.00	0.00	0.00	2.39
1.8	7.80	3.20	0.00	0.00	0.12	10.84	0.12	2.37	2.69	2.37	0.00	0.00	0.00	0.00	2.49
1.85	8.10	3.40	0.00	0.00	0.12	13.70	0.12	2.46	2.82	2.46	0.00	0.00	0.00	0.00	2.58
1.9	8.40	3.60	0.00	0.00	0.12	17.13	0.12	2.54	3.10	2.54	0.00	0.00	0.00	0.00	2.66
1.95	8.70	3.80	0.00	0.00	0.12	21.20	0.12	2.62	3.60	2.62	0.00	0.00	0.00	0.00	2.74
2	9.00	4.00	0.00	0.00	0.13	26.00	0.13	2.70	4.43	2.70	0.00	0.00	0.00	0.00	2.82
2.05	9.30	4.20	0.15	0.00	0.13	31.61	0.13	2.77	5.68	2.77	0.00	0.06	0.06	0.00	2.96
2.1	9.60	4.40	0.30	0.00	0.13	38.14	0.13	2.85	7.49	2.85	0.00	0.22	0.22	0.00	3.20
2.15	9.90	4.60	0.45	0.00	0.13	45.70	0.13	2.92	10.01	2.92	0.00	0.48	0.48	0.00	3.54
2.2	10.20	4.80	0.60	0.00	0.14	54.39	0.14	2.99	13.40	2.99	0.94	0.83	0.83	0.00	3.95
2.25	10.50	5.00	0.75	0.00	0.14	64.34	0.14	3.06	17.85	3.06	1.48	1.23	1.23	0.00	4.43
2.3	10.80	5.20	0.90	0.00	0.14	75.67	0.14	3.13	23.58	3.13	1.87	1.68	1.68	0.00	4.95
2.35	11.10	5.40	1.05	0.00	0.14	88.53	0.14	3.19	30.81	3.19	2.19	2.16	2.16	0.00	5.50
2.4	11.40	5.60	1.20	0.00	0.14	103.06	0.14	3.26	39.82	3.26	2.48	2.65	2.48	0.00	5.88
2.45	11.70	5.80	1.35	0.00	0.15	119.42	0.15	3.32	50.88	3.32	2.73	3.14	2.73	0.00	6.19
2.5	12.00	6.00	1.50	0.00	0.15	137.77	0.15	3.38	64.30	3.38	2.96	3.60	2.96	0.00	6.49
2.55	12.30	6.20	1.65	0.00	0.15	158.29	0.15	3.44	80.44	3.44	3.17	4.03	3.17	0.00	6.77
2.6	12.60	6.40	1.80	0.00	0.15	181.17	0.15	3.50	99.66	3.50	3.37	4.40	3.37	0.00	7.03
2.65	12.90	6.60	1.95	0.00	0.15	206.59	0.15	3.56	122.37	3.56	3.56	4.72	3.56	0.00	7.28
2.7	13.20	6.80	2.10	0.00	0.16	234.76	0.16	3.62	148.99	3.62	3.74	4.98	3.74	0.00	7.52
2.75	13.50	7.00	2.25	0.00	0.16	265.90	0.16	3.68	179.99	3.68	3.92	5.17	3.92	0.00	7.75
2.8	13.80	7.20	2.40	0.00	0.16	300.23	0.16	3.73	215.88	3.73	4.08	5.30	4.08	0.00	7.97
2.85	14.10	7.40	2.55	0.00	0.16	337.99	0.16	3.79	257.19	3.79	4.24	5.37	4.24	0.00	8.19
2.9	14.40	7.60	2.70	0.00	0.16	379.44	0.16	3.84	304.49	3.84	4.39	5.40	4.39	0.00	8.39
2.95	14.70	7.80	2.85	0.00	0.16	424.82	0.16	3.90	358.40	3.90	4.54	5.42	4.54	0.00	8.60
3	15.00	8.00	3.00	0.00	0.17	474.42	0.17	3.95	419.55	3.95	4.68	5.43	4.68	0.00	8.79
3.05	15.30	8.20	3.15	0.00	0.17	528.52	0.17	4.00	488.65	4.00	4.82	5.49	4.82	0.00	8.99
3.1	15.60	8.40	3.30	0.00	0.17	587.42	0.17	4.05	566.41	4.05	4.95	5.63	4.95	0.00	9.17
3.15	15.90	8.60	3.45	0.00	0.17	651.41	0.17	4.10	653.62	4.10	5.08	5.90	5.08	0.00	9.36
3.2	16.20	8.80	3.60	0.00	0.17	720.84	0.17	4.15	751.08	4.15	5.21	6.36	5.21	0.00	9.54
3.25	16.50	9.00	3.75	0.00	0.17	796.03	0.17	4.20	859.65	4.20	5.34	7.09	5.34	0.00	9.71
3.3	16.80	9.20	3.90	0.00	0.18	877.34	0.18	4.25	980.25	4.25	5.46	8.15	5.46	0.00	9.89
3.35	17.10	9.40	4.05	0.00	0.18	965.12	0.18	4.30	1113.81	4.30	5.58	9.64	5.58	0.00	10.06
3.4	17.40	9.60	4.20	0.00	0.18	1059.76	0.18	4.35	1261.35	4.35	5.69	11.66	5.69	0.00	10.22
3.45	17.70	9.80	4.35	0.00	0.18	1161.65	0.18	4.40	1423.90	4.40	5.81	14.33	5.81	0.00	10.38
3.5	18.00	10.00	4.50	0.00	0.18	1271.19	0.18	4.44	1602.58	4.44	5.92	17.76	5.92	0.00	10.55
3.55	18.30	10.20	4.65	0.00	0.18	1388.80	0.18	4.49	1798.53	4.49	6.03	22.10	6.03	0.00	10.70
3.6	18.60	10.40	4.80	0.00	0.19	1514.93	0.19	4.54	2012.94	4.54	6.14	27.51	6.14	0.00	10.86

BASIN J Discharge - Basin J

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	12
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	12	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box diameter	4

3.65	18.90	10.60	4.95	0.00	0.19	1650.01	0.19	4.58	2247.09	4.58	6.24	34.13	6.24	0.00	11.01
3.7	19.20	10.80	5.10	0.00	0.19	1794.53	0.19	4.63	2502.28	4.63	6.35	42.17	6.35	0.00	11.16
3.75	19.50	11.00	5.25	0.00	0.19	1948.96	0.19	4.67	2779.87	4.67	6.45	51.80	6.45	0.00	11.31
3.8	19.80	11.20	5.40	0.00	0.19	2113.80	0.19	4.72	3081.30	4.72	6.55	63.25	6.55	0.00	11.46
3.85	20.10	11.40	5.55	0.00	0.19	2289.57	0.19	4.76	3408.04	4.76	6.65	76.74	6.65	0.00	11.60
3.9	20.40	11.60	5.70	0.00	0.19	2476.80	0.19	4.80	3761.64	4.80	6.75	92.52	6.75	0.00	11.75
3.95	20.70	11.80	5.85	0.00	0.20	2676.05	0.20	4.85	4143.71	4.85	6.85	110.85	6.85	0.00	11.89
4	21.00	12.00	6.00	0.00	0.20	2887.86	0.20	4.89	4555.90	4.89	6.94	132.00	6.94	0.00	12.03
4.05	21.30	12.20	6.15	0.05	0.20	3112.84	0.20	4.93	4999.94	4.93	7.04	156.29	7.04	0.47	12.63
4.1	21.60	12.40	6.30	0.10	0.20	3351.59	0.20	4.97	5477.63	4.97	7.13	184.02	7.13	1.32	13.62
4.15	21.90	12.60	6.45	0.14	0.20	3604.71	0.20	5.02	5990.82	5.02	7.22	215.54	7.22	2.43	14.87
4.2	22.20	12.80	6.60	0.19	0.20	3872.86	0.20	5.06	6541.43	5.06	7.31	251.20	7.31	3.74	16.31
4.25	22.50	13.00	6.75	0.24	0.20	4156.69	0.20	5.10	7131.47	5.10	7.40	291.38	7.40	5.23	17.93
4.3	22.80	13.20	6.90	0.29	0.21	4456.87	0.21	5.14	7762.98	5.14	7.49	336.48	7.49	6.87	19.70
4.35	23.10	13.40	7.05	0.33	0.21	4774.09	0.21	5.18	8438.09	5.18	7.57	386.93	7.57	8.66	21.62
4.4	23.40	13.60	7.20	0.38	0.21	5109.08	0.21	5.22	9159.01	5.22	7.66	443.16	7.66	10.58	23.67
4.45	23.70	13.80	7.35	0.43	0.21	5462.57	0.21	5.26	9928.01	5.26	7.75	505.66	7.75	12.63	25.84
4.5	24.00	14.00	7.50	0.48	0.21	5835.30	0.21	5.30	10747.44	5.30	7.83	574.90	7.83	14.79	28.13
4.55	24.30	14.20	7.65	0.53	0.21	6228.06	0.21	5.34	11619.70	5.34	7.91	651.41	7.91	17.06	30.52
4.6	24.60	14.40	7.80	0.57	0.21	6641.63	0.21	5.38	12547.32	5.38	8.00	735.72	8.00	19.44	33.02
4.65	24.90	14.60	7.95	0.62	0.22	7076.84	0.22	5.41	13532.84	5.41	8.08	828.41	8.08	21.92	35.63
4.7	25.20	14.80	8.10	0.67	0.22	7534.51	0.22	5.45	14578.93	5.45	8.16	930.05	8.16	24.50	38.32
4.75	25.50	15.00	8.25	0.72	0.22	8015.51	0.22	5.49	15688.31	5.49	8.24	1041.28	8.24	27.17	41.11
4.8	25.80	15.20	8.40	0.76	0.22	8520.71	0.22	5.53	16863.79	5.53	8.32	1162.73	8.32	29.93	43.99
4.85	26.10	15.40	8.55	0.81	0.22	9051.01	0.22	5.57	18108.27	5.57	8.40	1295.09	8.40	32.78	46.96
4.9	26.40	15.60	8.70	0.86	0.22	9607.34	0.22	5.60	19424.72	5.60	8.48	1439.04	8.48	35.71	50.01
4.95	26.70	15.80	8.85	0.91	0.22	10190.63	0.22	5.64	20816.20	5.64	8.55	1595.32	8.55	38.73	53.14
5	27.00	16.00	9.00	0.96	0.22	10801.86	0.22	5.68	22285.84	5.68	8.63	1764.69	8.63	41.82	56.35
5.05	27.30	16.20	9.15	1.00	0.23	11442.02	0.23	5.71	23836.88	5.71	8.70	1947.94	8.70	45.00	59.64
5.1	27.60	16.40	9.30	1.05	0.23	12112.11	0.23	5.75	25472.63	5.75	8.78	2145.89	8.78	48.25	63.01
5.15	27.90	16.60	9.45	1.10	0.23	12813.17	0.23	5.79	27196.49	5.79	8.85	2359.38	8.85	51.58	66.45
5.2	28.20	16.80	9.60	1.15	0.23	13546.27	0.23	5.82	29011.97	5.82	8.93	2589.30	8.93	54.98	69.96
5.25	28.50	17.00	9.75	1.19	0.23	14312.48	0.23	5.86	30922.63	5.86	9.00	2836.56	9.00	58.45	73.54
5.3	28.80	17.20	9.90	1.24	0.23	15112.92	0.23	5.89	32932.16	5.89	9.07	3102.10	9.07	61.99	77.19
5.35	29.10	17.40	10.05	1.29	0.23	15948.71	0.23	5.93	35044.33	5.93	9.15	3386.92	9.15	65.60	80.91
5.4	29.40	17.60	10.20	1.34	0.23	16821.01	0.23	5.96	37263.00	5.96	9.22	3692.01	9.22	69.28	84.70
5.45	29.70	17.80	10.35	1.39	0.24	17731.01	0.24	6.00	39592.12	6.00	9.29	4018.44	9.29	73.03	88.55
5.5	30.00	18.00	10.50	1.43	0.24	18679.90	0.24	6.03	42035.75	6.03	9.36	4367.27	9.36	76.84	92.46
5.55	30.30	18.20	10.65	1.48	0.24	19668.93	0.24	6.07	44598.04	6.07	9.43	4739.63	9.43	80.71	96.44
5.6	30.60	18.40	10.80	1.53	0.24	20699.34	0.24	6.10	47283.25	6.10	9.50	5136.68	9.50	84.65	100.49
5.65	30.90	18.60	10.95	1.58	0.24	21772.43	0.24	6.13	50095.71	6.13	9.57	5559.59	9.57	88.65	104.59
5.7	31.20	18.80	11.10	1.62	0.24	22889.50	0.24	6.17	53039.89	6.17	9.64	6009.61	9.64	92.71	108.75
5.75	31.50	19.00	11.25	1.67	0.24	24051.88	0.24	6.20	56120.32	6.20	9.70	6487.99	9.70	96.83	112.97
5.8	31.80	19.20	11.40	1.72	0.24	25260.95	0.24	6.23	59341.68	6.23	9.77	6996.03	9.77	101.00	117.25
5.85	32.10	19.40	11.55	1.77	0.25	26518.09	0.25	6.27	62708.72	6.27	9.84	7535.09	9.84	105.24	121.59
5.9	32.40	19.60	11.70	1.82	0.25	27824.72	0.25	6.30	66226.31	6.30	9.90	8106.54	9.90	109.54	125.99
5.95	32.70	19.80	11.85	1.86	0.25	29182.28	0.25	6.33	69899.42	6.33	9.97	8711.81	9.97	113.89	130.44
6	33.00	20.00	12.00	1.91	0.25	30592.25	0.25	6.37	73733.13	6.37	10.04	9352.35	10.04	118.30	134.95

BASIN K Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0
invert elev:	0.50 ft	invert elev:	1.50 ft
Middle orifice diameter:	2 "	Emergency weir:	
number of orif:	0	Invert:	2.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box Diameter	4

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.6	0.60	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.65	0.90	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.7	1.20	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.75	1.50	0.00	0.00	0.00	0.04	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.8	1.80	0.00	0.00	0.00	0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.85	2.10	0.00	0.00	0.00	0.06	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.9	2.40	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
0.95	2.70	0.00	0.00	0.00	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1	3.00	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.05	3.30	0.30	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1.1	3.60	0.60	0.00	0.00	0.08	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.15	3.90	0.90	0.00	0.00	0.08	0.12	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.2	4.20	1.20	0.00	0.00	0.08	0.17	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
1.25	4.50	1.50	0.00	0.00	0.09	0.26	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.3	4.80	1.80	0.00	0.00	0.09	0.41	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.35	5.10	2.10	0.00	0.00	0.09	0.62	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1.4	5.40	2.40	0.00	0.00	0.10	0.93	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.45	5.70	2.70	0.00	0.00	0.10	1.36	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.5	6.00	3.00	0.00	0.00	0.10	1.94	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1.55	6.30	3.30	0.15	0.00	0.11	2.71	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.6	6.60	3.60	0.30	0.00	0.11	3.70	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.65	6.90	3.90	0.45	0.00	0.11	4.96	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.7	7.20	4.20	0.60	0.00	0.11	6.53	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1.75	7.50	4.50	0.75	0.00	0.12	8.47	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.8	7.80	4.80	0.90	0.00	0.12	10.84	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.85	8.10	5.10	1.05	0.00	0.12	13.70	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.9	8.40	5.40	1.20	0.00	0.12	17.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1.95	8.70	5.70	1.35	0.00	0.12	21.20	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
2	9.00	6.00	1.50	0.00	0.13	26.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
2.05	9.30	6.30	1.65	0.05	0.13	31.61	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.60
2.1	9.60	6.60	1.80	0.10	0.13	38.14	0.13	0.00	0.00	0.00	0.00	0.00	0.00	1.32	1.45
2.15	9.90	6.90	1.95	0.14	0.13	45.70	0.13	0.00	0.00	0.00	0.00	0.00	0.00	2.43	2.56
2.2	10.20	7.20	2.10	0.19	0.14	54.39	0.14	0.00	0.00	0.00	0.00	0.00	0.00	3.74	3.88
2.25	10.50	7.50	2.25	0.24	0.14	64.34	0.14	0.00	0.00	0.00	0.00	0.00	0.00	5.23	5.37
2.3	10.80	7.80	2.40	0.29	0.14	75.67	0.14	0.00	0.00	0.00	0.00	0.00	0.00	6.87	7.01
2.35	11.10	8.10	2.55	0.33	0.14	88.53	0.14	0.00	0.00	0.00	0.00	0.00	0.00	8.66	8.80
2.4	11.40	8.40	2.70	0.38	0.14	103.06	0.14	0.00	0.00	0.00	0.00	0.00	0.00	10.58	10.72
2.45	11.70	8.70	2.85	0.43	0.15	119.42	0.15	0.00	0.00	0.00	0.00	0.00	0.00	12.63	12.77
2.5	12.00	9.00	3.00	0.48	0.15	137.77	0.15	0.00	0.00	0.00	0.00	0.00	0.00	14.79	14.94
2.55	12.30	9.30	3.15	0.53	0.15	158.29	0.15	0.00	0.00	0.00	0.00	0.00	0.00	17.06	17.21
2.6	12.60	9.60	3.30	0.57	0.15	181.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	19.44	19.59
2.65	12.90	9.90	3.45	0.62	0.15	206.59	0.15	0.00	0.00	0.00	0.00	0.00	0.00	21.92	22.07
2.7	13.20	10.20	3.60	0.67	0.16	234.76	0.16	0.00	0.00	0.00	0.00	0.00	0.00	24.50	24.65
2.75	13.50	10.50	3.75	0.72	0.16	265.90	0.16	0.00	0.00	0.00	0.00	0.00	0.00	27.17	27.32
2.8	13.80	10.80	3.90	0.76	0.16	300.23	0.16	0.00	0.00	0.00	0.00	0.00	0.00	29.93	30.09
2.85	14.10	11.10	4.05	0.81	0.16	337.99	0.16	0.00	0.00	0.00	0.00	0.00	0.00	32.78	32.94
2.9	14.40	11.40	4.20	0.86	0.16	379.44	0.16	0.00	0.00	0.00	0.00	0.00	0.00	35.71	35.87
2.95	14.70	11.70	4.35	0.91	0.16	424.82	0.16	0.00	0.00	0.00	0.00	0.00	0.00	38.73	38.89
3	15.00	12.00	4.50	0.96	0.17	474.42	0.17	0.00	0.00	0.00	0.00	0.00	0.00	41.82	41.99
3.05	15.30	12.30	4.65	1.00	0.17	528.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	45.00	45.17
3.1	15.60	12.60	4.80	1.05	0.17	587.42	0.17	0.00	0.00	0.00	0.00	0.00	0.00	48.25	48.42
3.15	15.90	12.90	4.95	1.10	0.17	651.41	0.17	0.00	0.00	0.00	0.00	0.00	0.00	51.58	51.75
3.2	16.20	13.20	5.10	1.15	0.17	720.84	0.17	0.00	0.00	0.00	0.00	0.00	0.00	54.98	55.15
3.25	16.50	13.50	5.25	1.19	0.17	796.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00	58.45	58.63
3.3	16.80	13.80	5.40	1.24	0.18	877.34	0.18	0.00	0.00	0.00	0.00	0.00	0.00	61.99	62.17
3.35	17.10	14.10	5.55	1.29	0.18	965.12	0.18	0.00	0.00	0.00	0.00	0.00	0.00	65.60	65.78
3.4	17.40	14.40	5.70	1.34	0.18	1059.76	0.18	0.00	0.00	0.00	0.00	0.00	0.00	69.28	69.46
3.45	17.70	14.70	5.85	1.39	0.18	1161.65	0.18	0.00	0.00	0.00	0.00	0.00	0.00	73.03	73.21
3.5	18.00	15.00	6.00	1.43	0.18	1271.19	0.18	0.00	0.00	0.00	0.00	0.00	0.00	76.84	77.02
3.55	18.30	15.30	6.15	1.48	0.18	1388.80	0.18	0.00	0.00	0.00	0.00	0.00	0.00	80.71	80.89
3.6	18.60	15.60	6.30	1.53	0.19	1514.93	0.19	0.00	0.00	0.00	0.00	0.00	0.00	84.65	84.83

BASIN K Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0
invert elev:	0.50 ft	invert elev:	1.50 ft
Middle orifice diameter:	2 "	Emergency weir:	
number of orif:	0	Invert:	2.00 ft
Cg-middle:	0.61	Weir Length (ft)	12.6 ft
invert elev:	1.00 ft	Riser Box Diameter	4

3.65	18.90	15.90	6.45	1.58	0.19	1650.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	88.65	88.83
3.7	19.20	16.20	6.60	1.62	0.19	1794.53	0.19	0.00	0.00	0.00	0.00	0.00	0.00	92.71	92.89
3.75	19.50	16.50	6.75	1.67	0.19	1948.96	0.19	0.00	0.00	0.00	0.00	0.00	0.00	96.83	97.02
3.8	19.80	16.80	6.90	1.72	0.19	2113.80	0.19	0.00	0.00	0.00	0.00	0.00	0.00	101.00	101.20
3.85	20.10	17.10	7.05	1.77	0.19	2289.57	0.19	0.00	0.00	0.00	0.00	0.00	0.00	105.24	105.44
3.9	20.40	17.40	7.20	1.82	0.19	2476.80	0.19	0.00	0.00	0.00	0.00	0.00	0.00	109.54	109.73
3.95	20.70	17.70	7.35	1.86	0.20	2676.05	0.20	0.00	0.00	0.00	0.00	0.00	0.00	113.89	114.09
4	21.00	18.00	7.50	1.91	0.20	2887.86	0.20	0.00	0.00	0.00	0.00	0.00	0.00	118.30	118.50

BASIN O-L Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	2.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	1.20	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	2.40	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.15	3.90	3.60	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1.2	4.20	4.80	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.25	4.50	6.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.3	4.80	7.20	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
1.35	5.10	8.40	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.4	5.40	9.60	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.45	5.70	10.80	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.5	6.00	12.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.55	6.30	13.20	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
1.6	6.60	14.40	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.65	6.90	15.60	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.7	7.20	16.80	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.75	7.50	18.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.8	7.80	19.20	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.85	8.10	20.40	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.9	8.40	21.60	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1.95	8.70	22.80	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2	9.00	24.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2.05	9.30	25.20	0.15	0.06	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.63
2.1	9.60	26.40	0.30	0.12	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.32
2.15	9.90	27.60	0.45	0.18	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.00	0.00	1.93	2.20
2.2	10.20	28.80	0.60	0.24	0.27	108.78	0.27	0.00	0.00	0.00	0.00	0.00	0.00	2.98	3.25
2.25	10.50	30.00	0.75	0.30	0.28	128.67	0.28	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.44
2.3	10.80	31.20	0.90	0.36	0.28	151.34	0.28	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.75
2.35	11.10	32.40	1.05	0.42	0.28	177.06	0.28	0.00	0.00	0.00	0.00	0.00	0.00	6.90	7.18
2.4	11.40	33.60	1.20	0.48	0.29	206.12	0.29	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.71
2.45	11.70	34.80	1.35	0.54	0.29	238.84	0.29	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.34
2.5	12.00	36.00	1.50	0.60	0.30	275.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	11.77	12.07
2.55	12.30	37.20	1.65	0.66	0.30	316.59	0.30	0.00	0.00	0.00	0.00	0.00	0.00	13.58	13.88
2.6	12.60	38.40	1.80	0.72	0.30	362.33	0.30	0.00	0.00	0.00	0.00	0.00	0.00	15.48	15.78
2.65	12.90	39.60	1.95	0.78	0.31	413.17	0.31	0.00	0.00	0.00	0.00	0.00	0.00	17.45	17.76
2.7	13.20	40.80	2.10	0.84	0.31	469.51	0.31	0.00	0.00	0.00	0.00	0.00	0.00	19.50	19.81
2.75	13.50	42.00	2.25	0.90	0.31	531.79	0.31	0.00	0.00	0.00	0.00	0.00	0.00	21.63	21.94
2.8	13.80	43.20	2.40	0.96	0.32	600.46	0.32	0.00	0.00	0.00	0.00	0.00	0.00	23.83	24.15
2.85	14.10	44.40	2.55	1.02	0.32	675.99	0.32	0.00	0.00	0.00	0.00	0.00	0.00	26.10	26.42
2.9	14.40	45.60	2.70	1.08	0.33	758.88	0.33	0.00	0.00	0.00	0.00	0.00	0.00	28.43	28.76
2.95	14.70	46.80	2.85	1.14	0.33	849.65	0.33	0.00	0.00	0.00	0.00	0.00	0.00	30.83	31.16
3	15.00	48.00	3.00	1.20	0.33	948.85	0.33	0.00	0.00	0.00	0.00	0.00	0.00	33.30	33.63

