ATTACHMENT D

MITIGATED NEGATIVE DECLARATION

APPENDIX I

STORM WATER QUALITY MANAGEMENT PLAN

CITY OF SAN MARCOS

PRIORITY DEVELOPMENT PROJECT (PDP)
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
FOR
MANNING HOMES

COX ROAD / MULBERRY DR
SAN MARCOS , CA 92069

ASSESSOR'S PARCEL NUMBER(S):
182-131-14-00

ENGINEER OF WORK:

3/09/22

Robert Dentino, PE 45629

PREPARED FOR:

Manning Homes
Cox Road / Mulberry Dr
San Marcos, CA 92069
Contact Person: Craig kozma
Phone: (949) 250-4200
E-mail: craig@manninghomes.com

PDP SWQMP PREPARED BY:

Excel Engineering
440 State Place
Escondido, CA 92029
(760) 745-8188

DATE OF SWQMP:
11/11/2021
PLANS PREPARED BY:
Excel Engineering
440 State Place
Escondido, CA 92029
(760) 745-8188

REGISTERED PROFESSIONAL ENGINEER
ROBERT D. DENTINO
No. 45629
Exp. 12/31/22
CIVIL
STATE OF CALIFORNIA

3/09/22

City of San Marcos PDP SWQMP Template Date: March 15, 2016
PDP SWQMP Preparation Date: 11/11/2021

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TABLE OF CONTENTS

ACRONYMS

APN	Assessor's Parcel Number
BMP	Best Management Practice
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NRCS	Natural Resources Conservation Service
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
SWQMP	Storm Water Quality Management Plan

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PDP SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: Manning Homes
Permit Application Number: DSM21-0004

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 San Marcos BMP Design Manual, which is a design manual for compliance with local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the [City Engineer] has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP 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 the [City Engineer] 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.

Robert D. Dentino

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

Robert D. Dentino, RCE 45629, 12-31- 22

Print Name

Excel Engineering

Company

3/09/22

Date

Engineer's Seal:

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PDP SWQMP PROJECT OWNER'S CERTIFICATION PAGE

Project Name: Manning Homes
Permit Application Number: DSM21-0004

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for Hamann Companies by Excel Engineering. The PDP SWQMP is intended to comply with the PDP requirements of the City of San Marcos BMP Design Manual, which is a design manual for compliance with local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.

_____
Project Owner's Signature

Craig Kozma_____
Print Name

Manning Homes_____
Company

_____
Date

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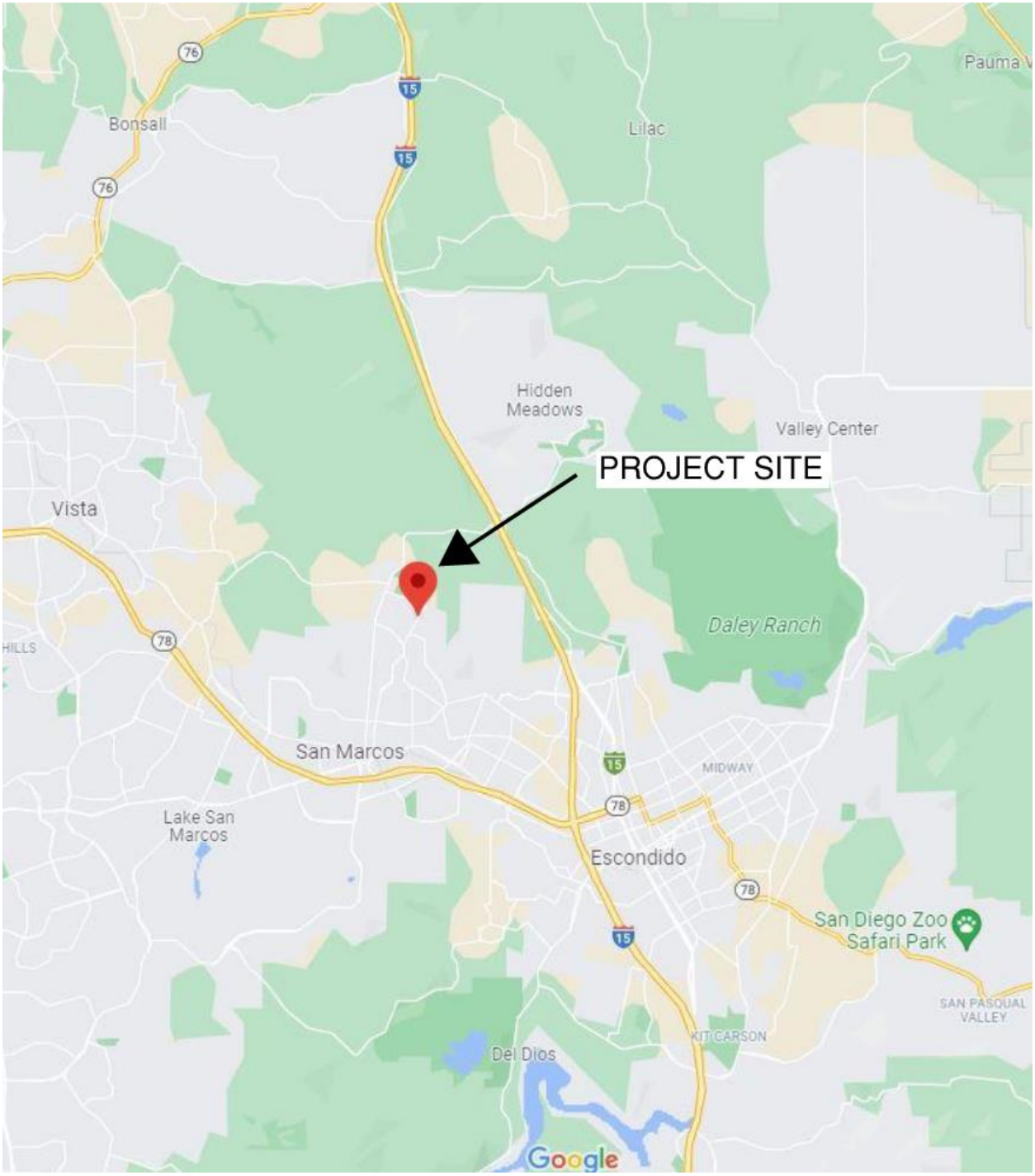
SUBMITTAL RECORD

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.

Submittal Number	Date	Project Status	Summary of Changes
1		☑ Preliminary Design / Planning/ CEQA ☐ Final Design	Initial Submittal
2	03/09/2022	☑ Preliminary Design / Planning/ CEQA ☐ Final Design	Second Submittal, Plan Check Comments
3		☐ Preliminary Design / Planning/ CEQA Final Design	
4		☐ Preliminary Design / Planning/ CEQA ☐ Final Design	

PROJECT VICINITY MAP

Project Name: Manning Homes
Permit Application Number: DSM21-0004



Applicability of Storm Water Best Management Practices (BMP) Requirements

(Storm Water Intake Form for all Development Permit Applications)
For detailed information please visit:
http://www.san-marcos.net/departments/development-services/stormwater/development-planning

Form I-1
[March 15, 2016]

Project Identification

Project Name: Manning Homes

Description: Proposed project is a residential houses project that will include driveways, buildings, structural BMPs, and all amenities.

Permit Application Number (if applicable): TSM21-0004 | Date: 11/10/2021

Project Address: Cox Road / Mulberry Dr, San Marcos, CA, 92069.

Determination of Requirements

This form is required as part of the City's application process. The purpose of this form is to identify potential land development planning storm water requirements that apply to development projects.

Development projects are defined as construction, rehabilitation, redevelopment, or reconstruction of any public or private projects. In addition, the identification of a development project, as it relates to storm water regulations, would truly apply to development and redevelopment activities that have the potential to contact storm water and contribute a source of pollutants, or reduce the natural absorption and infiltration abilities of the land.