BASIN O-M Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	2.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	1.20	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	2.40	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.15	3.90	3.60	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1.2	4.20	4.80	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.25	4.50	6.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.3	4.80	7.20	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
1.35	5.10	8.40	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.4	5.40	9.60	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.45	5.70	10.80	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.5	6.00	12.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.55	6.30	13.20	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
1.6	6.60	14.40	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.65	6.90	15.60	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.7	7.20	16.80	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.75	7.50	18.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.8	7.80	19.20	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.85	8.10	20.40	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.9	8.40	21.60	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1.95	8.70	22.80	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2	9.00	24.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2.05	9.30	25.20	0.15	0.06	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.63
2.1	9.60	26.40	0.30	0.12	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.32
2.15	9.90	27.60	0.45	0.18	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.00	0.00	1.93	2.20
2.2	10.20	28.80	0.60	0.24	0.27	108.78	0.27	0.00	0.00	0.00	0.00	0.00	0.00	2.98	3.25
2.25	10.50	30.00	0.75	0.30	0.28	128.67	0.28	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.44
2.3	10.80	31.20	0.90	0.36	0.28	151.34	0.28	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.75
2.35	11.10	32.40	1.05	0.42	0.28	177.06	0.28	0.00	0.00	0.00	0.00	0.00	0.00	6.90	7.18
2.4	11.40	33.60	1.20	0.48	0.29	206.12	0.29	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.71
2.45	11.70	34.80	1.35	0.54	0.29	238.84	0.29	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.34
2.5	12.00	36.00	1.50	0.60	0.30	275.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	11.77	12.07
2.55	12.30	37.20	1.65	0.66	0.30	316.59	0.30	0.00	0.00	0.00	0.00	0.00	0.00	13.58	13.88
2.6	12.60	38.40	1.80	0.72	0.30	362.33	0.30	0.00	0.00	0.00	0.00	0.00	0.00	15.48	15.78
2.65	12.90	39.60	1.95	0.78	0.31	413.17	0.31	0.00	0.00	0.00	0.00	0.00	0.00	17.45	17.76
2.7	13.20	40.80	2.10	0.84	0.31	469.51	0.31	0.00	0.00	0.00	0.00	0.00	0.00	19.50	19.81
2.75	13.50	42.00	2.25	0.90	0.31	531.79	0.31	0.00	0.00	0.00	0.00	0.00	0.00	21.63	21.94
2.8	13.80	43.20	2.40	0.96	0.32	600.46	0.32	0.00	0.00	0.00	0.00	0.00	0.00	23.83	24.15
2.85	14.10	44.40	2.55	1.02	0.32	675.99	0.32	0.00	0.00	0.00	0.00	0.00	0.00	26.10	26.42
2.9	14.40	45.60	2.70	1.08	0.33	758.88	0.33	0.00	0.00	0.00	0.00	0.00	0.00	28.43	28.76
2.95	14.70	46.80	2.85	1.14	0.33	849.65	0.33	0.00	0.00	0.00	0.00	0.00	0.00	30.83	31.16
3	15.00	48.00	3.00	1.20	0.33	948.85	0.33	0.00	0.00	0.00	0.00	0.00	0.00	33.30	33.63
3.05	15.30	49.20	3.15	1.26	0.34	1057.04	0.34	0.00	0.00	0.00	0.00	0.00	0.00	35.83	36.16
3.1	15.60	50.40	3.30	1.32	0.34	1174.83	0.34	0.00	0.00	0.00	0.00	0.00	0.00	38.42	38.76
3.15	15.90	51.60	3.45	1.38	0.34	1302.83	0.34	0.00	0.00	0.00	0.00	0.00	0.00	41.07	41.41
3.2	16.20	52.80	3.60	1.44	0.35	1441.68	0.35	0.00	0.00	0.00	0.00	0.00	0.00	43.77	44.12
3.25	16.50	54.00	3.75	1.50	0.35	1592.07	0.35	0.00	0.00	0.00	0.00	0.00	0.00	46.54	46.89
3.3	16.80	55.20	3.90	1.56	0.35	1754.68	0.35	0.00	0.00	0.00	0.00	0.00	0.00	49.36	49.71
3.35	17.10	56.40	4.05	1.62	0.36	1930.25	0.36	0.00	0.00	0.00	0.00	0.00	0.00	52.23	52.59
3.4	17.40	57.60	4.20	1.68	0.36	2119.52	0.36	0.00	0.00	0.00	0.00	0.00	0.00	55.16	55.52
3.45	17.70	58.80	4.35	1.74	0.36	2323.30	0.36	0.00	0.00	0.00	0.00	0.00	0.00	58.14	58.50
3.5	18.00	60.00	4.50	1.80	0.36	2542.37	0.36	0.00	0.00	0.00	0.00	0.00	0.00	61.18	61.54
3.55	18.30	61.20	4.65	1.86	0.37	2777.60	0.37	0.00	0.00	0.00	0.00	0.00	0.00	64.26	64.63
3.6	18.60	62.40	4.80	1.92	0.37	3029.85	0.37	0.00	0.00	0.00	0.00	0.00	0.00	67.39	67.77
3.65	18.90	63.60	4.95	1.98	0.37	3300.02	0.37	0.00	0.00	0.00	0.00	0.00	0.00	70.58	70.95
3.7	19.20	64.80	5.10	2.04	0.38	3589.06	0.38	0.00	0.00	0.00	0.00	0.00	0.00	73.81	74.19
3.75	19.50	66.00	5.25	2.10	0.38	3897.92	0.38	0.00	0.00	0.00	0.00	0.00	0.00	77.09	77.47
3.8	19.80	67.20	5.40	2.16	0.38	4227.60	0.38	0.00	0.00	0.00	0.00	0.00	0.00	80.42	80.80
3.85	20.10	68.40	5.55	2.22	0.39	4579.14	0.39	0.00	0.00	0.00	0.00	0.00	0.00	83.79	84.18
3.9	20.40	69.60	5.70	2.28	0.39	4953.61	0.39	0.00	0.00	0.00	0.00	0.00	0.00	87.21	87.60
3.95	20.70	70.80	5.85	2.34	0.39	5352.09	0.39	0.00	0.00	0.00	0.00	0.00	0.00	90.68	91.07
4	21.00	72.00	6.00	2.40	0.39	5775.73	0.39	0.00	0.00	0.00	0.00	0.00	0.00	94.19	94.58

BASIN O-N Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.6	0.60	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
0.65	0.90	0.00	0.00	0.00	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
0.7	1.20	0.00	0.00	0.00	0.07	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
0.75	1.50	0.00	0.00	0.00	0.09	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
0.8	1.80	0.00	0.00	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
0.85	2.10	0.00	0.00	0.00	0.11	0.15	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
0.9	2.40	0.00	0.00	0.00	0.12	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
0.95	2.70	0.00	0.00	0.00	0.13	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1	3.00	0.00	0.00	0.00	0.14	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
1.05	3.30	1.20	0.00	0.00	0.15	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.1	3.60	2.40	0.00	0.00	0.15	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
1.15	3.90	3.60	0.00	0.00	0.16	0.24	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1.2	4.20	4.80	0.00	0.00	0.17	0.34	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.25	4.50	6.00	0.00	0.00	0.17	0.52	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
1.3	4.80	7.20	0.00	0.00	0.18	0.81	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
1.35	5.10	8.40	0.00	0.00	0.19	1.24	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.4	5.40	9.60	0.00	0.00	0.19	1.86	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1.45	5.70	10.80	0.00	0.00	0.20	2.73	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.5	6.00	12.00	0.00	0.00	0.20	3.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
1.55	6.30	13.20	0.00	0.00	0.21	5.42	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
1.6	6.60	14.40	0.00	0.00	0.22	7.40	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.65	6.90	15.60	0.00	0.00	0.22	9.91	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
1.7	7.20	16.80	0.00	0.00	0.23	13.06	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.75	7.50	18.00	0.00	0.00	0.23	16.94	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
1.8	7.80	19.20	0.00	0.00	0.24	21.68	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.85	8.10	20.40	0.00	0.00	0.24	27.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
1.9	8.40	21.60	0.00	0.00	0.25	34.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1.95	8.70	22.80	0.00	0.00	0.25	42.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2	9.00	24.00	0.00	0.00	0.25	51.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
2.05	9.30	25.20	0.15	0.00	0.26	63.22	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
2.1	9.60	26.40	0.30	0.00	0.26	76.29	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
2.15	9.90	27.60	0.45	0.00	0.27	91.40	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
2.2	10.20	28.80	0.60	0.00	0.27	108.78	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
2.25	10.50	30.00	0.75	0.00	0.28	128.67	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
2.3	10.80	31.20	0.90	0.00	0.28	151.34	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
2.35	11.10	32.40	1.05	0.00	0.28	177.06	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
2.4	11.40	33.60	1.20	0.00	0.29	206.12	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
2.45	11.70	34.80	1.35	0.00	0.29	238.84	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
2.5	12.00	36.00	1.50	0.00	0.30	275.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
2.55	12.30	37.20	1.65	0.00	0.30	316.59	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
2.6	12.60	38.40	1.80	0.00	0.30	362.33	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
2.65	12.90	39.60	1.95	0.00	0.31	413.17	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
2.7	13.20	40.80	2.10	0.00	0.31	469.51	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
2.75	13.50	42.00	2.25	0.00	0.31	531.79	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
2.8	13.80	43.20	2.40	0.00	0.32	600.46	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
2.85	14.10	44.40	2.55	0.00	0.32	675.99	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
2.9	14.40	45.60	2.70	0.00	0.33	758.88	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
2.95	14.70	46.80	2.85	0.00	0.33	849.65	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
3	15.00	48.00	3.00	0.00	0.33	948.85	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
3.05	15.30	49.20	3.15	0.00	0.34	1057.04	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
3.1	15.60	50.40	3.30	0.00	0.34	1174.83	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
3.15	15.90	51.60	3.45	0.00	0.34	1302.83	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
3.2	16.20	52.80	3.60	0.00	0.35	1441.68	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
3.25	16.50	54.00	3.75	0.00	0.35	1592.07	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
3.3	16.80	55.20	3.90	0.00	0.35	1754.68	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
3.35	17.10	56.40	4.05	0.00	0.36	1930.25	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
3.4	17.40	57.60	4.20	0.00	0.36	2119.52	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
3.45	17.70	58.80	4.35	0.00	0.36	2323.30	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
3.5	18.00	60.00	4.50	0.00	0.36	2542.37	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
3.55	18.30	61.20	4.65	0.00	0.37	2777.60	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
3.6	18.60	62.40	4.80	0.00	0.37	3029.85	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
3.65	18.90	63.60	4.95	0.00	0.37	3300.02	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
3.7	19.20	64.80	5.10	0.00	0.38	3589.06	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
3.75	19.50	66.00	5.25	0.00	0.38	3897.92	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
3.8	19.80	67.20	5.40	0.00	0.38	4227.60	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
3.85	20.10	68.40	5.55	0.00	0.39	4579.14	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
3.9	20.40	69.60	5.70	0.00	0.39	4953.61	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
3.95	20.70	70.80	5.85	0.00	0.39	5352.09	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
4	21.00	72.00	6.00	0.00	0.39	5775.73	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
4.05	21.30	73.20	6.15	0.06	0.40	6225.69	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.77

BASIN O-N Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	4 "
Number:	2	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	2.00 ft
Middle orifice diameter:	0.5 "	Emergency weir:	
number of orif:	0	Invert:	4.00 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	1.00 ft	Riser Box LxW	2x3

4.1	21.60	74.40	6.30	0.12	0.40	6703.18	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.45
4.15	21.90	75.60	6.45	0.18	0.40	7209.43	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.93	2.34
4.2	22.20	76.80	6.60	0.24	0.41	7745.72	0.41	0.00	0.00	0.00	0.00	0.00	0.00	2.98	3.38
4.25	22.50	78.00	6.75	0.30	0.41	8313.37	0.41	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.57
4.3	22.80	79.20	6.90	0.36	0.41	8913.73	0.41	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.88
4.35	23.10	80.40	7.05	0.42	0.41	9548.18	0.41	0.00	0.00	0.00	0.00	0.00	0.00	6.90	7.31
4.4	23.40	81.60	7.20	0.48	0.42	10218.16	0.42	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.84
4.45	23.70	82.80	7.35	0.54	0.42	10925.13	0.42	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.47
4.5	24.00	84.00	7.50	0.60	0.42	11670.60	0.42	0.00	0.00	0.00	0.00	0.00	0.00	11.77	12.20
4.55	24.30	85.20	7.65	0.66	0.43	12456.12	0.43	0.00	0.00	0.00	0.00	0.00	0.00	13.58	14.01
4.6	24.60	86.40	7.80	0.72	0.43	13283.27	0.43	0.00	0.00	0.00	0.00	0.00	0.00	15.48	15.90
4.65	24.90	87.60	7.95	0.78	0.43	14153.68	0.43	0.00	0.00	0.00	0.00	0.00	0.00	17.45	17.88
4.7	25.20	88.80	8.10	0.84	0.43	15069.03	0.43	0.00	0.00	0.00	0.00	0.00	0.00	19.50	19.94
4.75	25.50	90.00	8.25	0.90	0.44	16031.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	21.63	22.06
4.8	25.80	91.20	8.40	0.96	0.44	17041.42	0.44	0.00	0.00	0.00	0.00	0.00	0.00	23.83	24.27
4.85	26.10	92.40	8.55	1.02	0.44	18102.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	26.10	26.54
4.9	26.40	93.60	8.70	1.08	0.44	19214.67	0.44	0.00	0.00	0.00	0.00	0.00	0.00	28.43	28.88
4.95	26.70	94.80	8.85	1.14	0.45	20381.26	0.45	0.00	0.00	0.00	0.00	0.00	0.00	30.83	31.28
5	27.00	96.00	9.00	1.20	0.45	21603.72	0.45	0.00	0.00	0.00	0.00	0.00	0.00	33.30	33.75
5.05	27.30	97.20	9.15	1.26	0.45	22884.03	0.45	0.00	0.00	0.00	0.00	0.00	0.00	35.83	36.28
5.1	27.60	98.40	9.30	1.32	0.45	24224.21	0.45	0.00	0.00	0.00	0.00	0.00	0.00	38.42	38.87
5.15	27.90	99.60	9.45	1.38	0.46	25626.34	0.46	0.00	0.00	0.00	0.00	0.00	0.00	41.07	41.52
5.2	28.20	100.80	9.60	1.44	0.46	27092.54	0.46	0.00	0.00	0.00	0.00	0.00	0.00	43.77	44.23
5.25	28.50	102.00	9.75	1.50	0.46	28624.96	0.46	0.00	0.00	0.00	0.00	0.00	0.00	46.54	47.00
5.3	28.80	103.20	9.90	1.56	0.46	30225.83	0.46	0.00	0.00	0.00	0.00	0.00	0.00	49.36	49.82
5.35	29.10	104.40	10.05	1.62	0.47	31897.42	0.47	0.00	0.00	0.00	0.00	0.00	0.00	52.23	52.70
5.4	29.40	105.60	10.20	1.68	0.47	33642.02	0.47	0.00	0.00	0.00	0.00	0.00	0.00	55.16	55.63
5.45	29.70	106.80	10.35	1.74	0.47	35462.01	0.47	0.00	0.00	0.00	0.00	0.00	0.00	58.14	58.61
5.5	30.00	108.00	10.50	1.80	0.47	37359.80	0.47	0.00	0.00	0.00	0.00	0.00	0.00	61.18	61.65
5.55	30.30	109.20	10.65	1.86	0.48	39337.85	0.48	0.00	0.00	0.00	0.00	0.00	0.00	64.26	64.74
5.6	30.60	110.40	10.80	1.92	0.48	41398.68	0.48	0.00	0.00	0.00	0.00	0.00	0.00	67.39	67.87
5.65	30.90	111.60	10.95	1.98	0.48	43544.86	0.48	0.00	0.00	0.00	0.00	0.00	0.00	70.58	71.06
5.7	31.20	112.80	11.10	2.04	0.48	45778.99	0.48	0.00	0.00	0.00	0.00	0.00	0.00	73.81	74.29
5.75	31.50	114.00	11.25	2.10	0.49	48103.77	0.49	0.00	0.00	0.00	0.00	0.00	0.00	77.09	77.58
5.8	31.80	115.20	11.40	2.16	0.49	50521.91	0.49	0.00	0.00	0.00	0.00	0.00	0.00	80.42	80.91
5.85	32.10	116.40	11.55	2.22	0.49	53036.19	0.49	0.00	0.00	0.00	0.00	0.00	0.00	83.79	84.28
5.9	32.40	117.60	11.70	2.28	0.49	55649.44	0.49	0.00	0.00	0.00	0.00	0.00	0.00	87.21	87.70
5.95	32.70	118.80	11.85	2.34	0.49	58364.57	0.49	0.00	0.00	0.00	0.00	0.00	0.00	90.68	91.17
6	33.00	120.00	12.00	2.40	0.50	61184.51	0.50	0.00	0.00	0.00	0.00	0.00	0.00	94.19	94.68

BASIN O-O Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	6 "
Number:	0	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	0	Invert:	0.50 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	2.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37
0.6	0.60	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05
0.65	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93
0.7	1.20	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.98
0.75	1.50	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.16
0.8	1.80	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.47
0.85	2.10	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	6.90
0.9	2.40	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.42
0.95	2.70	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.05
1	3.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.77	11.77

BASIN O-P Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	6 "	
Number:	0	Number:	0	
Cg-low:	0.61	Cg-low:	0.61	
invert elev:	0.50 ft	invert elev:	3.00 ft	
Middle orifice diameter:	3 "	Emergency weir:		
number of orif:	0	Invert:	0.50 ft	
Cg-middle:	0.61	Weir Length (ft)	10.0 ft	
invert elev:	2.00 ft	Riser Box LxW	2x3	

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37
0.6	0.60	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05
0.65	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93
0.7	1.20	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.98
0.75	1.50	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.16
0.8	1.80	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.47
0.85	2.10	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	6.90
0.9	2.40	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.42
0.95	2.70	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.05
1	3.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.77	11.77

BASIN O-Q Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "	Top orifice diameter:	6 "
Number:	0	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.50 ft	invert elev:	3.00 ft
Middle orifice diameter:	3 "	Emergency weir:	
number of orif:	0	Invert:	0.50 ft
Cg-middle:	0.61	Weir Length (ft)	10.0 ft
invert elev:	2.00 ft	Riser Box LxW	2x3

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37
0.6	0.60	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05
0.65	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93
0.7	1.20	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.98
0.75	1.50	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.16
0.8	1.80	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.47
0.85	2.10	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	6.90
0.9	2.40	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.42
0.95	2.70	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.05
1	3.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.77	11.77

BASIN O-R Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "		Top orifice diameter:		6 "
Number:	0		Number:		0
Cg-low:	0.61		Cg-low:		0.61
invert elev:	0.50 ft		invert elev:		3.00 ft
Middle orifice diameter:	3 "		Emergency weir:		
number of orif:	0		Invert:	0.50 ft	
Cg-middle:	0.61		Weir Length (ft)	10.0 ft	
invert elev:	2.00 ft		Riser Box LxW	2x3	

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37
0.6	0.60	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05
0.65	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93
0.7	1.20	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.98
0.75	1.50	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.16
0.8	1.80	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.47
0.85	2.10	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	6.90
0.9	2.40	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.42
0.95	2.70	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.05
1	3.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.77	11.77

BASIN O-S Discharge

Discharge vs Elevation Table

Bottom orifice diameter:	2 "		Top orifice diameter:		6 "
Number:	0		Number:		0
Cg-low:	0.61		Cg-low:		0.61
invert elev:	0.50 ft		invert elev:		3.00 ft
Middle orifice diameter:	3 "		Emergency weir:		
number of orif:	0		Invert:	0.50 ft	
Cg-middle:	0.61		Weir Length (ft)	10.0 ft	
invert elev:	2.00 ft		Riser Box LxW	2x3	

h (ft)	H/D-low -	H/D-mid -	H/D-top -	H/D-peak -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qpeak-top (cfs)	Qtot (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.30	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37
0.6	0.60	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05
0.65	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93
0.7	1.20	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.98
0.75	1.50	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	4.16
0.8	1.80	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	5.47
0.85	2.10	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	6.90
0.9	2.40	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.42	8.42
0.95	2.70	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.05	10.05
1	3.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.77	11.77

POC 1

SWMM Model Flow Coefficient Calculation

Basin A

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	17252	ft^2
Bioretention Surface Area	A_S, A_G	16410	ft^2
	A_S, A_G	0.3767	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	1.181	in/hr
Effective Ponding Depth	PD_{eff}	6.15	in
Flow Coefficient	C	0.1996	--

Basin B

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	18667	ft^2

Basin B

PARAMETER	ABBREV.	Bio-Retention Cell	
Bioretention Surface Area	A_S, A_G	17816	ft^2
	A_S, A_G	0.4090	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	1.088	in/hr
Effective Ponding Depth	PD_{eff}	6.14	in
Flow Coefficient	C	0.1838	--

Basin C

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	15865	ft^2
Bioretention Surface Area	A_S, A_G	15046	ft^2
	A_S, A_G	0.3454	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	1.288	in/hr
Effective Ponding Depth	PD_{eff}	6.16	in
Flow Coefficient	C	0.2177	--

Basin D

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	3	in
Drain (Flow) exponent	n	0.5	--

Basin D

PARAMETER	ABBREV.	Bio-Retention Cell	
Flow Rate (volumetric)	Q	0.401	cfs
Ponding Depth Surface Area	A_{PD}	15544	ft^2
Bioretention Surface Area	A_S, A_G	14725	ft^2
	A_S, A_G	0.3380	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	2.939	in/hr
Effective Ponding Depth	PD_{eff}	6.17	in
Flow Coefficient	C	0.5004	--

POC 2

SWMM Model Flow Coefficient Calculation

Basin E

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	4	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.707	cfs
Ponding Depth Surface Area	A_{PD}	26943	ft^2
Bioretention Surface Area	A_S, A_G	25000	ft^2
	A_S, A_G	0.5739	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	3.055	in/hr
Effective Ponding Depth	PD_{eff}	6.23	in
Flow Coefficient	C	0.5240	--

Basin F

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	9196	ft^2

Basin F

PARAMETER	ABBREV.	Bio-Retention Cell	
Bioretention Surface Area	A_S, A_G	8600	ft^2
	A_S, A_G	0.1974	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	2.253	in/hr
Effective Ponding Depth	PD_{eff}	6.21	in
Flow Coefficient	C	0.3808	--

Basin G

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	4	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.707	cfs
Ponding Depth Surface Area	A_{PD}	7458	ft^2
Bioretention Surface Area	A_S, A_G	6920	ft^2
	A_S, A_G	0.1589	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	11.038	in/hr
Effective Ponding Depth	PD_{eff}	6.23	in
Flow Coefficient	C	1.8931	--

Basin H

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--

Basin H

PARAMETER	ABBREV.	Bio-Retention Cell	
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	34958	ft^2
Bioretention Surface Area	A_S, A_G	33584	ft^2
	A_S, A_G	0.7710	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	0.577	in/hr
Effective Ponding Depth	PD_{eff}	6.12	in
Flow Coefficient	C	0.0975	--

Basin I

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	4	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.707	cfs
Ponding Depth Surface Area	A_{PD}	12058	ft^2
Bioretention Surface Area	A_S, A_G	11322	ft^2
	A_S, A_G	0.2599	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	6.747	in/hr
Effective Ponding Depth	PD_{eff}	6.20	in
Flow Coefficient	C	1.1570	--

Basin J

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft

Basin J

PARAMETER	ABBREV.	Bio-Retention Cell	
TOTAL		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	1	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.045	cfs
Ponding Depth Surface Area	A_{PD}	32738	ft^2
Bioretention Surface Area	A_S, A_G	31668	ft^2
	A_S, A_G	0.7270	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	0.154	in/hr
Effective Ponding Depth	PD_{eff}	6.10	in
Flow Coefficient	C	0.0259	--

Basin K

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	1	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.045	cfs
Ponding Depth Surface Area	A_{PD}	8383	ft^2
Bioretention Surface Area	A_S, A_G	7672	ft^2
	A_S, A_G	0.1761	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	0.636	in/hr
Effective Ponding Depth	PD_{eff}	6.28	in
Flow Coefficient	C	0.1067	--

POC 3

SWMM Model Flow Coefficient Calculation

Basin O-L

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	3	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.401	cfs
Ponding Depth Surface Area	A_{PD}	2380	ft^2
Bioretention Surface Area	A_S, A_G	2089	ft^2
	A_S, A_G	0.0480	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	20.719	in/hr
Effective Ponding Depth	PD_{eff}	6.42	in
Flow Coefficient	C	3.5274	--

POC 4

SWMM Model Flow Coefficient Calculation

Basin O-M

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	5861	ft^2
Bioretention Surface Area	A_S, A_G	5345	ft^2
	A_S, A_G	0.1227	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	3.625	in/hr
Effective Ponding Depth	PD_{eff}	6.29	in
Flow Coefficient	C	0.6127	--

Basin O-N

PARAMETER	ABBREV.	Bio-Retention Cell	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	18	in
Gravel Layer	G	12	in
TOTAL		3.0	ft
		36	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	2	in
Drain (Flow) exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.179	cfs
Ponding Depth Surface Area	A_{PD}	5211	ft^2
Bioretention Surface Area	A_S, A_G	4766	ft^2
	A_S, A_G	0.1094	ac
Porosity of Bioretention Soil	n	0.40	-
Flow Rate (per unit area)	q	4.065	in/hr
Effective Ponding Depth	PD_{eff}	6.28	in
Flow Coefficient	C	0.6872	--

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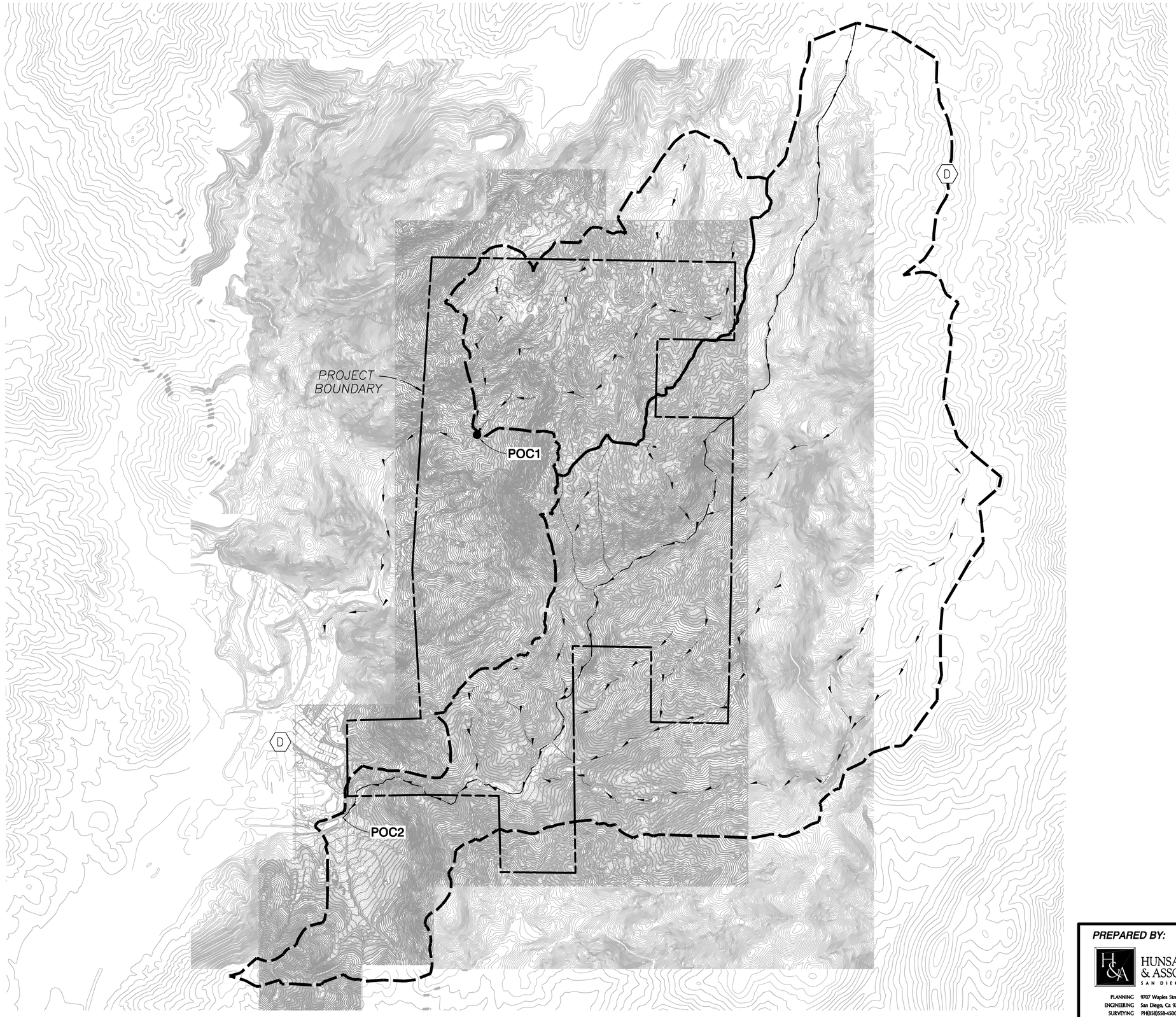
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

- ☒Underlying hydrologic soil group
- ☒Approximate depth to groundwater
- ☐Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☒Critical coarse sediment yield areas to be protected
- ☒Existing topography
- ☒Existing and proposed site drainage network and connections to drainage offsite
- ☒Proposed grading
- ☒Proposed impervious features
- ☒Proposed design features and surface treatments used to minimize imperviousness
- ☒Point(s) of Compliance (POC) for Hydromodification Management
- ☒Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☒Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)



LEGEND

PROJECT BOUNDARY

DRAINAGE BOUNDARY

DIRECTION OF FLOW

0 800 1600 2400

SCALE 1" = 800'

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 · FX(858)558-1414

ATTACHMENT 2B
EXISTING HMP EXHIBIT
FOR
SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 1 OF 3

W.O. 2374-0017

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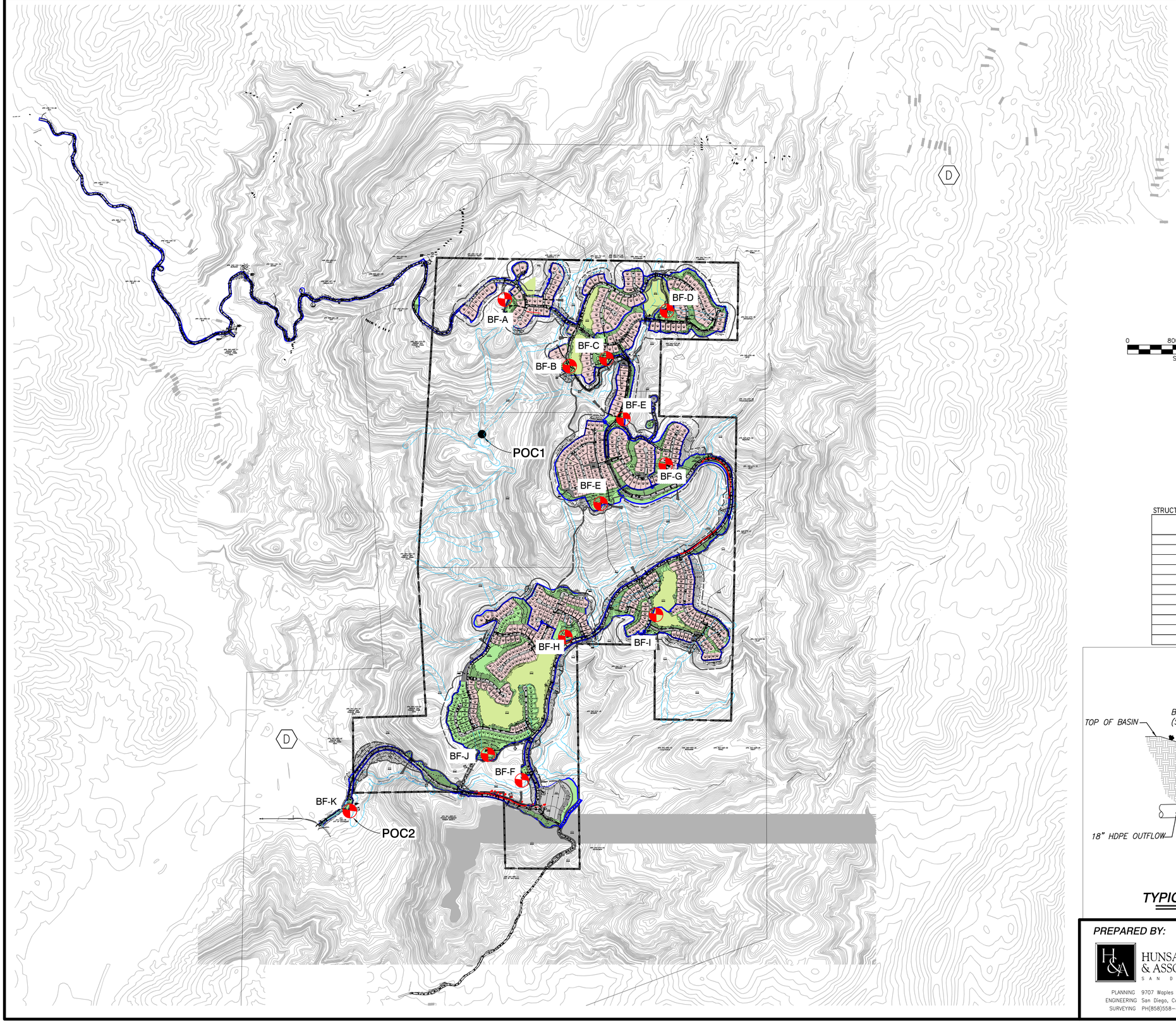


LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- DRAINAGE BOUNDARY
- DIRECTION OF FLOW
- PERVIOUS AREAS
- SELF TREATING AREAS
- STREETS
- LOT (50% IMPERVIOUS)
- PERVIOUS PAVERS
- HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

- BIOFILTRATION BASIN
- USACE US WATERS 50' BUFFER

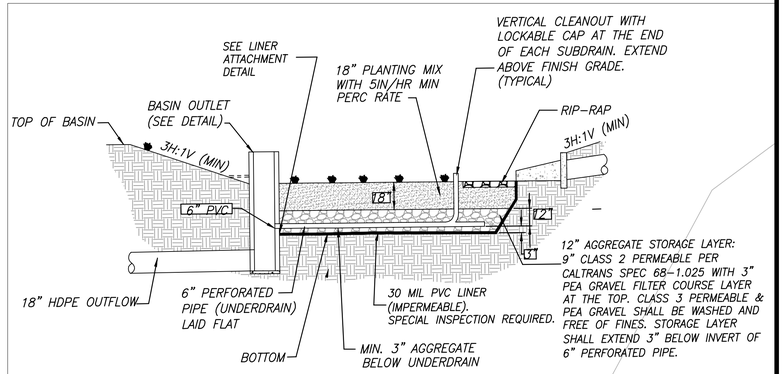
NOTES

NO GROUNDWATER FOUND ONSITE

0 800 1600 2400
SCALE 1" = 800'

STRUCTURAL BMPS

DMA	DMA TYPE	BMP	BMP ID	REQUIRED FOOTPRINT (SQFT)	PROVIDED FOOTPRINT (SQFT)
A	DRAINS TO BMP	BIOFILTRATION	BF-A	14315	15077
B	DRAINS TO BMP	BIOFILTRATION	BF-B	13345	13427
C	DRAINS TO BMP	BIOFILTRATION	BF-C	13969	15583
D	DRAINS TO BMP	BIOFILTRATION	BF-D	12282	12605
E	DRAINS TO BMP	BIOFILTRATION	BF-E	23597	23619
G	DRAINS TO BMP	BIOFILTRATION	BF-G	5413	5771
H	DRAINS TO BMP	BIOFILTRATION	BF-H	33377	33461
I	DRAINS TO BMP	BIOFILTRATION	BF-I	9486	9533
J	DRAINS TO BMP	BIOFILTRATION	BF-J	30865	30909
F	DRAINS TO BMP	BIOFILTRATION	BF-F	7934	8070
K	DRAINS TO BMP	BIOFILTRATION	BF-K	6700	7567



TYPICAL BIOFILTRATION BASIN DETAIL (PVT)* (ALL BASINS)

NOT TO SCALE

PREPARED BY:

HUNSAKER & ASSOCIATES
SAN DIEGO, IN
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-[illegible]414

ATTACHMENT 2B
PROPOSED HMP EXHIBIT FOR
SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 2 OF 3

W.O. 2374-0017

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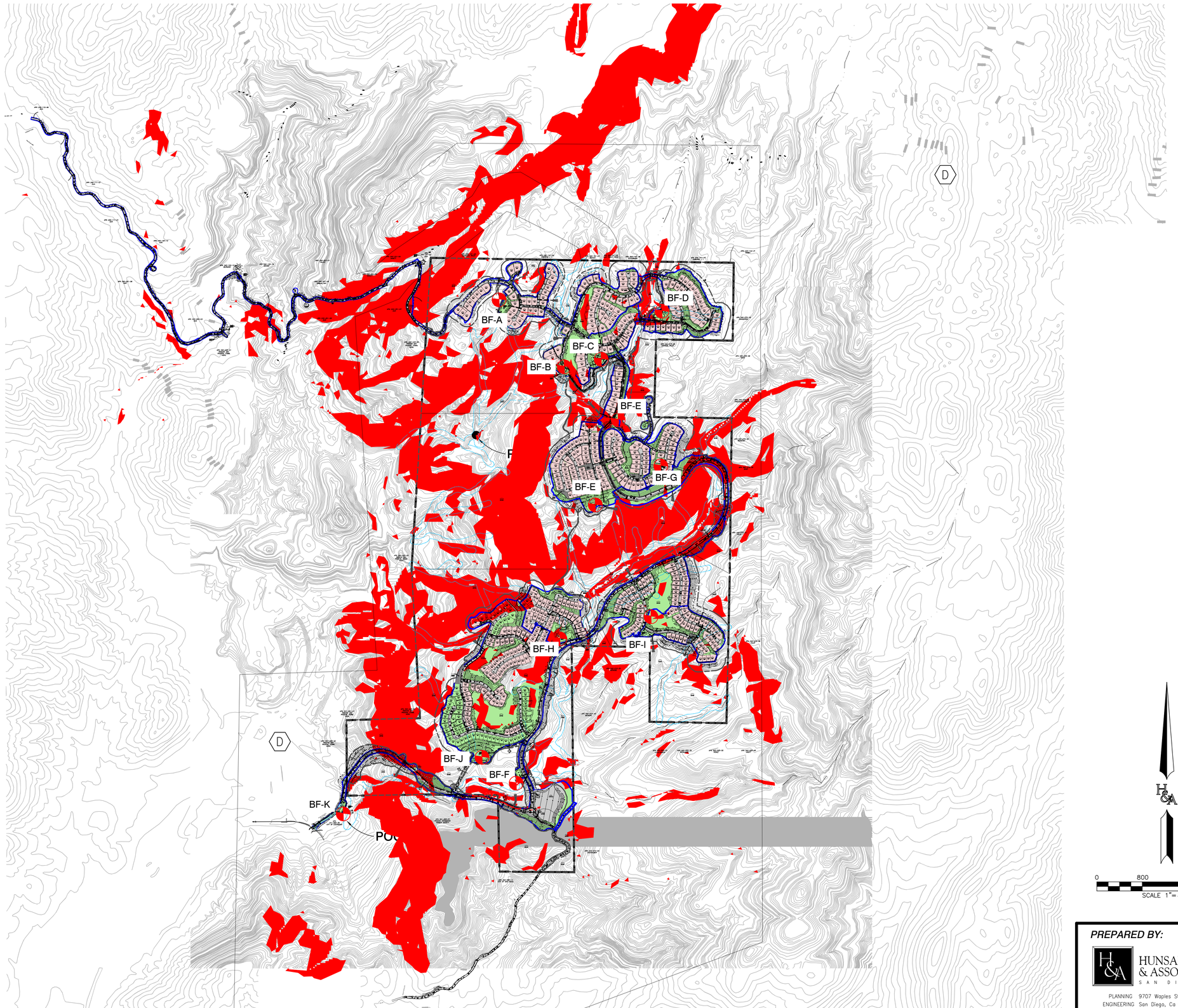

LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- DRAINAGE BOUNDARY
- DIRECTION OF FLOW
- PERVIOUS AREAS
- SELF TREATING AREAS
- STREETS
- LOT (50% IMPERVIOUS)
- PERVIOUS PAVERS
- POTENTIAL CCSYA
- HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

- BIOFILTRATION BASIN
- USACE US WATERS 50' BUFFER

NOTES

NO GROUNDWATER FOUND ONSITE

0 800 1600 2400

SCALE 1"=800'

PREPARED BY:

HUNSAKER & ASSOCIATES
SAN DIEGO, IN
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-[illegible]414

ATTACHMENT 2B
PROPOSED HMP EXHIBIT
W/ WMAA MAPPING
SAFARI HIGHLANDS

CITY OF ESCONDIDO, CA

SHEET 3 OF 3

W.O. 2374-0017

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POC5

POC4

POC3

LEGEND

PROJECT BOUNDARY

DRAINAGE BOUNDARY

DIRECTION OF FLOW

0 700 1400 2100

SCALE 1" = 700'

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC.

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 · FX(858)558-1414

ATTACHMENT 2B
EXISTING HMP EXHIBIT
FOR
OFFSITE ACCESS ROAD

CITY OF ESCONDIDO, CA

SHEET 1 OF 2

W.O. 2374-0017

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DMA O-S
DMA O-R
DMA O-Q
DMA O-P
DMA O-O
DMA O-M
DMA O-L
DMA O-N
POC5
POC4
POC3
D
SEE ONSITE EXHIBIT FOR PROPOSED HMP

LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- DRAINAGE BOUNDARY
- DIRECTION OF FLOW
- PERVIOUS AREAS
- STREETS
- LOT (50% IMPERVIOUS)
- HYDROLOGIC SOIL TYPE (D)

STRUCTURAL BMPS

- BIOFILTRATION BASIN
- USACE US WATERS 50' BUFFER

NOTES

- NO GROUNDWATER FOUND ONSITE

0 800 1600 2400
SCALE 1" = 800'

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING ENGINEERING SURVEYING
9707 Waples Street
San Diego, Ca 92121
PH(858)558-4500 FX(858)558-1414

ATTACHMENT 2B
PROPOSED HMP EXHIBIT FOR
OFFSITE ACCESS ROAD
CITY OF ESCONDIDO, CA

W.O. 2374-0017

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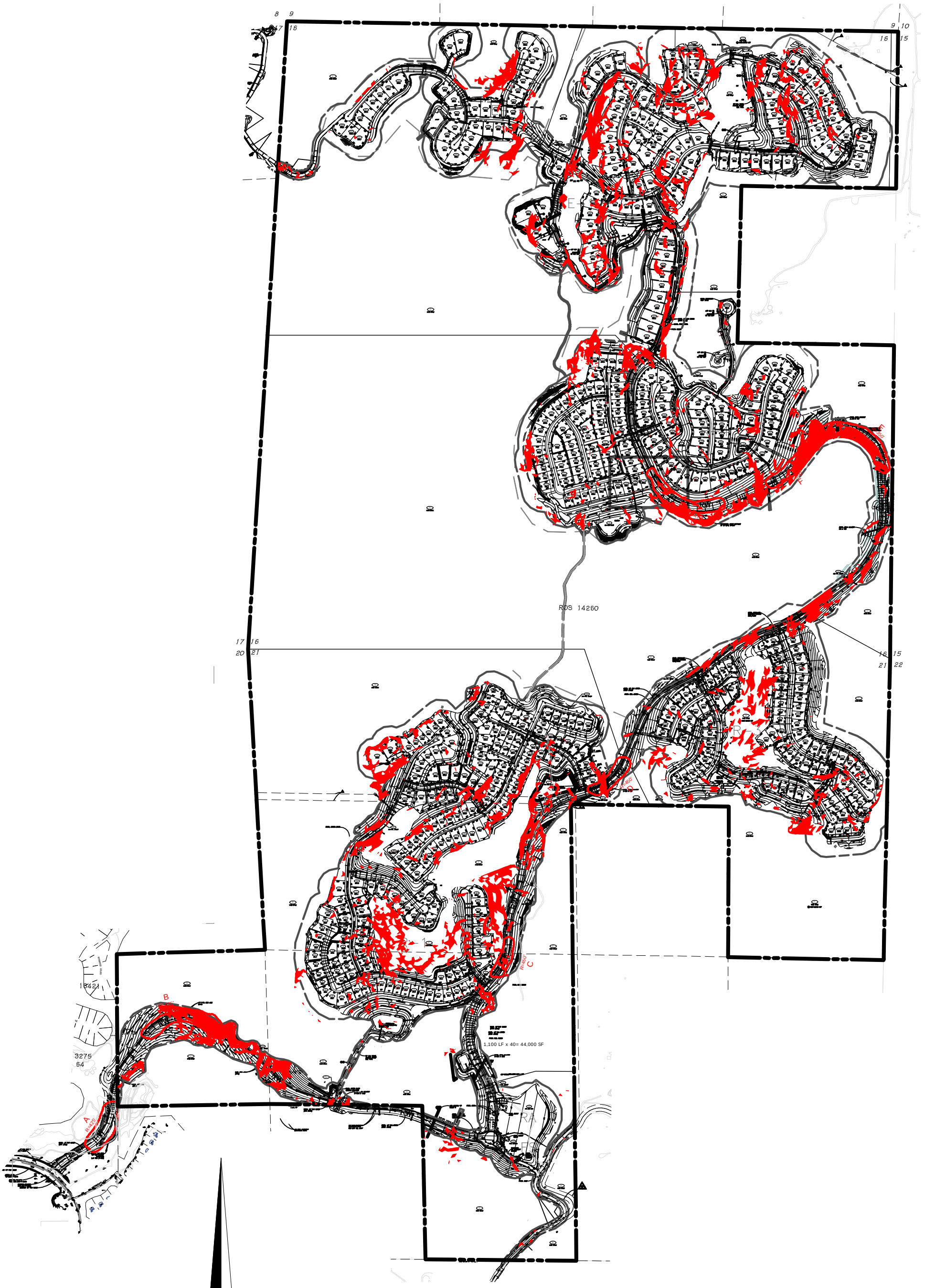

LEGEND

CRITICAL COARSE SEDIMENT YIELD AREAS(GLUs) WITHIN GRADING LIMITS
46 AC

PREPARED BY:

HUNSAKER & ASSOCIATES
SAN DIEGO, INC
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

ATTACHMENT 2C
GLU ANALYSIS MAP
SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

W.O. 2374-0017

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ATTACHMENT 3

Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Plan (Required)	☒Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Storm Water Control Facilities Maintenance Agreement (SWCFMA) (when applicable)	☐Included ☒Not Applicable

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PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Attachment 3a must identify:

- ☒ Specific maintenance indicators and actions for proposed structural BMP(s). This must be based on Section 7.7 of the Storm Water Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☒ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☒ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☒ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For all Structural BMPs, Attachment 3b must include a draft maintenance agreement in the City's standard format depending on the Category (PDP applicant to contact City staff to obtain the current maintenance agreement forms). Refer to Section 7.3 in the Storm Water Design Manual for a description of the different categories.

Attachment 3a: Structural BMP Maintenance Plan

Maintenance Program for Biofiltration Basins	
BMP Access: Access Road/Roadway	
Inspection Frequency/Indications:	Regular Inspections q Before wet season begins (September); q Every 60 days during wet season (September-April); q After wet season (April). Performance Inspections q After rainfall events greater than 0.5 inch
Maintenance Indications Connections	**Maintenance Activities Connections**
q Damage to inlet/outlet, sideslopes, headwall, or other structures	q Repair inlet/outlet structures, side slopes, fences, or other structural elements as needed to maintain performance of the facility.
q Over-grown vegetation, emergent woody vegetation and/or weeds	q Trim vegetation to average height of 12 inches and remove trimmings. q Remove emergent trees and other vegetation that are not part of bioretention basin plan and weeds q Re-seed and re-plan barren areas prior to rainy season q Install erosion blanket on barren spots if re-vegetation is not successful
q Sediment accumulation over 3 inches	q Remove sediment accumulation at or near plant height
q Accumulation of sediment, litter, or debris in infiltration basin, pretreatment device, or on permeable pavement surface	q Remove and properly dispose of accumulated materials
q Poor vegetation establishment	q Re-seed, re-plant, or re-establish vegetation per original plans
q Overgrown vegetation	q Mow or trim as appropriate, but not less than design height of the vegetation per original plans when applicable
q Erosion due to concentrated irrigation flow	q Repair/re-seed/re-plant eroded areas and adjust the irrigation system
q Irrigation due to concentrated storm water runoff flow	q Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
q Standing water in vegetated swales	q Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, loosening or replacing top soil to allow for better infiltration, or minor re-grading for proper drainage. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
q Standing water in bioretention, biofiltration with partial retention, or biofiltration areas, or flow-through planter boxes for longer than 96 hours following a storm event*	q Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.
q Obstructed inlet or outlet structure	q Clear obstructions
q Damage to structural components such as weirs, inlet or outlet strucuture	q Repair or replace as applicable
Recommended Equipment	All BMP maintenance is recommended to be accomplished using hand tools (IE. shovel, rake, whellbarrow, etc.) to avoid disturbance and compaction of the biofiltration basin

Attachment 3a: Structural BMP Maintenance Plan

Waste Disposal	Sediment, other pollutants, and all other waste shall be properly disposed of in a licensed landfill or by another appropriate disposal method in accordance with local, state, and federal regulations.