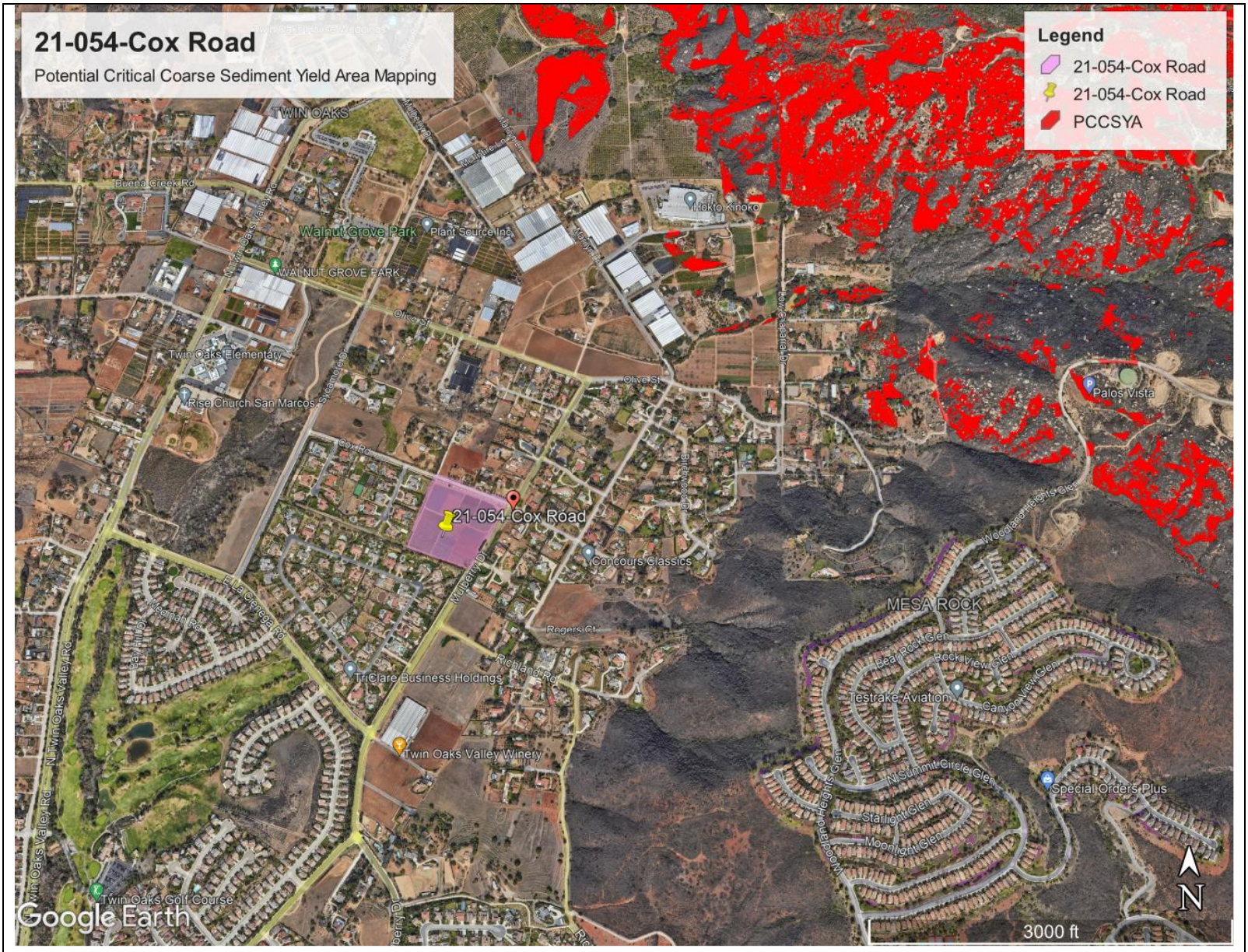
To access the BMP Design Manual, Storm Water Quality Management Plan (SWQMP) templates, and other pertinent information related to this program please refer to:
http://www.san-marcos.net/departments/development-services/stormwater/development-planning

Please answer each of the following steps below, starting with Step 1 and progressing through each step until reaching "Stop".