Maintenance Program for Inlet Stenciling	
BMP Access: Street	
Inspection Frequency/Indications:	Regular Maintenance Inspections q Before wet season begins (September); q After wet season (April).
Maintenance Indications	**Maintenance Activities**
q Inlet stenciling/signage begins to weather or fade	q Re-stamp signage
q Broken or damaged structure	q Repair or replace signage structure

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ATTACHMENT 4

City of Escondido PDP Structural BMP Verification for Permitted Land Development Projects

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City of Escondido Storm Water Structural BMP Verification Form Page 1 of 4	
Project Summary Information	
Project Name	Safari Highlands Ranch
Record ID (e.g., grading/improvement plan number)	SUB15-0019
Project Address	W Zoo Rd. San Diego, CA
Assessor's Parcel Number(s) (APN(s))	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	905.32 San Dieguito HU, San Pasqual HA, Las Lomas Muertas HSA
Maintenance Notification / Agreement No.	
Responsible Party for Construction Phase	
Developer's Name	Hunsaker & Associates – San Diego, INC.
Address	9707 Waples St. San Diego, CA 92121
Email Address	RMartin@HunsakerSD.com
Phone Number	858-558-4500
Engineer of Work	Raymond L. Martin
Engineer's Phone Number	858-558-4500
Responsible Party for Ongoing Maintenance	
Owner's Name(s)*	Safari Highlands Ranch, LLC
Address	380 Stevens Ave, Suite 307 Solana Beach, CA 92075
Email Address	
Phone Number	
*Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.	

City of Escondido Storm Water Structural BMP Verification Form Page 2 of 4				
Stormwater Structural Pollutant Control & Hydromodification Control BMPs* (List all from SWQMP)				
Description/Type of Structural BMP	**Plan Sheet #**	**Structural BMP ID#**	**Maintenance Agreement Recorded Doc #**	**Revisions**
Biofiltration		BF-A		
Biofiltration		BF-B		
Biofiltration		BF-C		
Biofiltration		BF-D		
Biofiltration		BF-K		
Biofiltration		BF-F		
Biofiltration		BF-E		
Biofiltration		BF-G		
Biofiltration		BF-H		
Biofiltration		BF-I		
Biofiltration		BF-J		
Biofiltration		BF-O-L		
Biofiltration		BF-O-M		
Biofiltration		BF-O-N		
Biofiltration		BF-O-O		
Biofiltration		BF-O-P		
Biofiltration		BF-O-Q		
Biofiltration		BF-O-R		
Biofiltration		BF-O-S		
*All Priority Development Projects (PDPs) require a Structural BMP				

Note: If this is a partial verification of Structural BMPs, provide a list and map denoting Structural BMPs that have already been submitted, those for this submission, and those anticipated in future submissions.

City of Escondido Storm Structural BMP Verification Form Page 3 of 4

Checklist for Engineer of Work (EOW) to submit to Field Engineering:

- ☐ Copy of the final accepted SWQMP and any accepted addendum.
- ☐ Copy of the most current plan showing the Storm Water Structural BMP Table, plans/cross-section sheets of the Structural BMPs and the location of each verified as-built Structural BMP.
- ☐ Photograph of each Structural BMP.
- ☐ Photograph(s) of each Structural BMP during the construction process to illustrate proper construction.
- ☐ Copy of the approved Structural BMP maintenance agreement and associated security

By signing below, I certify that the Structural BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the City reserves the right to inspect the above BMPs to verify compliance with the approved plans and Storm Water Ordinance. Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date: _____

[SEAL]

City of Escondido Storm Water Structural BMP Verification Form Page 4 of 4

CITY - OFFICIAL USE ONLY:

Permit #:_____

City Inspector: _____

Date Project has/expects to close: _____

Date verification received from Engineer of Work (EOW): _____

By signing below, City Inspector concurs that every noted Structural BMP has been installed per plan.

City Inspector's Signature: _____ Date: _____

FOR Environmental Programs:

Date Received from Field Engineering:_____

Environmental Programs Submittal Reviewer:_____

Environmental Programs Reviewer concurs that the information provided for the following Structural BMPs is acceptable to enter into the Structural BMP Maintenance verification inventory:

List **acceptable** Structural BMPs:

Environmental Programs Reviewer's Signature: _____

Date: _____

ATTACHMENT 5

Copy of Plan Sheets Showing Permanent Storm Water BMPs, Source Control, and Site Design

This is the cover sheet for Attachment 5.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

☐Structural BMP(s) with ID numbers matching Step 6 Summary of PDP Structural BMPs
☐The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
☐Details and specifications for construction of structural BMP(s)
☐Signage indicating the location and boundary of structural BMP(s) as required by City staff
☐How to access the structural BMP(s) to inspect and perform maintenance
☐Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☐Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
☐Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☐Recommended equipment to perform maintenance
☐When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
☐Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
☐All BMPs must be fully dimensioned on the plans
☐When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number must be provided. Photocopies of general brochures are not acceptable.
☐Include all source control and site design measures described in Steps 4 and 5 of the SWQMP. Can be included as a separate exhibit as necessary.

TENTATIVE SUBDIVISION MAP SUB15-0019

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

EXISTING EASEMENT NOTES

ENCUMBRANCES: SOUTH PR

THE FOLLOWING IS A LIST OF EXCEPTIONS PER A A PRELIMINARY REPORT PREPARED BY CHICAGO TITLE COMPANY AS ORDER NO. 12201181-996-U50 DATED DECEMBER 6, 2012.

THE FOLLOWING ITEMS AFFECT PARCELS 2 & 2A (242-010-02)

17 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: ARTHUR SANSONE AND RAYDA JO SANSONE, HUSBAND AND WIFE
PURPOSE: ROAD AND PUBLIC UTILITY PURPOSES
RECORDED: JULY 17, 1975 AS INSTRUMENT NO. 75-184900 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

18 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: STUART H. REED AND MARY LOU REED, HUSBAND AND WIFE AS JOINT TENANTS
PURPOSE: ROAD AND PUBLIC UTILITY PURPOSES
RECORDED: FEBRUARY 27, 1984 AS INSTRUMENT NO. 84-069560 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

19 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: STANLEY A. YALOF AND GLORIA YALOF, HUSBAND AND WIFE, AS JOINT TENANTS
PURPOSE: ROAD AND PUBLIC UTILITY PURPOSES
RECORDED: AUGUST 22, 1985 AS INSTRUMENT NO. 85-0304855 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

20 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: JAMES HOWERZYL AND JEANETTE HOWERZYL, HUSBAND AND WIFE AND STEPHEN J. HOWERZYL AND RONDA HOWERZYL, HUSBAND AND WIFE, AS JOINT TENANTS
PURPOSE: ROAD AND PUBLIC UTILITY PURPOSES
RECORDED: AUGUST 27, 1985 AS INSTRUMENT NO. 85-311000 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

23 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: SAN DIEGO TRUST & SAVINGS BANK, AS TRUSTEE FOR CARL AND DOROTHY BOSSARD TRUST NO. 1-4088-00-8, AND SAN DIEGO TRUST & SAVINGS BANK, SUCCESSOR TRUSTEE UNDER DECLARATION OF TRUST DATED APRIL 16, 1975 AND CAROL DAWN BONTRAGER, TRUSTEE OF THE CAROL DAWN BONTRAGER TRUST, DATED AUGUST 9, 1983
PURPOSE: ROAD AND PUBLIC UTILITY PURPOSES
RECORDED: DECEMBER 1, 1987 AS INSTRUMENT NO. 87-0663622 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

THE FOLLOWING ITEMS AFFECT PARCELS 3, 3A, 3C, 4, 4A ?4C (242-010-36 & 37)

34 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: SAN DIEGO TRUST & SAVINGS BANK AS TRUSTEE FOR CARL AND DOROTHY BOSSARD TRUST NO. 1-4088-00-8
PURPOSE: ROAD AND UTILITY PURPOSES
RECORDED: DECEMBER 6, 1978 AS INSTRUMENT NO. 78-0524806 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED

35 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO: SAN DIEGO TRUST & SAVINGS BANK AS TRUSTEE FOR TRUST NO. 1-4088-00-8
PURPOSE: PURPOSES NOT SET FORTH IN SAID DOCUMENT
RECORDED: FEBRUARY 16, 1978 AS INSTRUMENT NO. 78-063970 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED

38 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS RESERVED IN A DOCUMENT.

PURPOSE: ROAD AND UTILITY PURPOSES
RECORDED: DECEMBER 17, 1987 AS INSTRUMENT NO. 87-0692205 OF OFFICIAL RECORDS
AFFECTS: THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED AND RELOCATED TO PERMANENT LOCATION OF ZOO ROAD

THE FOLLOWING ITEMS AFFECT PARCEL 5 (242-010-38)

THE FOLLOWING ITEMS AFFECT ALL PARCELS (INTEREST OF GENERAL PARTNER)

ENCUMBRANCES: NORTH PR

THE FOLLOWING IS A LIST OF EXCEPTIONS PER A A PRELIMINARY REPORT PREPARED BY CHICAGO TITLE COMPANY AS ORDER NO. 12201469-996-U50 DATED FEBRUARY 14, 2013.

5 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

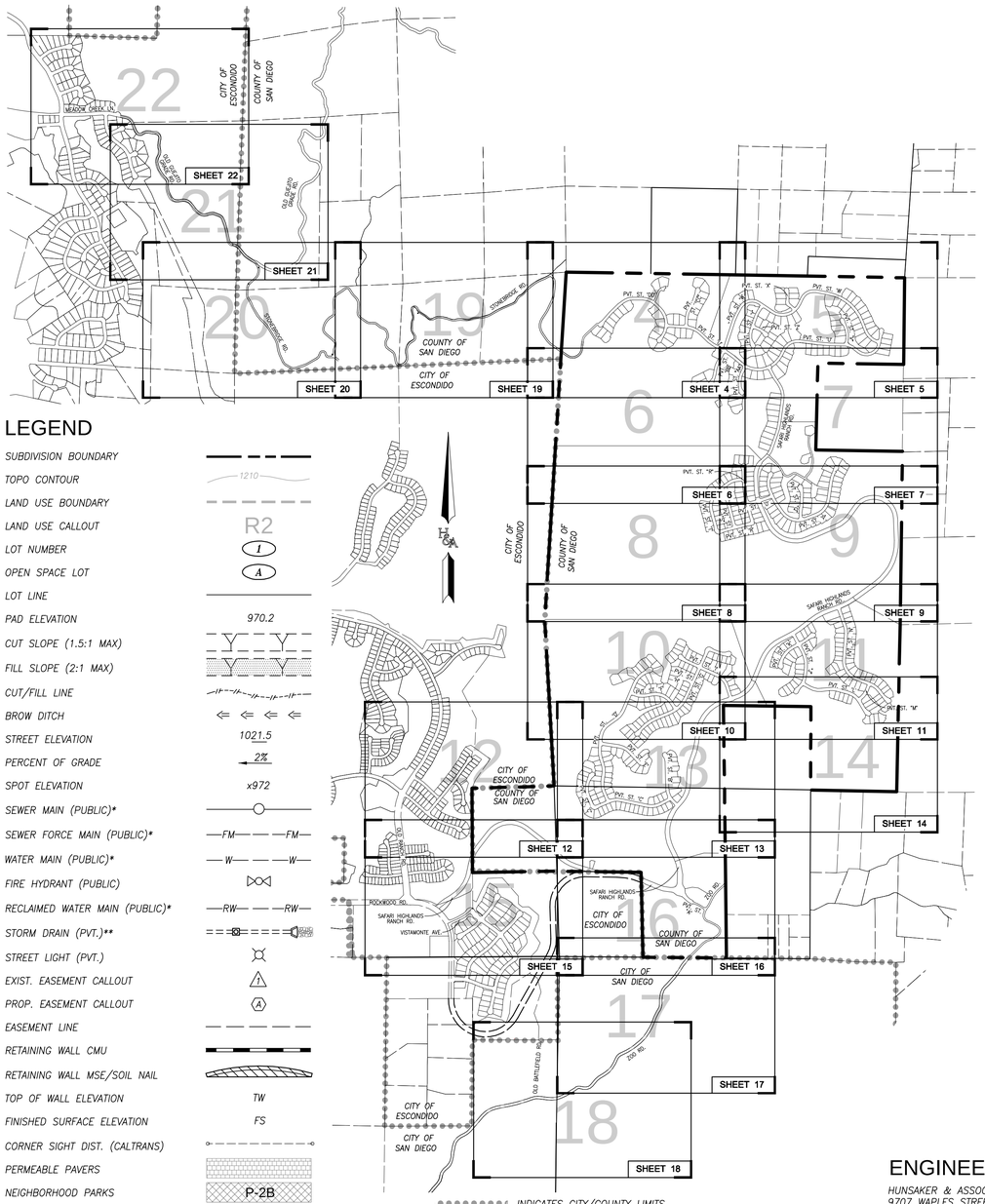
GRANTED TO:. SAN DIEGO GAS AND ELECTRIC COMPANY
PURPOSE:. PUBLIC UTILITIES, INGRESS, EGRESS
RECORDED:.SEPTEMBER 13, 1960 AS INSTRUMENT NO. 183740 OF OFFICIAL RECORDS
AFFECTS:. THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED

6 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO:. WESTMONT COLLEGE
PURPOSE:. ROAD AND UTILITY
RECORDED: DECEMBER 31, 1974 AS INSTRUMENT NO. 74-0337439 OF OFFICIAL RECORDS
AFFECTS:. THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED

7 AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

GRANTED TO:. THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY
PURPOSE:. PUBLIC UTILITIES, INGRESS, EGRESS
RECORDED:. JUNE 10, 1981 AS INSTRUMENT NO. 81-0180733 OF OFFICIAL RECORDS
AFFECTS:. THE ROUTE THEREOF AFFECTS A PORTION OF SAID LAND AND IS MORE FULLY DESCRIBED IN SAID DOCUMENT.
FUTURE DISPOSITION: EASEMENT TO BE QUITCLAIMED



LEGEND

SUBDIVISION BOUNDARY	
TOPO CONTOUR	1210
LAND USE BOUNDARY	
LAND USE CALLOUT	R2 / I / A
LOT NUMBER	
OPEN SPACE LOT	
LOT LINE	
PAD ELEVATION	970.2
CUT SLOPE (1.5:1 MAX)	
FILL SLOPE (2:1 MAX)	
CUT/FILL LINE	
BROW DITCH	
STREET ELEVATION	1021.5
PERCENT OF GRADE	2%
SPOT ELEVATION	x972
SEWER MAIN (PUBLIC)*	
SEWER FORCE MAIN (PUBLIC)*	FM
WATER MAIN (PUBLIC)*	W
FIRE HYDRANT (PUBLIC)	
RECLAIMED WATER MAIN (PUBLIC)*	RW
STORM DRAIN (PVT.)**	
STREET LIGHT (PVT.)	
EXIST. EASEMENT CALLOUT	1
PROP. EASEMENT CALLOUT	A
EASEMENT LINE	
RETAINING WALL CMU	
RETAINING WALL MSE/SOIL NAIL	
TOP OF WALL ELEVATION	TW
FINISHED SURFACE ELEVATION	FS
CORNER SIGHT DIST. (CALTRANS)	
PERMEABLE PAVERS	
NEIGHBORHOOD PARKS	P-2B
FLOW LINE WATERS OF THE US	
FLOW LINE 50' BUFFER WATERS OF THE US	

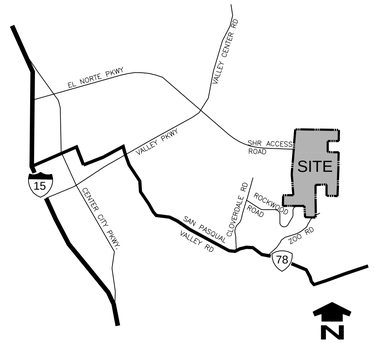
* SIZE AND MATERIAL PER PLAN
**SIZE AND MATERIAL TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS

INDICATES CITY/COUNTY LIMITS

1 INDICATES SHEET NUMBER

SHEET KEY MAP

NOT TO SCALE



VICINITY MAP

NOT TO SCALE

LEGAL DESCRIPTION

BEING PORTIONS OF SECTIONS 20 AND 21, TOGETHER WITH LOTS 1 TO 7 INCLUSIVE AND LOTS 9 TO 16 INCLUSIVE OF SECTION 16, ALL OF TOWNSHIP 12 SOUTH, RANGE 1 WEST, S.B.M. IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF.

PUBLIC UTILITIES/DISTRICTS

GAS & ELECTRIC.....SAN DIEGO GAS AND ELECTRIC 1(800)411-7343
WATER.....CITY OF ESCONDIDO (760)839-4657
SEWER.....CITY OF ESCONDIDO (760)839-4657
STORM DRAIN.....HOA MAINTAINED
FIRE.....CITY OF ESCONDIDO (760)839-5400
POLICE.....CITY OF ESCONDIDO (760)839-4722
SCHOOLS.....ESCONDIDO UNION HS DIST. (760)291-3200
SAN PASQUAL UNION SCHOOL DIST. (760)745-4931

ASSESSOR'S PARCEL / ADDRESS

APN 240-270-33 23260 OLD WAGON RD. VALLEY CENTER, CA 92082
APN 242-010-37 ZOO RD. CA 92027
APN 242-010-36 ZOO RD. CA 92027
APN 242-010-38 ZOO RD. CA 92027
APN 242-060-03 ROCKWOOD RD. SAN DIEGO, CA 92027
APN 242-010-02 ROCKWOOD RD. SAN DIEGO, CA 92027

TOPOGRAPHICAL SOURCE

1. TOPOGRAPHY SHOWN WITHIN THE PROJECT BOUNDARY AND DIRECTLY WEST WAS PROVIDED BY TOWILL INC., MAY 1991. A FIELD SURVEY BASED ON THE BENCHMARK REFERENCE WAS PERFORMED BY HUNSAKER & ASSOCIATES TO SPOT CHECK THE TOPOGRAPHY AND DATUM AS NGVD '29.
2. TOPOGRAPHY FOR OFF SITE ZOO ROAD COMPILED BY ROBERT J. LUNG AND ASSOC. DATUM NGVD '29. FLOWN ON 4-16-14
3. TOPOGRAPHY FOR OFF-SITE NORTHWEST SECONDARY EMERGENCY ACCESS COMPILED BY ROBERT J. LUNG AND ASSOC. DATUM NGVD '29. FLOWN ON 9-16-14

BENCHMARK

VERTICAL BASED ON PT 1009 FROM ROS 14236. (2" IRON PIPE WITH 2 ½" BRASS DISC STAMPED "EGCS 1992 1009" IN PAVEMENT. LOCATED 0.8+/- MILES NORTH ON ZOO DRIVE FROM INTERSECTION OF ZOO DRIVE AND SAN PASQUAL VALLEY ROAD. TB 23 F3.)
ELEV. 598.74' (NGVD '29)

EARTHWORK

CUT: 3,889,600 CY
FILL: 3,889,600 CY*
*FILL ADJUSTED FOR AFFECT OF BULKING

GENERAL NOTES

1. SUBDIVISION AREA GROSS/NET: 1,098.6 ACRES
2. TOTAL NO. LOTS: 584
   - 20 OPEN SPACE LOTS
   - 8 HOA PRIVATE STREET LOTS
   - 550 RESIDENTIAL LOTS
   - 1 FIRE STATION LOT (FS)
   - 2 WATER RESERVOIR LOTS
   - 1 SEWER LIFT STATION LOT
   - 1 WATER PUMP STATION LOT
   - 1 HOA REC. AREA (RA)
3. EXISTING/PROPOSED GENERAL PLAN: SPA-4
4. EXISTING/PROPOSED ZONING: SP (SPECIFIC PLAN)
5. GROSS DENSITY: 0.5 DU/AC (550 UNITS/1,098.6 AC)
6. ALL SITE IMPROVEMENTS SHALL CONFORM TO CITY OF ESCONDIDO DESIGN STANDARDS EXCEPTING DESIGN STANDARDS WAIVERS LISTED ON TM.
7. ALL EXIST/PROPOSED UTILITIES TO BE UNDERGROUND.
8. FINISHED GRADES ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE IN FINAL DESIGN CONSISTENT WITH THE CITY'S SUBSTANTIAL CONFORMANCE POLICY.
9. CUT SLOPES 1.5:1 MAX, FILL SLOPES 2:1 MAX.
10. ALL PROPOSED LOTS TO BE ON A SANITARY SEWER SYSTEM.
11. THERE ARE NO EXISTING STRUCTURES ON SITE.
12. THE PROJECT AREA HAS NOT BEEN MAPPED BY FEMA FOR FLOOD INSURANCE.
13. ALL PROPOSED SEWER IMPROVEMENTS ARE PUBLIC AND SHALL BE MAINTAINED BY THE CITY OF ESCONDIDO.
14. ALL PROPOSED WATER IMPROVEMENTS ARE PUBLIC AND SHALL BE MAINTAINED BY THE CITY OF ESCONDIDO.
15. ALL PROPOSED STORM DRAIN IMPROVEMENTS ARE PRIVATE AND SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
16. SOILS REPORT PREPARED BY: GEOCON
17. THIS PROJECT IS A "MULTIPLE PHASE" SUBDIVISION. IT IS THE INTENT THAT MULTIPLE FINAL MAPS MAY BE FILED PURSUANT TO SECTION 66456.1 OF THE SUBDIVISION MAP ACT. THE FINAL MAP MAY CONSIST OF ONE OR MORE MULTIPLE LOTS AS SHOWN ON THIS TENTATIVE MAP.
18. MODEL UNITS MAY BE BUILT PRIOR TO FINAL MAP RECORDATION.
19. TREES WITH A TRUNK DIAMETER OF 4" OR LARGER HAVE NOT BEEN LOCATED DUE TO SUBDIVISION SIZE.
20. STREET LIGHTS TO BE INSTALLED ON ALL PRIVATE STREETS IN ACCORDANCE WITH SUMMARY OF MINIMUM DESIGN STANDARDS IN FINAL ENGINEERING.
21. LIGHTED SAG VERTICAL CURVES PER AASHTO COMFORT LIGHTED SAG
22. MSE/SOIL NAIL WALLS WILL BE EVALUATED IN FINAL ENGINEERING TO DETERMINE WHICH WALL TYPE IS BEST SUITED TO LOCATIONS SHOWN. ON TM.

APPLICANT / OWNER

SAFARI HIGHLANDS RANCH, LLC
380 STEVENS AVENUE, SUITE 307
SOLANA BEACH, CA 92075

OWNER'S CERTIFICATE

I (WE) HEREBY CERTIFY THAT I (WE) AM (ARE) THE RECORD OWNER OF THE PROPERTY SHOWN ON THE TENTATIVE SUBDIVISION MAP AND THAT SAID MAP SHOWS ALL MY (OUR) CONTIGUOUS OWNERSHIP IN WHICH I (WE) HAVE ANY DEED OR TRUST INTEREST. I (WE) UNDERSTAND THAT MY (OUR) PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS, OR RAILROAD RIGHTS OF WAY.

JEB B. HALL, ESQ. — DATE 7/10/15

SHEET INDEX

ENGINEER OF WORK

HUNSAKER & ASSOCIATES
9707 WAPLES STREET
SAN DIEGO, CA 92121
(858) 558-4500

REGISTERED PROFESSIONAL ENGINEER — ALISA S. VIALPANDO — C 47945 — Exp. 12/31/21 — CIVIL — STATE OF CALIFORNIA

ALISA S. VIALPANDO R.C.E. 47945 EXP. 12/31/21 — DATE 2/17/2020

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

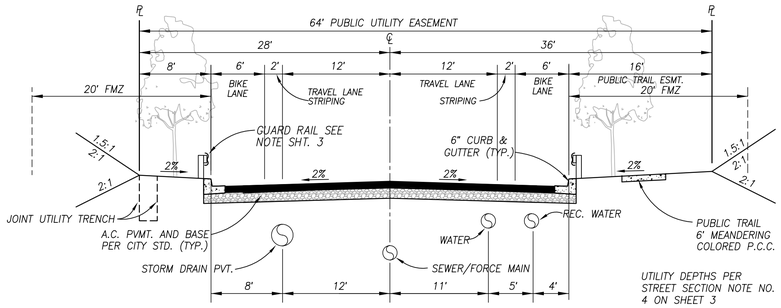
REVISION	DATE	BY
ORIGINAL	7/01/15	H&A
REVISE PER CITY COMMENTS	10/04/16	H&A
REVISE PER CITY COMMENTS	1/25/17	H&A
REVISE PER CITY COMMENTS	4/24/17	H&A
REVISE PER CITY COMMENTS	10/24/18	H&A
REVISE PER CITY COMMENTS	03/26/19	H&A
REVISE PER CITY COMMENTS	12/19/19	H&A
REVISE PER CITY COMMENTS	02/17/20	H&A

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 1 OF 45

W.O. NO: 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 01.dwg[]Feb-18-2020:09:54

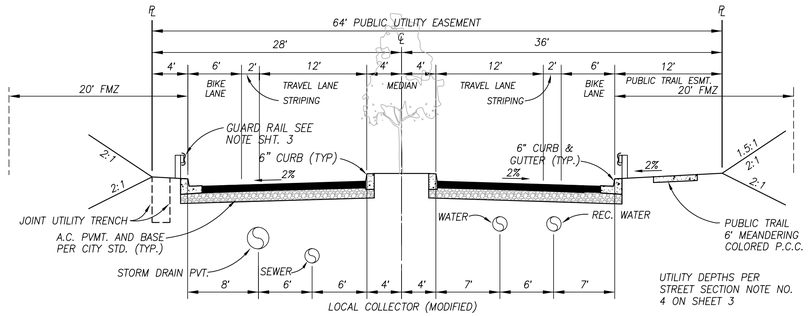


UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

LOCAL COLLECTOR (MODIFIED)

SAFARI HIGHLAND RANCH ROAD
PVT. COLLECTOR STREET

NOT TO SCALE

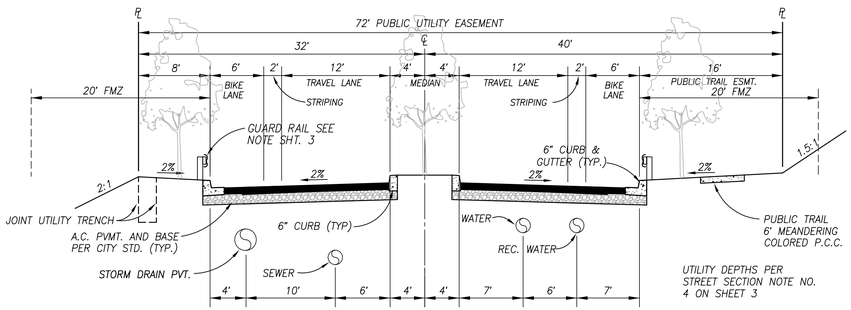


UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

LOCAL COLLECTOR (MODIFIED)

SAFARI HIGHLAND RANCH ROAD
TRAFFIC CALMING MEDIAN PVT. COLLECTOR STREET

NOT TO SCALE

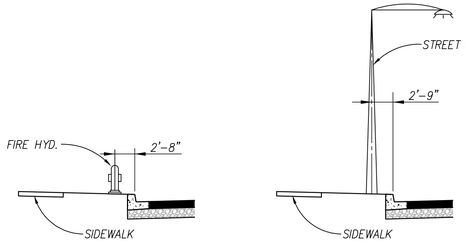


UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

LOCAL COLLECTOR (MODIFIED)

SAFARI HIGHLAND RANCH ROAD
PVT. COLLECTOR ST.-MEDIAN

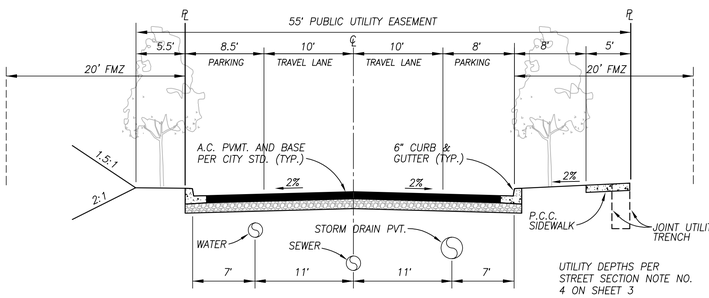
NOT TO SCALE



TYP. FIRE HYDRANT AND STREET LIGHT LOCATION

NOT TO SCALE

STREET LIGHT SPACING PER SUMMARY OF MODIFIED MINIMUM STREET DESIGN STANDARDS ON SHEET 3



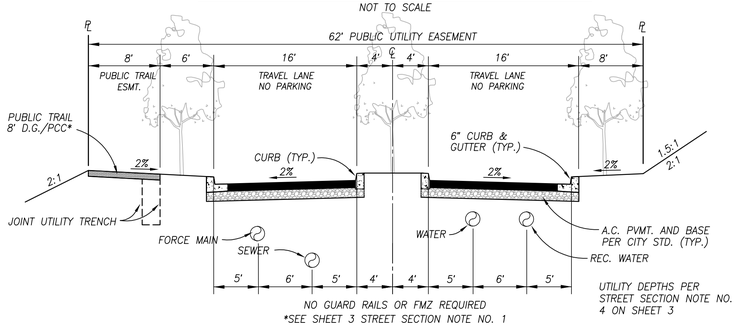
UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

RESIDENTIAL STREET PRIVATE (MODIFIED)

PVT. STREETS 'A' THRU 'T'

PVT. RESIDENTIAL STREET

NOT TO SCALE



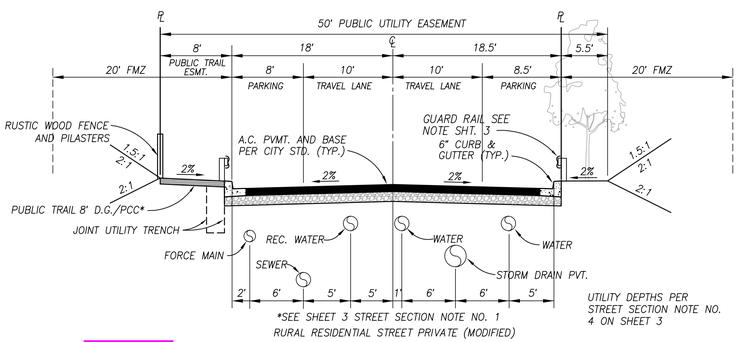
NO GUARD RAILS OR FMZ REQUIRED
*SEE SHEET 3 STREET SECTION NOTE NO. 1

UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

RURAL RESIDENTIAL STREET PRIVATE (MODIFIED)

PORT. SAFARI HIGHLANDS RANCH ROAD
PVT. ESTATE STREET - MEDIAN

NOT TO SCALE



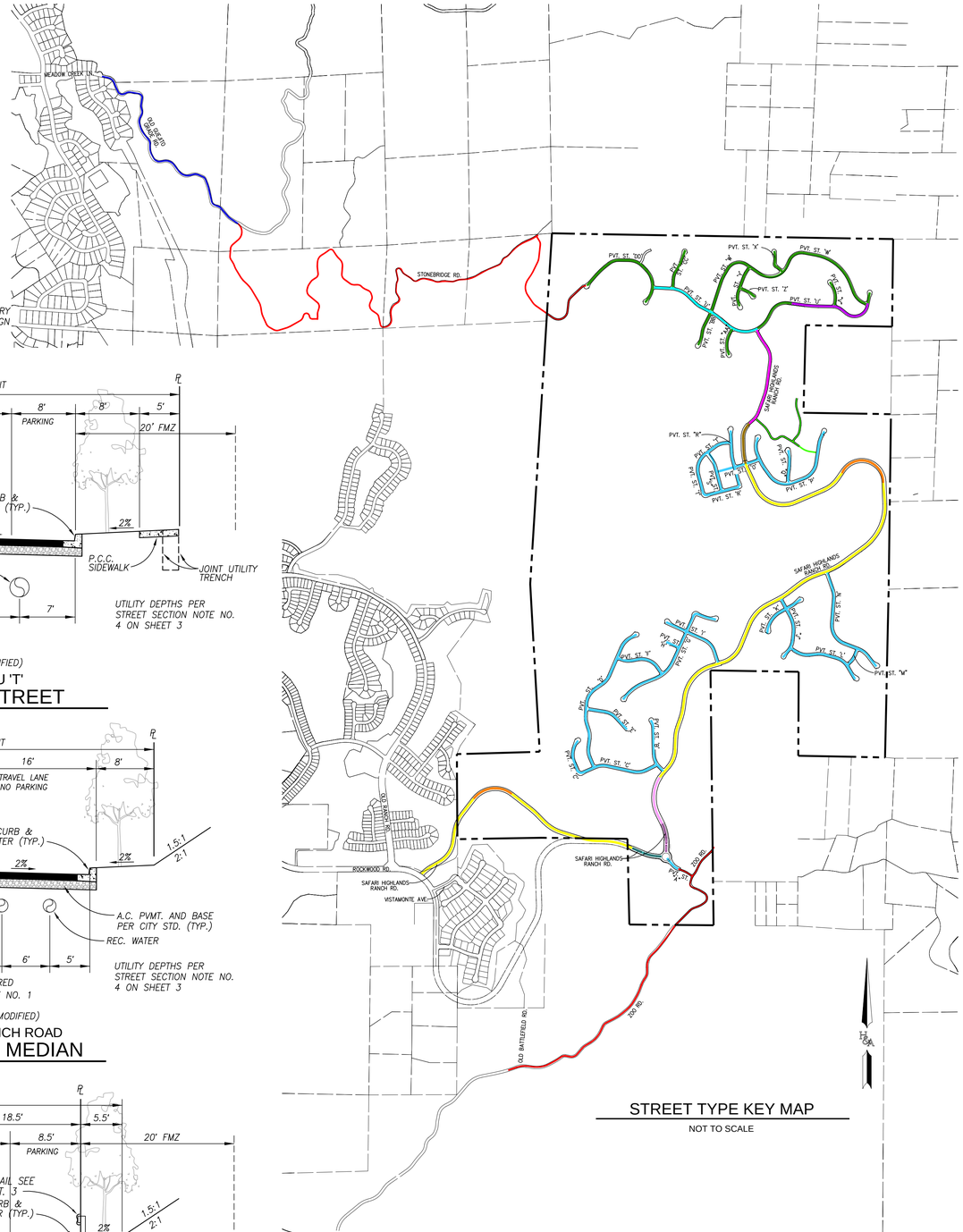
*SEE SHEET 3 STREET SECTION NOTE NO. 1

UTILITY DEPTHS PER STREET SECTION NOTE NO. 4 ON SHEET 3

RURAL RESIDENTIAL STREET PRIVATE (MODIFIED)

PORT. SAFARI HIGHLAND RANCH ROAD
PVT. ESTATE STREET

NOT TO SCALE



STREET TYPE KEY MAP

NOT TO SCALE

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

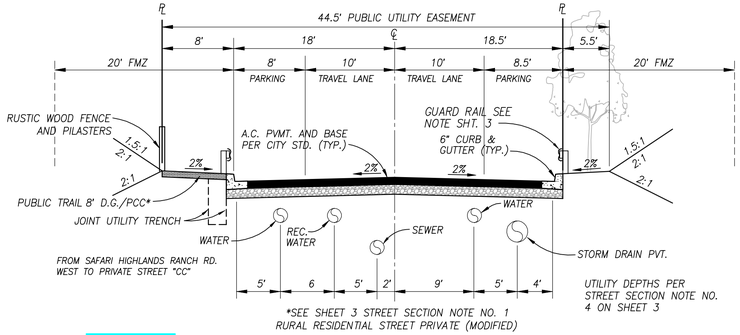
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

STREET SECTIONS
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 2 OF 45

W.O. NO. 2374-17

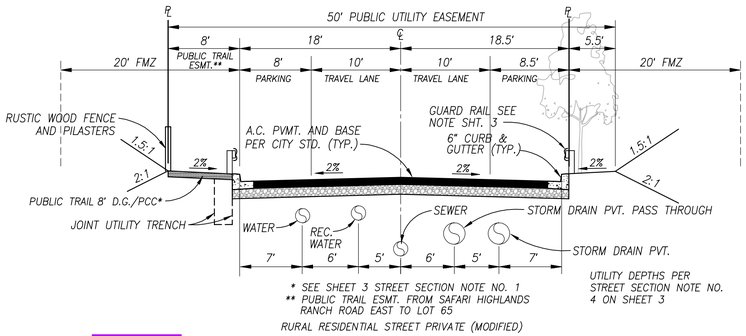
R:\1211\&Pln\TM Safari Highlands Ranch Sht 02 & 03 Sections.dwg[]Feb-17-2020:15:23



*SEE SHEET 3 STREET SECTION NOTE NO. 1
RURAL RESIDENTIAL STREET PRIVATE (MODIFIED)

PORT. OF STREET 'U' TO 'DD'
PVT. ESTATE STREET

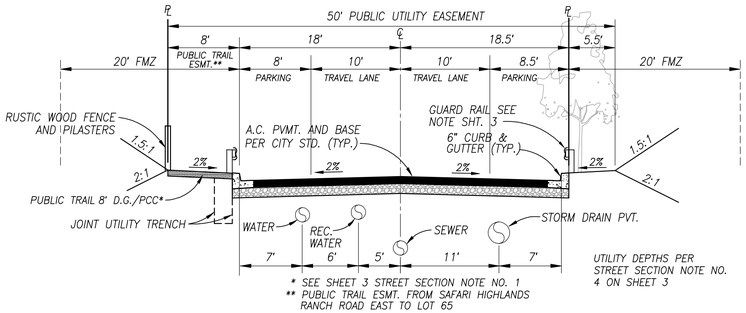
NOT TO SCALE



* SEE SHEET 3 STREET SECTION NOTE NO. 1
** PUBLIC TRAIL ESMT. FROM SAFARI HIGHLANDS RANCH ROAD EAST TO LOT 65
RURAL RESIDENTIAL STREET PRIVATE (MODIFIED)

PVT. STREETS "U"-"DD"
PVT. ESTATE STREET

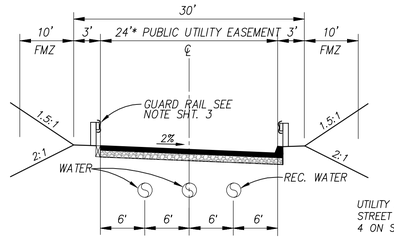
NOT TO SCALE



* SEE SHEET 3 STREET SECTION NOTE NO. 1
** PUBLIC TRAIL ESMT. FROM SAFARI HIGHLANDS RANCH ROAD EAST TO LOT 65
RURAL RESIDENTIAL STREET PRIVATE (MODIFIED)

PVT. STREETS "U"-"DD"
PVT. ESTATE STREET

NOT TO SCALE



*WHERE EASEMENTS ARE NECESSARY, THE MINIMUM WIDTH SHALL BE 20', WITH AN ALL-WEATHER ROAD SURFACE. GRADES OVER 10% SHALL BE PAVED WITH CONCRETE. EASEMENT ROADS SHALL HAVE A 25' MIN. INSIDE RADIUS, 5% MAX CROSS-SLOPE & 15% MAX GRADE.

TANK ACCESS ROAD

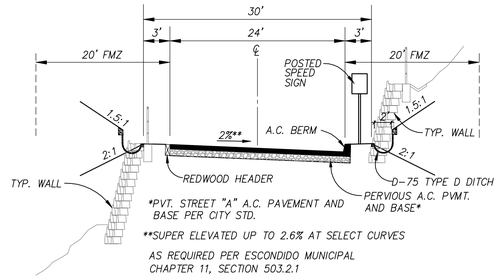
NOT TO SCALE

DEVIATION FROM STANDARD

1. PROPOSED PUBLIC WATER MAINS MAY USE HORIZONTAL CURVES AS ALLOWED PER PIPE MANUFACTURERS RECOMMENDATIONS.
2. PROPOSED PUBLIC UTILITIES MAY HAVE TREES CLOSER THAN 15' BUT NO CLOSER THAN 10' PROVIDED TREE ROOT BARRIERS ARE INSTALLED.
3. LOCAL COLLECTOR STANDARDS TO BE BASED ON AASHTO STANDARDS FOR 30 MPH DESIGN SPEED AS FOLLOWS. ROW/CURB TO CURB/PARKWAYS PER TYPICAL SECTIONS ON SHEET 2, HORIZONTAL RADIUS 350' MINIMUM, MAXIMUM GRADE 15%.
4. PRIVATE RESIDENTIAL STREET ROW/CURB TO CURB/PARKWAYS PER TYPICAL SECTIONS ON SHEET 2.
5. PRIVATE ESTATE STREETS TO BE BASED ON AASHTO STANDARDS AS FOLLOWS. HORIZONTAL RADIUS 200' MINIMUM. ROW/CURB TO CURB/PARKWAYS PER TYPICAL SECTIONS ON SHEET 2.
6. PRIVATE ACCESS EASEMENT TO BE BASED ON AASHTO STANDARDS AS FOLLOWS. DESIGN SPEED 20 MPH, HORIZONTAL RADIUS 107' MINIMUM, HORIZONTAL RADIUS 90' MINIMUM WITH 2.6% SUPER ELEVATION.
7. SIDEWALKS ONE SIDE ONLY FOR LOCAL COLLECTOR, RESIDENTIAL STREET (PRIVATE) AND RURAL RESIDENTIAL STREET (PRIVATE). LOCAL COLLECTOR 6' MEANDERING D.G. TRAIL, RESIDENTIAL STREET (PRIVATE) 5' CONCRETE SIDEWALK AND RURAL RESIDENTIAL STREET (PRIVATE) 8' D.G. TRAIL.

STREET SECTION NOTES

1. PARKWAYS WITHIN ESTATE STREETS TO BE CONSTRUCTED OF D.G. FOR GRADES UP TO 5% AND CONCRETE FOR GRADES UP TO 15%.
2. GUARD RAILS TO BE INSTALLED PER CALTRANS REQUIREMENTS AND THE REQUIREMENTS FOR AND THE LIMITS OF GUARD RAIL INSTILLATION SHALL BE DETERMINED DURING FINAL ENGINEERING TO THE SATISFACTION OF THE CITY ENGINEER.
3. FIRE HYDRANT AND STREET LIGHT LOCATIONS PER DETAIL ON SHEET 2
4. TYPICAL MINIMUM UTILITY DEPTHS FOR WATER 3 FEET COVER TO TOP OF PIPE, STORM DRAIN 4 FEET TYPICAL COVER TO TOP OF PIPE, SEWER 8 FEET TYPICAL COVER TO TOP OF PIPE. WHEN THE HORIZONTAL SEPERATION BETWEEN POTABLE AND RECYCLED WATER LINES IS LESS THAN 10', THE RECYLCED WATER LINE SHALL BE A MIN 1' BELOW THE POTABLE WATER LINE, FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
5. UTILITY SEPARATION FROM CURB SHOWN IS NOT A MINIMUM, BUT MAY VARY BASED ON CITY STANDARD PROHIBITING CURVED PIPE.

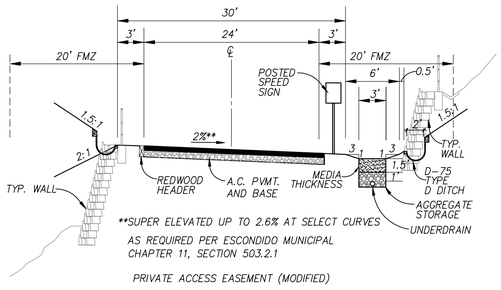


**SUPER ELEVATED UP TO 2.6% AT SELECT CURVES AS REQUIRED PER ESCONDIDO MUNICIPAL CHAPTER 11, SECTION 503.2.1

PRIVATE ACCESS EASEMENT (MODIFIED)

ZOO RD., STONEBRIDGE RD., PORTION OF PVT. ST. 'A'
EMERGENCY ACCESS RD. CONDITION A

NOT TO SCALE

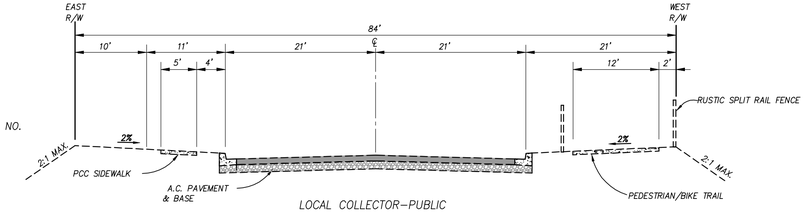


**SUPER ELEVATED UP TO 2.6% AT SELECT CURVES AS REQUIRED PER ESCONDIDO MUNICIPAL CHAPTER 11, SECTION 503.2.1

PRIVATE ACCESS EASEMENT (MODIFIED)

OLD GUEJITO RD.
EMERGENCY ACCESS RD. CONDITION B

NOT TO SCALE



LOCAL COLLECTOR-PUBLIC

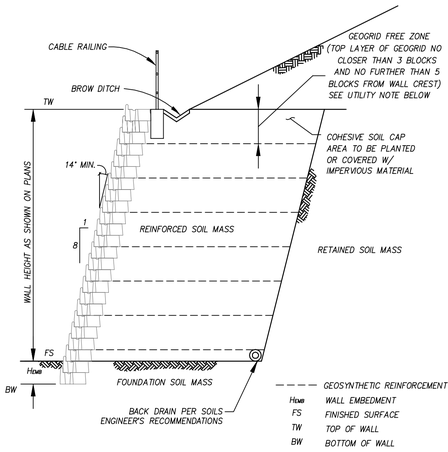
EXISTING ROCKWOOD ROAD

NOT TO SCALE

SUMMARY OF MODIFIED MINIMUM STREET DESIGN STANDARDS

DESIGN CRITERIA	LOCAL COLLECTOR (PRIVATE)	RESIDENTIAL STREET (PRIVATE)	RURAL RESIDENTIAL STREET (PRIVATE)	PRIVATE ACCESS EASEMENT
1) ESTIMATED ULTIMATE 24 HR. TRAFFIC (VOLUME)	2,000 TO 10,000	LESS THAN 2,000	LESS THAN 2,000	LESS THAN 750
2) DESIGN SPEED (MPH)	30***	25	25	20***
3) SPACING OF FOUR WAY INTERSECTIONS (FEET)	300	--	--	--
4) SPACING OF MEDIAN OPENINGS (FEET)	N/A	N/A	N/A	N/A
5) RIGHT-OF-WAY (FEET)	64-72	49.5	62-44.5	N/A
6) ACCESS TO ADJOINING PROPERTY	NO	OK	OK	OK
7) CURB TO CURB (FEET)	40 8' MEDIAN	36	32-36 8' MEDIAN-N/A	24
8) TRAFFIC INDEX	6	4	4	4
9) MIN. THICKNESS OF PAVEMENT (INCHES)	3AC/6AB	3AC/6AB*	3AC/6AB*	3AC/6AB*
10) STOPPING SIGHT DISTANCE (SUMMITS) (FEET)	250	200	200	PER AASHTO
11) HEADLIGHT DISTANCE (SAGS) (FEET)	250	200	200	PER AASHTO
12) MIN. HORIZONTAL RADIUS (FEET) FOR STANDARD CROWN	350**	300	165**	107 (90 MIN.)**
13) MIN. TANGENT BETWEEN REVERSING HORIZONTAL CURVES (FEET) (2 SEC. RECOVERY TIME)	100	90	90	NONE
14) MAXIMUM GRADE (%) A.C. P.C.C.	 12 15	 15 20	 15 20	 15 20
15) MINIMUM GRADE (%)	0.5	0.5	0.5	0.5
16) STREET LIGHTS MIN/MAX (LUMENS) SPACING**(FEET)	8600/12600 400	5600/8600 440	5600/8600 440	5600/8600 440****

* NOTE: ADD 1/2" OF AC FOR EACH 2% OF FRACTION THEREOF IN GRADE ADDED OVER 12%, UP TO 15%
** NOTE: MEETS AASHTO SEE STREET DESIGN DEVIATION REQUESTS LETTERS PREPARED BY HUNSAKER & ASSOC.
*** NOTE: REQUIRES TRAFFIC CALMING PER TRAFFIC ENGINEER LINSCOTT, LAW AND GREENSPAN
**** NOTE: REQUIRED IN SELECT LOCATIONS FOR CENTERLINES WITH RADII LESS THAN 200' PER EMERGENCY ACCESS ROAD DESIGN SPEED DEVIATION LETTER MITIGATION REPORT, LOCATIONS SHOWN ON PLAN



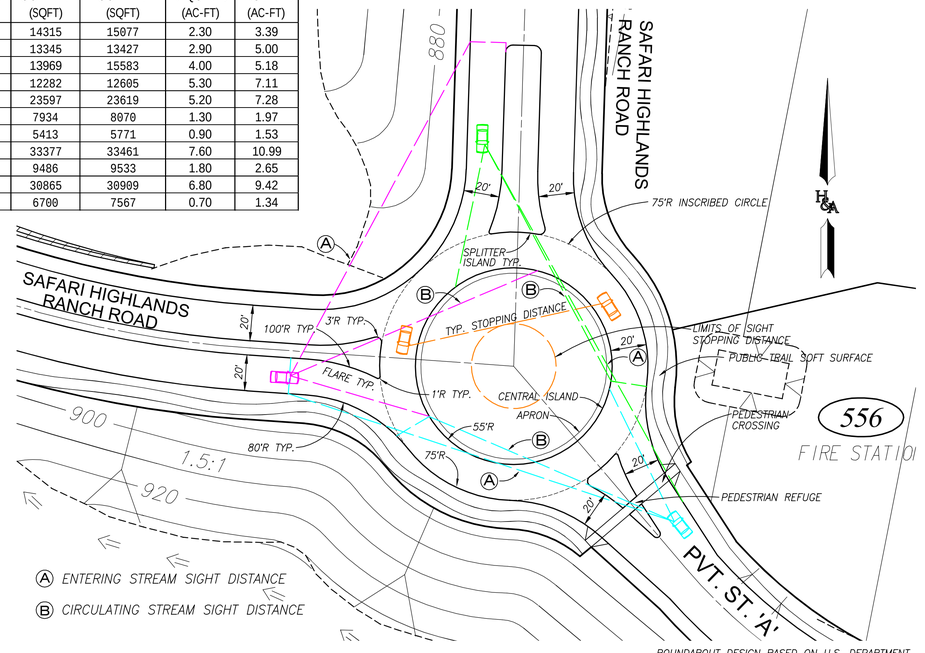
MSE WALL DETAIL

NOT TO SCALE

UTILITY NOTE: MSE/SOIL NAIL WALL DESIGN SHALL NOT EXTEND GEOSYNTHETIC REINFORCEMENT INTO TRAVELED WAY AT A DEPTH THAT MAY CONFLICT WITH PROPOSED UTILITIES (10'). ALTERNATE DESIGN MAY BE REQUIRED INCLUDING CONCRETE BACKFILL WITH SHORTER GRID LENGTHS, ALTERNATE ALTERNATE WALL DESIGN OR OTHER MEASURES TO KEEP THE UTILITY ZONE FREE FROM CONFLICT

BASIN SUMMARY TABLE

DMA	BMP ID	REQUIRED FOOTPRINT (SQFT)	PROVIDED FOOTPRINT (SQFT)	STORAGE REQUIRED (AC-FT)	STORAGE PROVIDED (AC-FT)
A	BF-A	14315	15077	2.30	3.39
B	BF-B	13345	13427	2.90	5.00
C	BF-C	13969	15583	4.00	5.18
D	BF-D	12282	12605	5.30	7.11
E	BF-E	23597	23619	5.20	7.28
F	BF-F	7934	8070	1.30	1.97
G	BF-G	5413	5771	0.90	1.53
H	BF-H	33377	33461	7.60	10.99
I	BF-I	9486	9533	1.80	2.65
J	BF-J	30865	30909	6.80	9.42
K	BF-K	6700	7567	0.70	1.34



PVT. ROUNDABOUT DETAIL

SCALE: 1" = 40'

ROUNDABOUT DESIGN BASED ON U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION PUBLICATION NO. FHWA-RD-00-067 "ROUNDABOUTS: AN INFORMATIONAL GUIDE"

PREPARED BY:
H&A HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500- FX(858)558-1414

STREET SECTIONS/DETAILS
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 3 OF 45

W.O. NO. 2374-17

R:\1211\&PlnTM Safari Highlands Ranch Sht 00.dwg[$(GETVAR,??)

APN 240-251-03
SUN

APN 240-141-25
ISAKOVICH TRUST

APN 240-141-24
OSBORNE J T

APN

APN 240-433-02
RANCHO SAN PASQUAL COMM. ASSN.

HYDROMOD/ WATER QUALITY/ DETENTION BASIN O-L

RCP PIPE

EMERGENCY ACCESS ROAD PER AGREEMENT TO GRANT EASEMENT DOC 2015-0527693

TW 1360 TS 1350.0 10'

TW 1400.0 TS 1384.0 18'

TW 1440.0 TS 1410.0 30'

TW 1470.0 TS 1446.0 24'

TW 1490.0 TS 1476.0 14'

PVT. ST. 'EE'

PVT. ST. 'DD'

PVT. ST. 'CC'

PVT. ST. 'U'

PVT. ST. 'BB'

HAMMERHEAD TURN AROUND PER ESCONDIDO STANDARD DRAWING, FIG.18 & ESCONDIDO FIRE DEPT REQ. SEE SHEET 18 FOR DETAILS

PROP. 30' PRIVATE DRIVEWAY WITH 24' CONC. PAVEMENT

HYDROMOD/ WATER QUALITY/ DETENTION BASIN A

HOA LOT STREET

P OPEN SPACE

Q OPEN SPACE

T OPEN SPACE

N89°01'56"W 5334.24'

SEE SHEET NO. 19

SEE SHEET NO. 5

SEE SHEET -07

SEE SHEET NO. 6

E-1

E-1

PROPOSED EASEMENTS

- (A) PROPOSED 20' PUBLIC SEWER EASEMENT
- (B) PROPOSED 24' PUBLIC WATER EASEMENT
- (C) PROPOSED 15' PRIVATE STORM DRAIN EASEMENT
- (D) PROPOSED OPEN SPACE HABITAT CONSERVATION EASEMENT
- (E) PROPOSED 30' PRIVATE RECIPROCAL ACCESS AND PVT. UTILITY EASEMENT
- (F) PROPOSED IRREVOCABLE OFFER TO DEDICATE A 10' PUBLIC TRAIL EASEMENT.
- (G) PROPOSED 20' PUBLIC TRAIL EASEMENT
- (H) PROPOSED PUBLIC WATER EASEMENT
- (I) PROPOSED HOA SLOPE MAINT. EASEMENT
- (J) PROPOSED 8' PRIVATE TRAIL EASEMENT
- (K) PROPOSED SIGHT DISTANCE EASEMENT
- (L) PROPOSED RELOCATION OF EASEMENT NO. 17, 18, 19, 20, 23, & 38
- (M) PROPOSED PUBLIC UTILITY EASEMENT

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
3. PROP. PUBLIC 12" PVC WATER MAIN
4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
6. PROP. PUBLIC 6" PVC RECYCLED WATER MAIN
7. PROP. PUBLIC 4" PVC FORCE MAIN
8. PROP. PRIVATE STORM DRAIN SIZE VARIES TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS
9. PROP. MAINT. ACCESS 14' ALL-WEATHER ROAD SURFACE

0 100 200 300
SCALE 1" =100'

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 4 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:21

SEE SHEET NO. 4

SEE SHEET NO. 7

SEE SHEET NO. 1

APN 240-141-23
BIENIAS

APN 240-141-22
HALE FAMILY TRUST

APN 240-141-38
ACKERMANN

APN 240-141-14
OSBORNE J T

APN 240-142-31
ROBEY

APN 240-270-16
SWINDERSKI

APN 240-270-32
ESPARZA TRUST

N89°01'56"W 5334.24'

N00°44'27"E 1368.61'

N89°03'33"W 1350.32'

E-2

E-2

E-2

PARK P-EL
2,000 SF

PARK P-EK
5,000 SF

PVT. ST. "V"

PVT. ST. "W"

PVT. ST. "U"

PVT. ST. "T"

PVT. ST. "Y"

PVT. ST. "Z"

PVT. ST. "AA"

HOA PVT. STREET

OPEN SPACE

HYDROMOD/ WATER QUALITY/ DETENTION BASIN D

PROP. PVT. 2-60" RCP

PROP. AASHTO LIGHTED SAG VERT. CURVE

PROP. PVT. 2-72" RCP

PROP. 2-77" RCP

DESIGN NOTES

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5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
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H&A

0 100 200 300
SCALE 1" =100'

PROPOSED EASEMENTS

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- (K) PROPOSED SIGHT DISTANCE EASEMENT
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TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 5 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:22

SEE SHEET NO. 4

APN 240-433-02
RANCHO SAN PASQUAL COMM. ASSN.

N03°32'54"E 5490.82'

0 100 200 300
SCALE 1" = 100'

OPEN SPACE

PARK P-EJ
3,000 SF

LIFT STATION TURNAROUND WILL BE INCORPORATED DURING FINAL ENGINEERING

HYDROMOD/ WATER QUALITY DETENTION BASIN B

LOT 551 TO BE DEDICATED TO THE CITY IN FEE

PROP. SEWER LIFT STATION

PVT. ST. AA

PVT. ST. BB

PVT. ST. T

PVT. ST. S

SEE SECTION "B" SHEET 25

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
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4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
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- (G) PROPOSED 20' PUBLIC TRAIL EASEMENT
- (H) PROPOSED PUBLIC WATER EASEMENT
- (I) PROPOSED HOA SLOPE MAINT. EASEMENT
- (J) PROPOSED 8' PRIVATE TRAIL EASEMENT
- (K) PROPOSED SIGHT DISTANCE EASEMENT
- (L) PROPOSED RELOCATION OF EASEMENT NO. 17, 18, 19, 20, 23, & 38
- (M) PROPOSED PUBLIC UTILITY EASEMENT

SEE SHEET NO. 7

SEE SHEET NO. 8

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 6 OF 45

W.O. NO. 2374-17

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SEE SHEET NO. 5

SEE SHEET NO. 6

SEE SHEET NO. 9

SEE SHEET NO. 8

E-1

E-2

R-5

R-4

N89°03'33"W 1350.32'

APN 240-270-32
ESPARZA TRUST

APN 240-270-49
KECK

APN 240-270-48
FROCKLAGE/GRATZ

APN 240-270-52
WISNIESKI

N01°26'32"E 1369.28'

N89°05'08"W 1367.09'

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
3. PROP. PUBLIC 12" PVC WATER MAIN
4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
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0 100 200 300
SCALE 1" = 100'

SAFARI HIGHLANDS RANCH RD

PVT. ST. 'AA'

PVT. ST. 'P'

PVT. ST. 'R'

PARK P-EI (1,000 SF)

PARK P-EM 2,000 SF

PROP. RESERVOIR 1821 ZONE

LOT 552 TO BE DEDICATED TO THE CITY IN FEE

LOT 553 TO BE DEDICATED TO THE CITY IN FEE

PROP. RECYCLED WATER STORAGE 0.5 MG (MIN.) SITE

HYDROMOD/ WATER QUALITY/ DETENTION BASIN 9

PROP. SEWER LIFT STATION

PROP. 2-7'W RCP

8' TRAIL

OPEN SPACE

HOA OPEN SPACE

HOA PVT. STREET

PROP. CULVERT 2-6'H X 7'W

SEE SECTION 'B' SHEET 25

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 7 OF 45

W.O. NO. 2374-17

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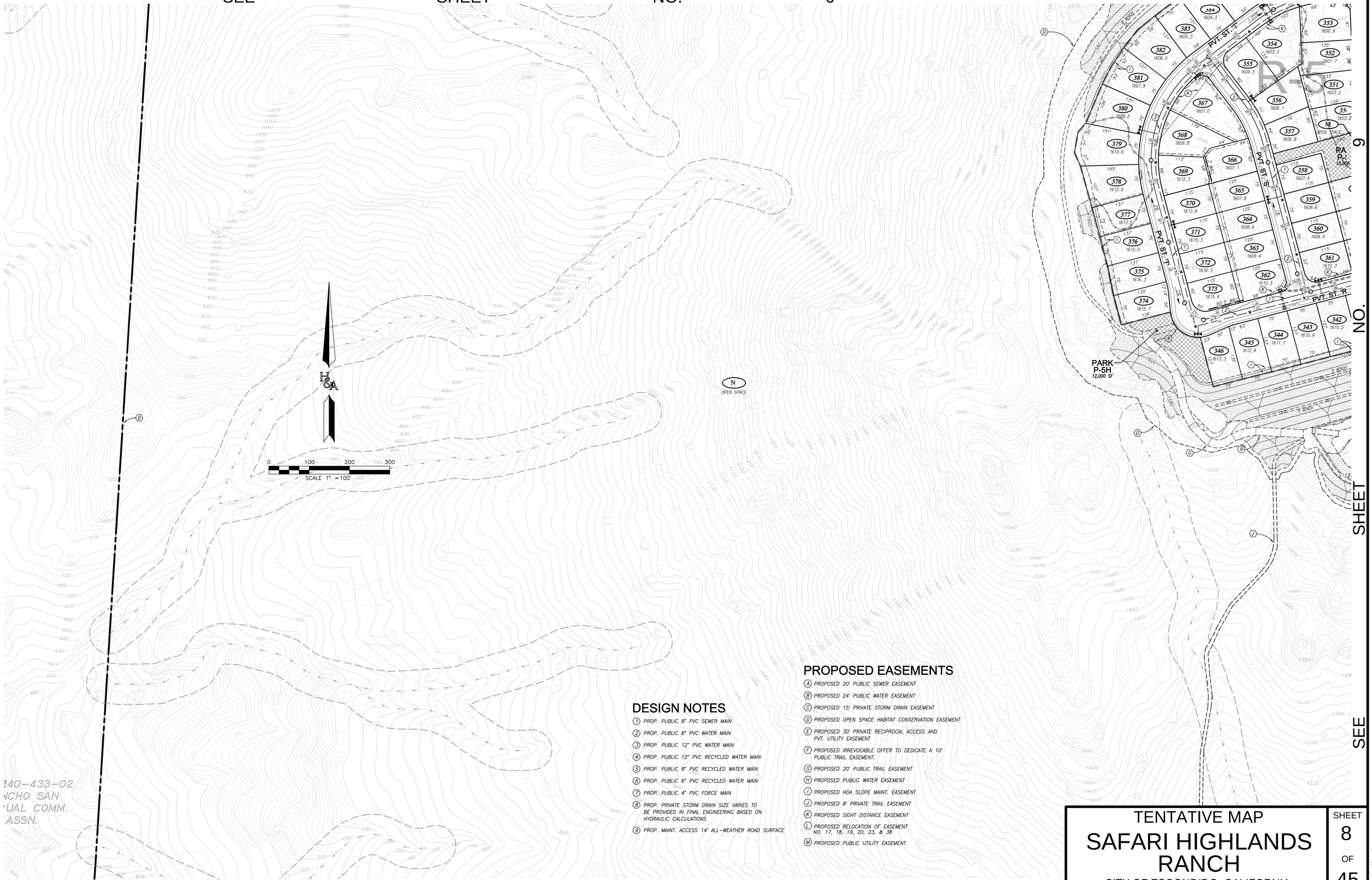
SEE SHEET NO. 6

SEE SHEET NO. 9



DESIGN NOTES

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4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
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6. PROP. PUBLIC 6" PVC RECYCLED WATER MAIN
7. PROP. PUBLIC 4" PVC FORCE MAIN
8. PROP. PRIVATE STORM DRAIN SIZE VARIES TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS
9. PROP. MAINT. ACCESS 14' ALL-WEATHER ROAD SURFACE

PROPOSED EASEMENTS

- (A) PROPOSED 20' PUBLIC SEWER EASEMENT
- (B) PROPOSED 24' PUBLIC WATER EASEMENT
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- (M) PROPOSED PUBLIC UTILITY EASEMENT

SEE SHEET NO. 10

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 8 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:25

SEE SHEET NO. 7

SEE SHEET NO. 8

SEE SHEET NO. 11

R-5

R-1

PARK P-5G 15,000 SF

PARK P-4F 10,000 SF

HYDROMOD/ WATER QUALITY/ DETENTION BASIN G

HYDROMOD/ WATER QUALITY/ DETENTION BASIN L

PROP. CULVERT 2-6'H X 7'W

PROP. PVT. CULVERT 6'H X 6'W

HORIZONTAL SIGHT DISTANCE AT 30 MPH S=200'

PROP. PRESSURE REDUCING STATION 1821/1500

APN 240-270-55 BASH

APN 240-270-01 YALOF

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
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- (M) PROPOSED PUBLIC UTILITY EASEMENT

N00°44'27"E 2737.22'

0 100 200 300
SCALE 1" =100'

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 9 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:26

SEE SHEET NO. 8

SEE SHEET NO. 11

SEE SHEET NO. 13

PASQUAL COMM. ASSN.

DESIGN NOTES

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2. PROP. PUBLIC 8" PVC WATER MAIN
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- (M) PROPOSED PUBLIC UTILITY EASEMENT

SCALE 1" = 100'

N03°13'25"W 2629.14'

PARK P-1A 15,000 SF

HAMMERHEAD TURN AROUND PER ESCONDIDO STANDARD DRAWING FIG. 18 & ESCONDIDO FIRE DEPT. REQ. SEE SHEET 18 FOR DETAIL

SEE SHEET 17 FOR FIRE TRUCK ACCESS TYPICAL

PROP. PRESSURE REDUCING STATION 1821/1292

HYDROMOD/ WATER QUALITY/ DETENTION BASIN H

OPEN SPACE

HOA PVT. STREET

PVT. ST. 'D'

PVT. ST. 'E'

PVT. ST. 'F'

PVT. ST. 'G'

PVT. ST. 'H'

PVT. ST. 'I'

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 10 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:27

SEE SHEET NO. 9

SEE SHEET NO. 10

SEE SHEET NO. 14

R-3

PROP. PRESSURE REDUCING STATION 1821/1500

PROP. PRESSURE REDUCING STATION 1821/1500

PROP. 12" PVC WATER (1821 ZONE)

PROP. REC. WATER

PARK P-2C 7,000 SF

PARK P-2B 10,000 SF

PARK P-3D 6,000 SF

PARK P-3E 6,000 SF

PVT. ST. 'K'

PVT. ST. 'J'

PVT. ST. 'N'

PVT. ST. 'L'

PVT. ST. 'H'

PVT. ST. 'I'

SAFARI HIGHLANDS RANCH ROAD

HYDROMOD WATER QUALITY DETENTION BASIN

PROP. CULVERT 2-8'H X 8'W

N89°08'30"W 1378.63'

N01°13'45"E 2631.21'

APN 242-010-35 MCINDOE

APN 242-010-69 YALOF

OPEN SPACE

HOA OPEN SPACE

HOA PVT. STREET

0 100 200 300

SCALE 1" = 100'

PROPOSED EASEMENTS

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9. PROP. MAINT. ACCESS 14' ALL-WEATHER ROAD SURFACE

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 11 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-18-2020:19:41

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
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- (B) PROPOSED 24' PUBLIC WATER EASEMENT
- (C) PROPOSED 15' PRIVATE STORM DRAIN EASEMENT
- (D) PROPOSED OPEN SPACE HABITAT CONSERVATION EASEMENT
- (E) PROPOSED 30' PRIVATE RECIPROCAL ACCESS AND PVT. UTILITY EASEMENT
- (F) PROPOSED IRREVOCABLE OFFER TO DEDICATE A 10' PUBLIC TRAIL EASEMENT.
- (G) PROPOSED 20' PUBLIC TRAIL EASEMENT
- (H) PROPOSED PUBLIC WATER EASEMENT
- (I) PROPOSED HOA SLOPE MAINT. EASEMENT
- (J) PROPOSED 8' PRIVATE TRAIL EASEMENT
- (K) PROPOSED SIGHT DISTANCE EASEMENT
- (L) PROPOSED RELOCATION OF EASEMENT NO. 17, 18, 19, 20, 23, & 38
- (M) PROPOSED PUBLIC UTILITY EASEMENT

H&A

0 100 200 300
SCALE 1" = 100'

OLD RANCH ROAD
PLUM TREE LANE
TIMBER CREEK LANE
WYNWOOD COURT
FERN CREEK LANE
MAPLE WOOD PLACE
SAFARI HIGHLANDS RANCH ROAD

APN 241-261-47
RANCHO SAN PASQUAL COMM. ASSN.

APN 241-260-42
RANCHO SAN PASQUAL COMM. ASSN.

APN 240-433-02
RANCHO SAN PASQUAL COMM. ASSN.

N88°22'24"E 1294.80'
N00°23'19"W 1330.17'

D OPEN SPACE
C OPEN SPACE

SEE SHEET NO. 15

SEE SHEET NO. 13

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 12 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:28

SEE SHEET NO. 10
SEE SHEET NO. 12
SEE SHEET NO. 14
SEE SHEET NO. 16

R-1

PARK P-1A 15,000 SF

PVT. ST. 'E'
PVT. ST. 'D'
PVT. ST. 'C'
PVT. ST. 'B'
PVT. ST. 'A'

SAFARI HIGHLANDS RANCH ROAD

HOA PVT. STREET

OPEN SPACE

HOA OPEN SPACE

SEE SHEET 17 FOR FIRE TRUCK ACCESS TYPICAL

HYDROMOD/ WATER QUALITY/ DETENTION BASIN 'I'

HYDROMOD/ WATER QUALITY/ DETENTION BASIN 'F'

SEE SECTION "E" SHEET 25

SEE SECTION "D" SHEET 25

PROP. CULVERT 2-8'H X 10'W

N00°41'29"W 3984.88'

APN 242-0 MCINDO

APN 242-010-35 MCINDOE

H&A

0 100 200 300
SCALE 1" = 100'

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
3. PROP. PUBLIC 12" PVC WATER MAIN
4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
6. PROP. PUBLIC 6" PVC RECYCLED WATER MAIN
7. PROP. PUBLIC 4" PVC FORCE MAIN
8. PROP. PRIVATE STORM DRAIN SIZE VARIES TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS
9. PROP. MAINT. ACCESS 14' ALL-WEATHER ROAD SURFACE

PROPOSED EASEMENTS

- (A) PROPOSED 20' PUBLIC SEWER EASEMENT
- (B) PROPOSED 24' PUBLIC WATER EASEMENT
- (C) PROPOSED 15' PRIVATE STORM DRAIN EASEMENT
- (D) PROPOSED OPEN SPACE HABITAT CONSERVATION EASEMENT
- (E) PROPOSED 30' PRIVATE RECIPROCAL ACCESS AND PVT. UTILITY EASEMENT
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- (K) PROPOSED SIGHT DISTANCE EASEMENT
- (L) PROPOSED RELOCATION OF EASEMENT NO. 17, 18, 19, 20, 23, & 38
- (M) PROPOSED PUBLIC UTILITY EASEMENT

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 13 OF 45

M.D. NO. 2374-17

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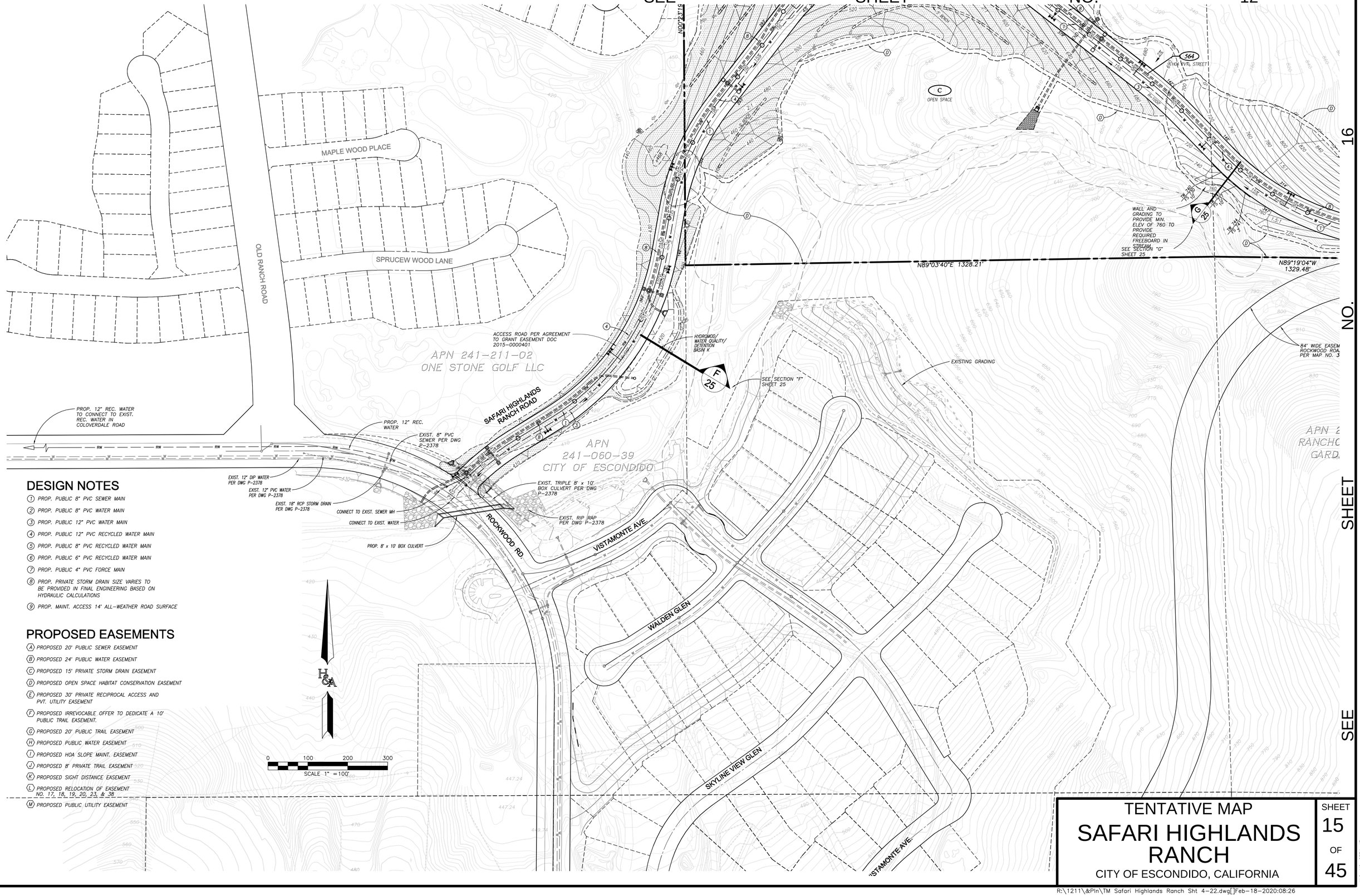
SEE SHEET NO. 12

SEE SHEET NO. 16



DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
3. PROP. PUBLIC 12" PVC WATER MAIN
4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
6. PROP. PUBLIC 6" PVC RECYCLED WATER MAIN
7. PROP. PUBLIC 4" PVC FORCE MAIN
8. PROP. PRIVATE STORM DRAIN SIZE VARIES TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS
9. PROP. MAINT. ACCESS 14' ALL-WEATHER ROAD SURFACE

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- (L) PROPOSED RELOCATION OF EASEMENT NO. 17, 18, 19, 20, 23, & 38
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TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 15 OF 45

W.O. NO: 2374-17

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SEE SHEET NO. 13

SEE SHEET NO. 15

SEE SHEET NO. 17

SEE SECTION "D" SHEET 25

D 25

D OPEN SPACE

554

PROP. WATER PUMP STATION 945/1821

PROP. CULVERT 2–10'H X 12'W

N89°19'04"W 1329.48'

PROP. 12" PVC WATER (945 ZONE)

84' WIDE EASEMENT ROCKWOOD ROAD PER MAP NO. 3247

84' WIDE EASEMENT ROCKWOOD ROAD PER MAP NO. 3247

PROP. 12" PVC WATER (1821 ZONE)

SEE SECTION "A" SHEET 25

A 25

SAFARI HIGHLANDS RANCH ROAD

HYDROMOD/ WATER QUALITY/ DETENTION BASIN F

PROP. CULVERT 2–8'H X 10'W

563 HOA PVT. STREET

PROP. GATE

555 HOA REC AREA

TEMP. DESILT BASIN

PROP. PRESSURE REDUCING STATION 1821/1292

TEMP. DESILT BASIN

556 FIRE STATION

PROPOSED 24' DRIVEWAY ACCESS

PROP. RECLAIMED WATER PUMP STATION

PVT. ST. 'A'

ZOO RD. 'F'

PROP. GATE

B OPEN SPACE

PROP. SOLAR POWERED STREET LIGHT FOR CENTER LINES LESS THAN 107' R

APN 242–010–04 STEINHILBER

N01°15'31"W 1341.11'

A OPEN SPACE

ZOO RD.

B OPEN SPACE

N89°29'59"W 1316.11'

APN 241–293–01 RANCHO VISTAMONTE GARDEN SOCIETY

APN 242–060–11 CITY OF SAN DIEGO

0 100 200 300

SCALE 1" = 100'

DESIGN NOTES

1. PROP. PUBLIC 8" PVC SEWER MAIN
2. PROP. PUBLIC 8" PVC WATER MAIN
3. PROP. PUBLIC 12" PVC WATER MAIN
4. PROP. PUBLIC 12" PVC RECYCLED WATER MAIN
5. PROP. PUBLIC 8" PVC RECYCLED WATER MAIN
6. PROP. PUBLIC 6" PVC RECYCLED WATER MAIN
7. PROP. PUBLIC 4" PVC FORCE MAIN
8. PROP. PRIVATE STORM DRAIN SIZE VARIES TO BE PROVIDED IN FINAL ENGINEERING BASED ON HYDRAULIC CALCULATIONS
9. PROP. MAINT. ACCESS 14' ALL–WEATHER ROAD SURFACE

PROPOSED EASEMENTS

- (A) PROPOSED 20' PUBLIC SEWER EASEMENT
- (B) PROPOSED 24' PUBLIC WATER EASEMENT
- (C) PROPOSED 15' PRIVATE STORM DRAIN EASEMENT
- (D) PROPOSED OPEN SPACE HABITAT CONSERVATION EASEMENT
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TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 16 OF 45

W.O. NO: 2374–17

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SEE SHEET NO. 16

N89°29'59"W 1316.11'

APN 242-060-11
CITY OF SAN DIEGO

EMERGENCY ACCESS ROAD
PER SETTLEMENT
AGREEMENT DOC 73-286259

ZOO ROAD

EMERGENCY ACCESS ROAD
PER SETTLEMENT
AGREEMENT DOC 73-286259

0 100 200 300
SCALE 1" =100'

FIRE TRUCK DRIVE
LENGTH LESS THAN 150'
NO TURN AROUND REQ.

HOSE PULL
LENGTH

FIRE TRUCK
9' X 43'

TYPICAL ACCESS FOR FIRE TRUCKS ON FLAG LOTS

FIRE TRUCK ACCESS TYP.

SCALE: 1"=40'

SEE SHEET NO. 18

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 17 OF 45

W.O. NO: 2374-17

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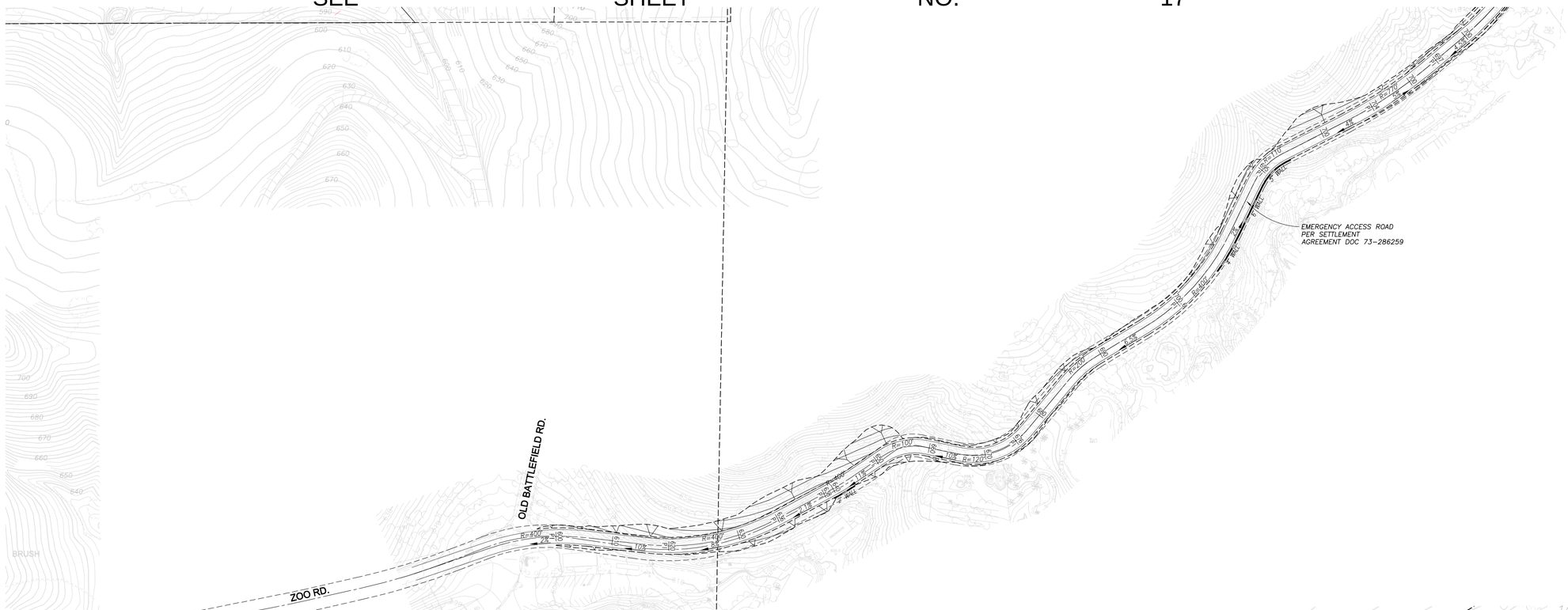
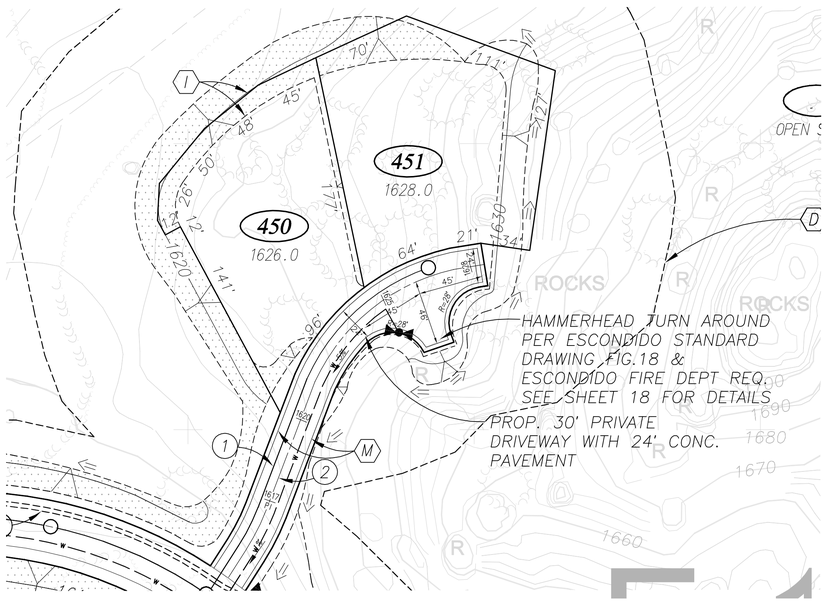
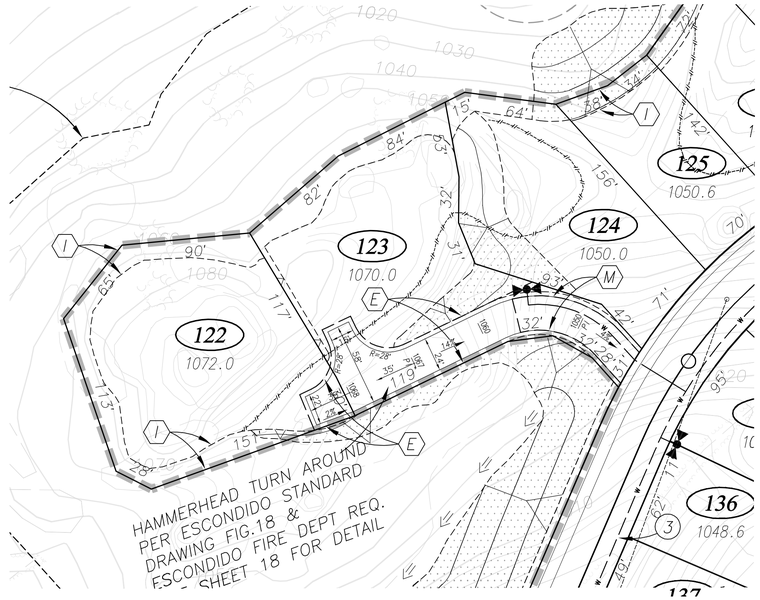
SEE SHEET NO. 17





FIRE TRUCK TURN-AROUND

SCALE: 1"=50'



FIRE TRUCK TURN-AROUND

SCALE: 1"=50'

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 18 OF 45

W.O. NO: 2374-17

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NO. 20

NO. 4

SHEET

SEE

APN 240-120-15
VAND

APN 240-120-16
ASHRAF

APN 240-251-01
FIALKO

APN 240-251-02
ANNETT

APN 240-251-04
ANNETT

APN 240-251-05
SAMUEL/KAT

APN 240-251-06
SUN

APN 240-251-07
SUN

APN 240-433-(
RANCHO SAN
PASQUAL COMM
ASSN

3-01
AN
OMM.

HYDROMOD/
WATER QUALITY/
DETENTION
BASIN O-M

HYDROMOD/
WATER QUALITY/
DETENTION
BASIN O-N

HYDROMOD/
WATER QUA
DETENTION
BASIN O-L

PROP. 24" RCP
STORM DRAIN PIPE

PROP. 18" RCP
STORM DRAIN PIPE

PROP. SOLAR POWERED
STREET LIGHT FOR
CENTER LINES LESS THAN
200' R (TYP.)

PROP. SOLAR POWERED
STREET LIGHT FOR
CENTER LINES LESS
THAN 107' R

PROP. 10K WATER TANK TO
BE FILLED BY WATER TRUCK
AND MAINTAINED BY THE H.O.A.

EMERGENCY ACCESS ROAD PER AGREEMENT TO
GRANT EASEMENT DOC 2015-0527693

EMERGENCY ACCESS ROAD
PER AGREEMENT TO GRANT
EASEMENT DOC
2015-0527693

FIRE HYD. CONNECTION 10K
TANK

NO. 2 FIRE
TURNAROUND

TW 1360
FS 1350.0
10"

TW 1400.0
FS 1384.0
18"

TW 1440.0
FS 1410.0
30"

TW 1470.0
FS 1456.0
24"

TW 1490.0
FS 1476.0
14"

H&A

0 100 200 300
SCALE 1" = 100'

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 19 OF 45

W.O. NO. 2374-17

R:\1211\&Pln\TM Safari Highlands Ranch Sht 4-22.dwg[]Feb-17-2020:17:16

SEE SHEET NO. 21

SEE SHEET NO. 19

APN 240-120-12
SUN

APN 240-120-15
BURNAND

APN 240-241-06
SUN

APN 240-250-03
SUN

OLD GUEJITO GRADE ROAD

OLD GUEJITO ROAD

STONEBRIDGE ROAD

STONEBRIDGE ROAD

PROP. SOLAR POWERED STREET LIGHT FOR FIRE TURNAROUND

NO. 1 FIRE TURNAROUND

EMERGENCY ACCESS ROAD PER AGREEMENT TO GRANT EASEMENT DOC 2015-0527693

PROP. 10K WATER TANK TO BE FILLED BY WATER TRUCK AND MAINTAINED BY THE H.O.A.

PROP. 24" RCP STORM DRAIN PIPE

PROP. SOLAR POWERED STREET LIGHT FOR CENTER LINES LESS THAN 107' R

PROP. SOLAR POWERED STREET LIGHT FOR CENTER LINES LESS THAN 107' R AND FIRE HYD. CONNECTION

HYDROMOD/ WATER QUALITY/ DETENTION BASIN D-N

FIRE HYD. CONNECTION 10K TANK

TRIPLE BOX CULVERT 3 12'x12' BOXES 7,500 CFS

0 100 200 300
SCALE 1" = 100'

SEE SHEET NO. 20

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 20 OF 45

W.O. NO. 2374-17

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SEE SHEET NO. 22

OAK BLUFF PLACE

OAK VALLEY LANE

EMERGENCY ACCESS ROAD PER AGREEMENT TO GRANT EASEMENT DOC 2015-0527693

PROP. 60" RCP STORM DRAIN PIPE

PROP. SOLAR POWERED STREET LIGHT FOR CENTER LINES LESS THAN 200' R (TYP.)

PROP. 30" RCP STORM DRAIN PIPE

OLD GUEJITO GRADE ROAD

PROP. 30" RCP STORM DRAIN PIPE

APN 240-111-51
SUN

PROP. 18" RCP STORM DRAIN PIPE

EMERGENCY ACCESS ROAD PER AGREEMENT TO GRANT EASEMENT DOC 2015-0527693

PROP. SOLAR POWERED STREET LIGHT FOR CENTER LINES LESS THAN 200' R (TYP.)

PROP. 42" RCP STORM DRAIN PIPE

APN 240-111-51
SUN

APN 240-120-12
SUN

OLD GUEJITO GRADE ROAD

H&A

0 100 200 300
SCALE 1" = 100'

SEE SHEET NO. 20

TENTATIVE MAP

SAFARI HIGHLANDS RANCH

CITY OF ESCONDIDO, CALIFORNIA

SHEET 21 OF 45

W.O. NO. 2374-17

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SEE SHEET NO. 21

TENTATIVE MAP
SAFARI HIGHLANDS RANCH
CITY OF ESCONDIDO, CALIFORNIA

SHEET 22 OF 45

W.O. NO: 2374-17

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ATTACHMENT 6

Supporting Documentation

Optional Additional Analysis
When Potential 'Critical Coarse Sediment Yield Areas' ("CCSYA")
are present on site

Optional Additional Analysis When Potential 'Critical Coarse Sediment Yield Areas' ("CCSYA") are Present Onsite

Following three steps are involved in the optional analysis per Escondido Storm Water Design Manual, Appendix H, to determine whether the Safari Highlands project site is a Significant Source of Bed Sediment Supply to the channel receiving runoff and includes the following components:

A. Site soil assessment, including an analysis and comparison of the Bed Sediment in the receiving channel and the onsite channel;

B. Determination of the capability of the channels on the project site to deliver the site Bed Sediment (if present) to the receiving channel; and

C. Present and potential future condition of the receiving channel.

A. Site soil assessment, including an analysis and comparison of the Bed Sediment in the channel receiving runoff and the onsite channels;

The geotechnical analysis was not done to assess the soils onsite and in the channels to meet the requirements of conditions of step A. The decision to not do the soil analysis was based on clear signs of fine silty sand and coarse sand on site. We are opting to accept that a high probability rating for the onsite coarse sediment to the onsite channels in lieu of geotechnical analysis.

B. Determination of the capability of the channels on the project site to deliver the site Bed Sediment Supply (if present) to the channel receiving runoff from the project site

The WMAA mapping showed presence of potential critical coarse sediment polygons. We performed GLU analysis onsite to determine the critical coarse sediment yield areas and verified the GLUs to be CB-SCRUB/SHRUB-4. Two onsite reaches, Reach 1(R1) and Reach 2(R2) as shown on Potential CCSYA Optional Analysis Exhibit (Attachment 6) were observed to qualitatively assess the sediment delivery potential of the channels on the project site to deliver the Bed Sediment Supply to the channel receiving runoff from the project site. Optional procedures for determining Bed Sediment delivery potential or ratio discussed in the Appendix H are optional and were not performed. Hydraulic analysis with HEC-RAS was done per direction of the City reviewer to provide backup computational data and as an alternative to optional procedures discussed on Appendix H. Hydraulic Analysis with HEC-RAS was performed at two locations were aggradation of coarse sediment was observed to assess flow velocities for a 10-yr storm event. The velocities for Reach 1 were in the range of 2fps-5.5fps and for Reach2 were less than 2fps which have very low or no potential to move the coarse sediment through these flatter areas of the two reaches.

This assessment also considered several factors effecting the sediment transport/delivery potential including the sediment source, proximity to the receiving stream, onsite channel density. These factors were assessed to plan for optional analysis site visit and verified onsite. Project watershed area, slope, length, land use and land cover, and rainfall intensity was assessed to compute peak storm runoff. Inline structures like bridges, culverts and grade controls structure also limit the transport of sediment as discussed below.

It appears that coarse sediment may reach the onsite channel based on topographical observations but there is low potential for sediment transport and sediment supply to downstream offsite receiving channel based on the channel conditions. The site inspection showed signs of coarse sediment along with fine sediment present in the upstream reaches of the onsite channels. The transport of coarse sediment material seems to be prevented by flatter terrain at two locations along the flow path and inline structures present downstream of the two reaches. The downstream reaches of the two onsite channels show signs of loose coarse sediment deposits indicating an active transport and aggradation process but only up to the bridge culverts. Reach 1 has an Arizona crossing with CMP culverts and Reach 2 has a culvert over a bridge crossing at Rockwood Road which prevents the sediment from transporting downstream and where the coarse sediment transport is intercepted. The vegetative cover is very dense and increases the channel roughness, resulting in reduced velocities of stormwater moving through the channel which limits erosion potential and does not facilitate transport of denser coarse sedimentation to the downstream receiving channel. Therefore, in our opinion, the potential to deliver sediment to the downstream receiving waters is low.

C. Present and potential future condition of the channel receiving runoff from the project site.

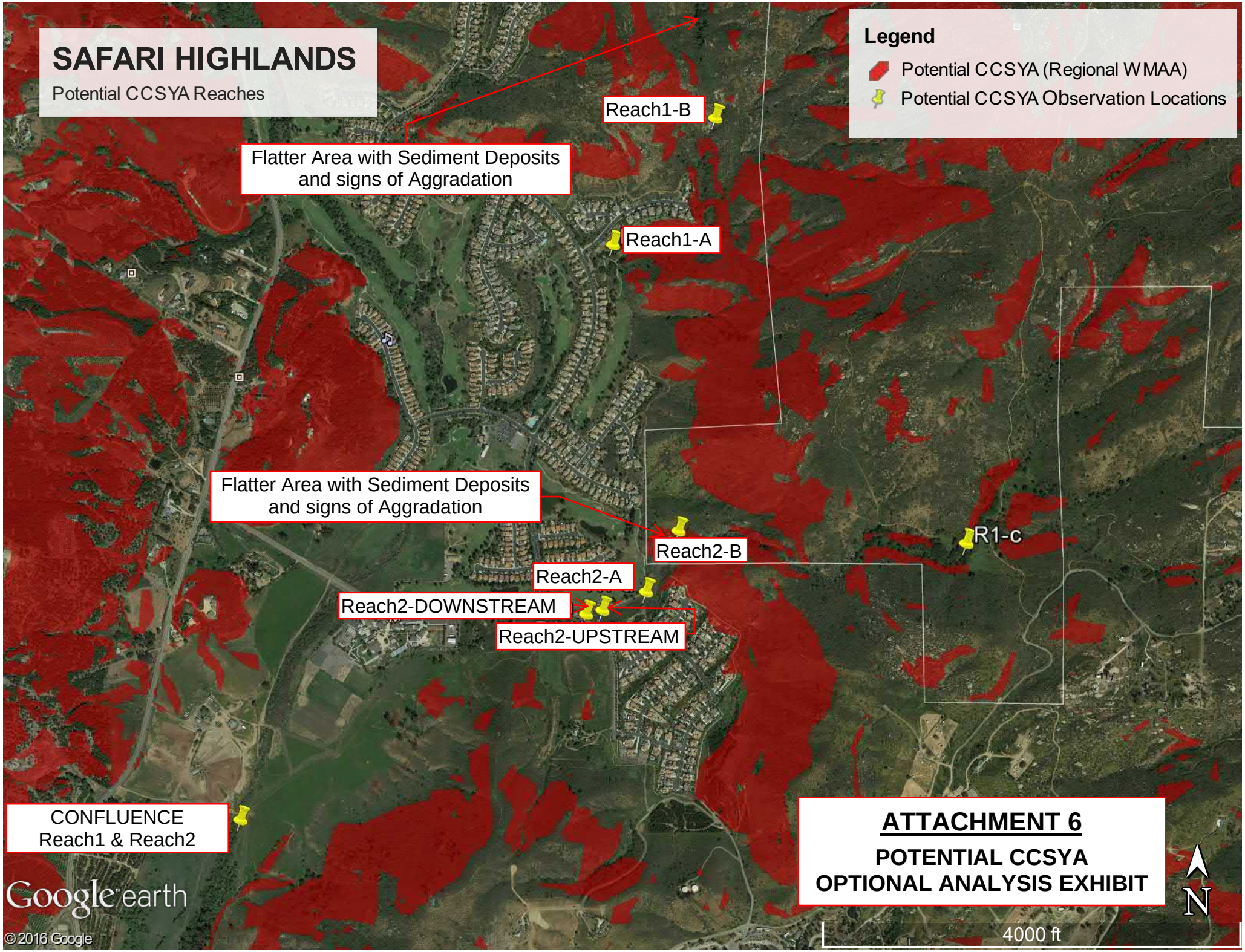
Both Reaches of the onsite channel and the channel downstream leaving the project site was visually inspected for bank stability, degree of incision, signs of aggradation and degradation of bed material. Each of these channels is covered with dense vegetative cover as discussed above. There are also rock formations at some locations within the channel proving additional scour protection and stability. The inspection showed no signs of channel bed or banks incision. The project preserves major portions of the existing channels and also 87% of the mapped areas supplying coarse sediment draining to the onsite channel reaches. Our observation of this area indicated no signs of instability due to sediment deposition or scour, nor signs of sensitivity to changes in bed material load. Hydromodification management measures included in the project design assure comparable flow rates through these channels in the future. Therefore, the condition of the receiving channel is expected to remain stable and the potential for adverse response based on a change in bed sediment load due to onsite development is low.

Conclusions;

The triad assessment results using the BMP Manual provide the following values;

A. Site soil assessment - High probability
B. Sediment delivery capacity – Low probability
C. Present and Future Condition – Low probability

Therefore the predominant score is low and the project site is not significant source of sediment bed material; hence site design considerations are not recommended for the site to mitigate for CCSYAs. It should be noted that site design implements preservation of some of the channels, as would be considered for projects with predominantly “medium” values. Therefore, we conclude that the site is not a critical source of coarse sediment supply and development of the site as proposed on the project tentative map may proceed without adverse response in the downstream.


SAFARI HIGHLANDS
Potential CCSYA Reaches
Legend
Potential CCSYA (Regional WMAA)
Potential CCSYA Observation Locations
Reach1-B
Flatter Area with Sediment Deposits and signs of Aggradation
Reach1-A
Flatter Area with Sediment Deposits and signs of Aggradation
Reach2-B
R1-c
Reach2-A
Reach2-DOWNSTREAM
Reach2-UPSTREAM
CONFLUENCE Reach1 & Reach2
ATTACHMENT 6
POTENTIAL CCSYA OPTIONAL ANALYSIS EXHIBIT
N
4000 ft
Google earth
© 2016 Google

SITE PHOTOGRAPHS

SAFARI HIGHLANDS RANCH - REACH1

Wooden Bridge over Arizona Crossing Near Reach1-A

Coarse sediment was observed to be deposited upstream of the crossing.

SAFARI HIGHLANDS RANCH - REACH2

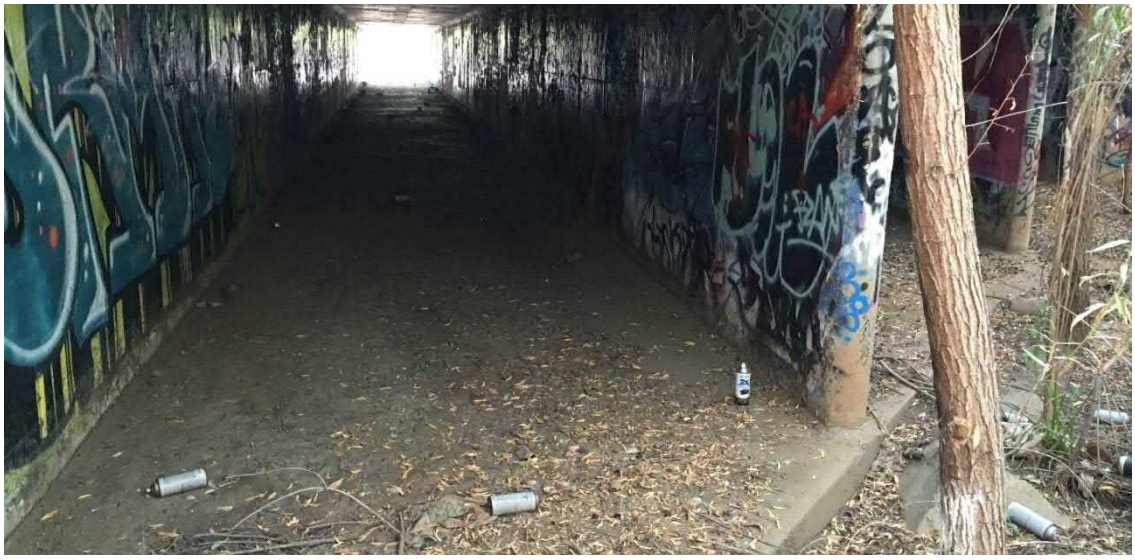
Flatter slope areas upstream of the Rockwood Road Bridge

Most coarse sediment was trapped at this location. Coarse sediment was observed to be deposited about 6-12inch deep layer and limits the transport of coarse sediment downstream to the Rockwood Road Culvert.

REACH2-Upstream of Rockwood Road Culvert

coarse sediment observed to be trapped between the riprap rock

REACH2-Dowstream side of Rockwood Road Culvert



As seen in the exhibits there was some coarse sediment observed to be trapped between the riprap rock upstream of the Rockwood Road Culvert but there was no sign of similar coarse sediment downstream of the Rockwood Road Culvert. It is our conclusion that the coarse sediment does not reach the downstream reaches in existing condition and is not critical to the downstream reaches.

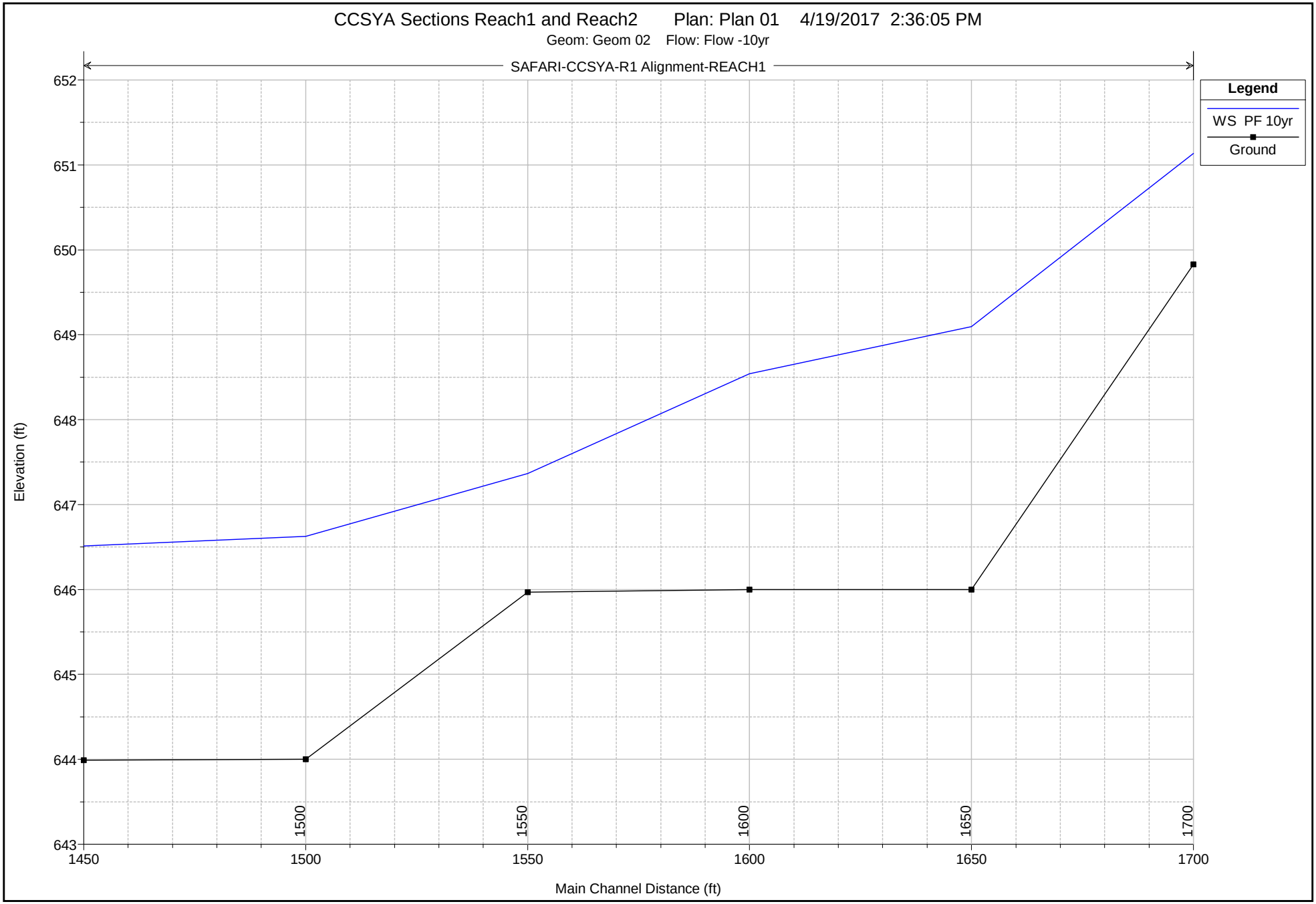
HEC-RAS ANALYSIS

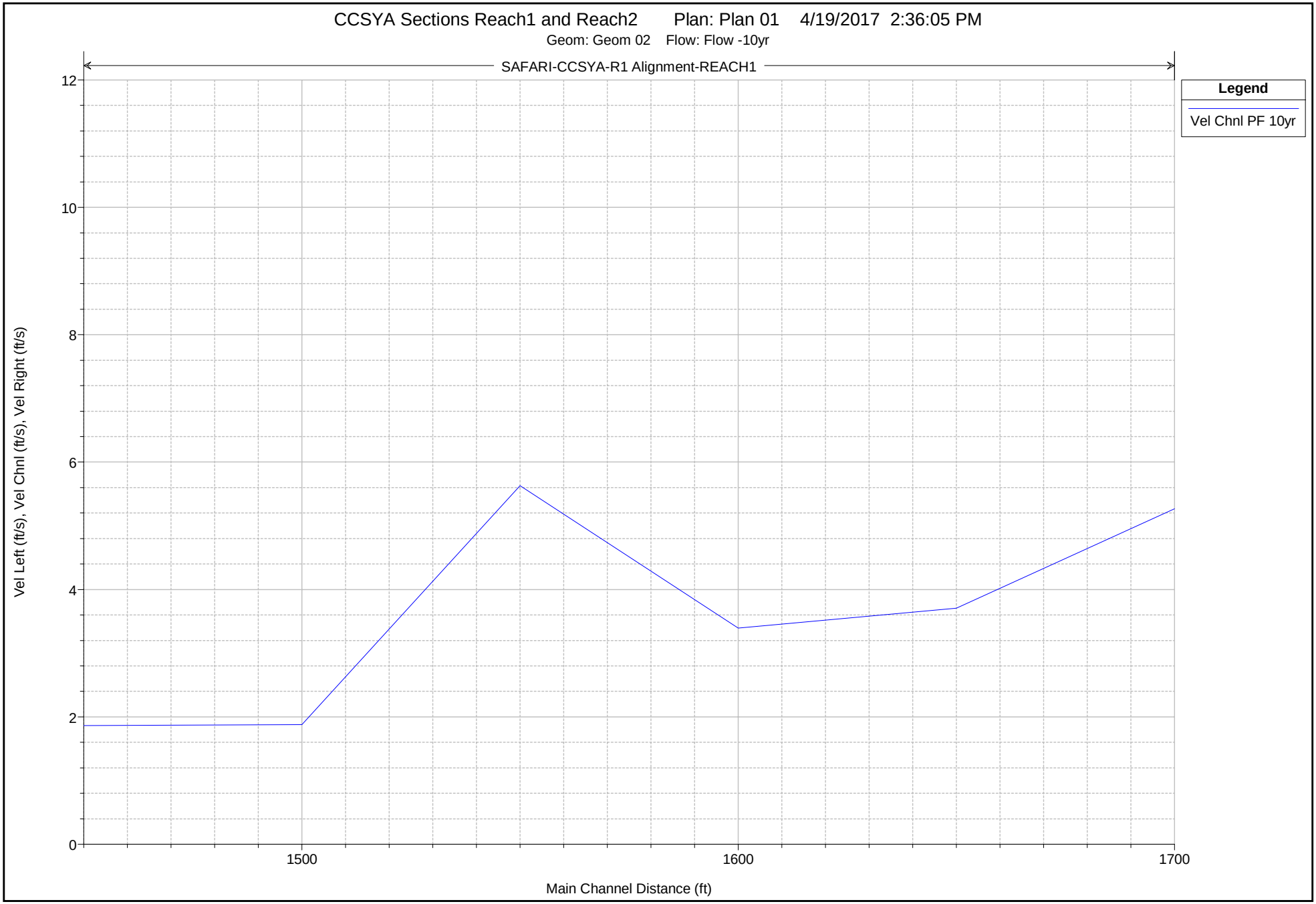
CCSYA SECTIONS – REACH1

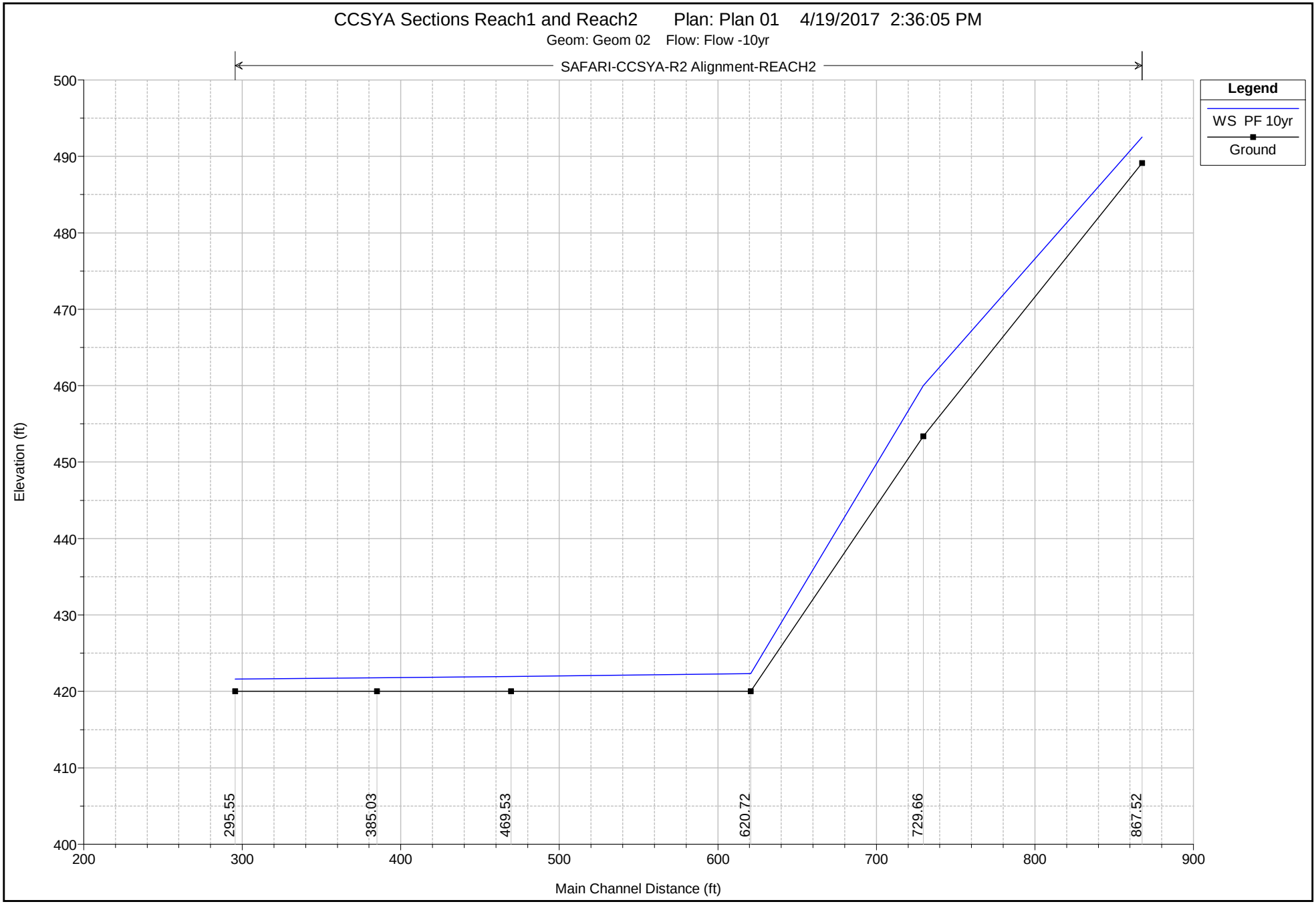
CCSYA SECTIONS – REACH2

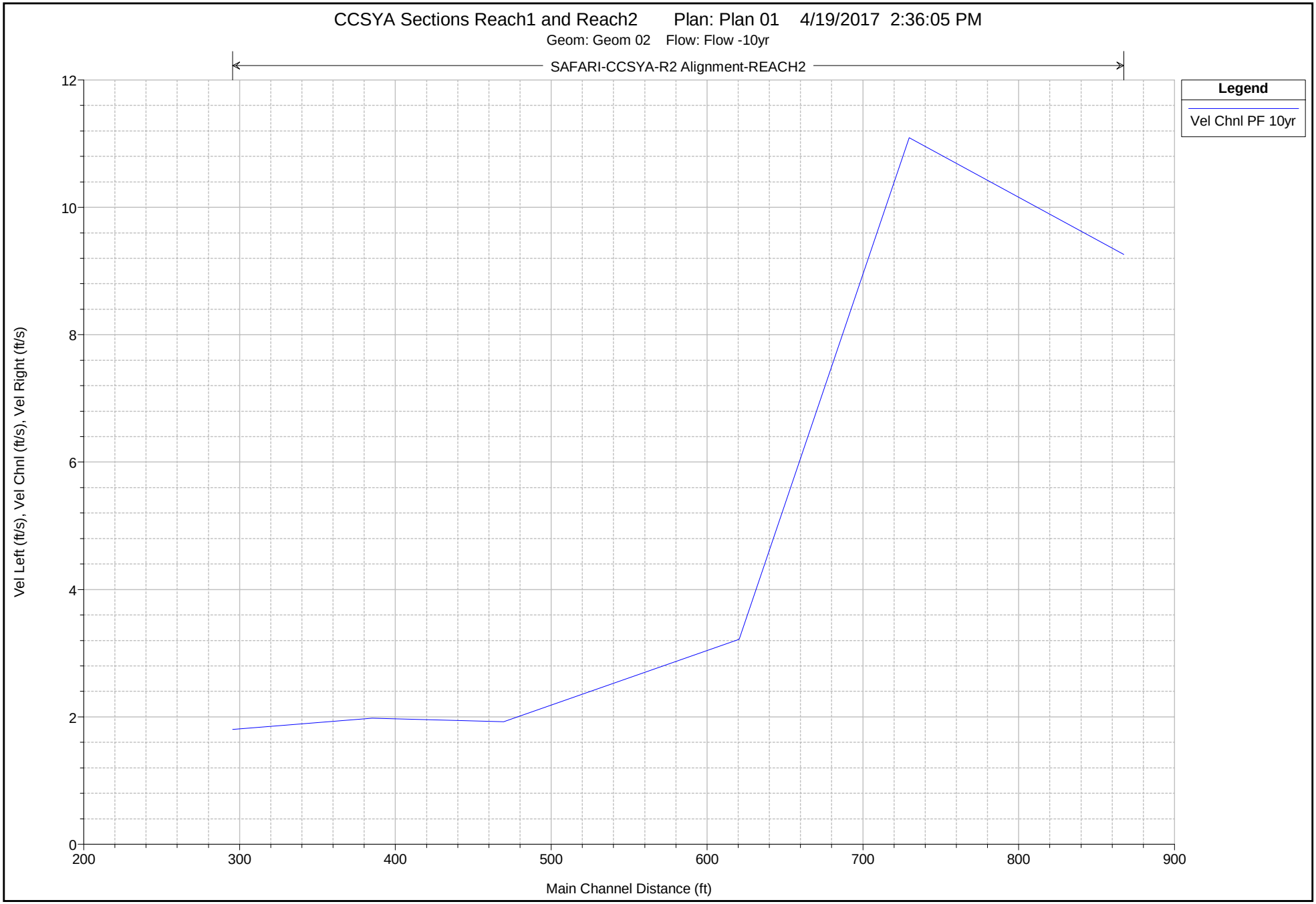
HEC-RAS Plan: Plan 01 Profile: PF 10yr

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SAFARI-CCSYA-R2	Alignment-REACH2	867.52	PF 10yr	930.00	489.14	492.52	492.52	493.85	0.028098	9.26	100.43	38.13	1.01
SAFARI-CCSYA-R2	Alignment-REACH2	729.66	PF 10yr	930.00	453.39	459.99	459.99	461.90	0.029617	11.09	83.83	21.96	1.00
SAFARI-CCSYA-R2	Alignment-REACH2	620.72	PF 10yr	930.00	420.00	422.34		422.50	0.005821	3.22	288.92	169.69	0.43
SAFARI-CCSYA-R2	Alignment-REACH2	469.53	PF 10yr	930.00	420.00	421.96		422.02	0.001765	1.92	484.00	252.91	0.24
SAFARI-CCSYA-R2	Alignment-REACH2	385.03	PF 10yr	930.00	420.00	421.80		421.86	0.002091	1.98	469.35	265.90	0.26
SAFARI-CCSYA-R2	Alignment-REACH2	295.55	PF 10yr	930.00	420.00	421.62	420.65	421.67	0.002001	1.80	516.05	326.47	0.25
SAFARI-CCSYA-R1	Alignment-REACH1	1700	PF 10yr	190.00	649.83	651.14	651.14	651.57	0.039388	5.27	36.07	42.59	1.01
SAFARI-CCSYA-R1	Alignment-REACH1	1650	PF 10yr	190.00	646.00	649.10		649.31	0.014615	3.71	51.24	48.08	0.63
SAFARI-CCSYA-R1	Alignment-REACH1	1600	PF 10yr	190.00	646.00	648.54	647.81	648.72	0.009384	3.39	56.00	43.05	0.52
SAFARI-CCSYA-R1	Alignment-REACH1	1550	PF 10yr	190.00	645.97	647.37	647.37	647.86	0.037380	5.63	33.74	34.58	1.01
SAFARI-CCSYA-R1	Alignment-REACH1	1500	PF 10yr	190.00	644.00	646.62		646.68	0.002506	1.88	101.07	70.31	0.28
SAFARI-CCSYA-R1	Alignment-REACH1	1450	PF 10yr	190.00	643.99	646.51	645.24	646.57	0.002002	1.86	102.00	61.02	0.25


CCSYA Sections Reach1 and Reach2 Plan: Plan 01 4/19/2017 2:36:05 PM
Geom: Geom 02 Flow: Flow -10yr
SAFARI-CCSYA-R1 Alignment-REACH1
Legend
WS PF 10yr
Ground
Elevation (ft)
652
651
650
649
648
647
646
645
644
643
1450
1500
1550
1600
1650
1700
Main Channel Distance (ft)


CCSYA Sections Reach1 and Reach2 Plan: Plan 01 4/19/2017 2:36:05 PM
Geom: Geom 02 Flow: Flow -10yr
SAFARI-CCSYA-R1 Alignment-REACH1
Legend
Vel Chnl PF 10yr
Vel Left (ft/s), Vel Chnl (ft/s), Vel Right (ft/s)
Main Channel Distance (ft)
0
2
4
6
8
10
12
1500
1600
1700


CCSYA Sections Reach1 and Reach2 Plan: Plan 01 4/19/2017 2:36:05 PM
Geom: Geom 02 Flow: Flow -10yr
SAFARI-CCSYA-R2 Alignment-REACH2
Legend
WS PF 10yr
Ground
Elevation (ft)
Main Channel Distance (ft)
500
490
480
470
460
450
440
430
420
410
400
200
300
400
500
600
700
800
900
295.55
385.03
469.53
620.72
729.66
867.52


CCSYA Sections Reach1 and Reach2 Plan: Plan 01 4/19/2017 2:36:05 PM
Geom: Geom 02 Flow: Flow -10yr
SAFARI-CCSYA-R2 Alignment-REACH2
Legend
Vel Chnl PF 10yr
Vel Left (ft/s), Vel Chnl (ft/s), Vel Right (ft/s)
Main Channel Distance (ft)
0
2
4
6
8
10
12
200
300
400
500
600
700
800
900

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