Step	Answer	Progression
Step 1: Based on the above, Is the project a "development project" (See definition above)? See Section 1.3 of the BMP Design Manual for further guidance if necessary.	☑ Yes	Go to Step 2.
	☐ No	Permanent BMP requirements do not apply. No SWQMP will be required. Provide brief discussion below. **STOP.**
Discussion / justification if the project is not a "development project" (e.g., the project includes *only* interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? **To answer this item, complete Form I-2, Project Type Determination. See Section 1.4 of the BMP Design Manual *in its entirety* for guidance.** **In addition to Section 1.4, please refer to the City's SWQMP Submittal Requirements form.**	☐ Standard Project	Only Standard Project requirements apply, including Standard Project SWQMP. **STOP.**
	☑ PDP	Standard and PDP requirements apply, including PDP SWQMP. **Go to Step 3 on the following page.**
	☐ Exception to PDP definitions	Standard Project requirements apply, and any additional requirements specific to the type of project. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP. **STOP.**
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		

Form I-1 Page 2, Form Date: March 15, 2016		
Step 3 (PDPs only). Please answer the list of questions in this section to determine if hydromodification requirements reply to the proposed PDP. Does the project:		
Step 3a. Discharge storm water runoff directly to the Pacific Ocean?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3b.
Step 3b. Discharge storm water runoff directly to an enclosed embayment, not within protected areas?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3c.
Step 3c. Discharge storm water runoff directly to a water storage reservoir or lake, below spillway or normal operating level?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3d.
Step 3d. Discharge storm water runoff directly to an area identified in WMAA?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Hydromodification requirements apply to the project. Go to Step 4.
Discussion / justification if hydromodification control requirements do <u>not</u> apply:		

Step 4 (PDPs subject to hydromodification control requirements only). Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance.	☐ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☑ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.



No Potential Critical Coarse Sediment Yield areas nearby that will influence the project.

Project Type Determination Checklist			Form I-2 [March 15, 2016]
Project Information			
Project Name/Description: Manning Homes			
Permit Application Number (if applicable): DSM21-0004			Date: 11/10/2021
Project Address: Cox Road / Mulberry Dr, San Marcos, CA 92069			
Project Type Determination: Standard Project or Priority Development Project (PDP)			
The project is (select one): ☑ New Development ☐ Redevelopment			
The total proposed newly created or replaced impervious area is: _140548.22_ ft^2 (__3.23__) acres			
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.

Form I-2 Page 2, Form Date: March 15, 2016			
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. See BMP Design Manual Section 1.4.2 for additional guidance.*
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 ☐	(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 BMP 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).

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 new impervious areas are considered PDP

OR

greater than fifty percent (50%) – the entire project site is a PDP

Site Information Checklist For PDPs	Form I-3B (PDPs) [March 15, 2016]
Project Summary Information	
Project Name	Manning Homes
Project Address	COX ROAD / MULBERRY DR SAN MARCOS , CA 92069
Assessor's Parcel Number(s) (APN(s))	182-131-14-00
Permit Application Number	DSM21-0004
Project Hydrologic Unit	Select One: ☐ Santa Margarita 902 ☐ San Luis Rey 903 ☑ Carlsbad 904 ☐ San Dieguito 905 ☐ Penasquitos 906 ☐ San Diego 907 ☐ Pueblo San Diego 908 ☐ Sweetwater 909 ☐ Otay 910 ☐ Tijuana 911
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	The project is located in the Twin Oaks Hydrologic Sub Area of the San Marcos Hydrologic Area of the Carlsbad Hydrologic Unit (904.53).
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	__10.05__ Acres (_437778_____ Square Feet)
Area to be Disturbed by the Project (Project Area)	__10.73__ Acres (_467398.8_____ Square Feet)
Project Proposed Impervious Area (subset of Project Area)	__3.23__ Acres (__140548.22____ Square Feet)
Project Proposed Pervious Area (subset of Project Area)	__7.50__ Acres (_326850.58_____ Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	

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):

- ☑ Vegetative Cover
- ☑ Non-Vegetated Pervious Areas
- ☐ Impervious Areas

Description / Additional Information:

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):

- ☐ GW Depth < 5 feet
- ☐ 5 feet < GW Depth < 10 feet
- ☐ 10 feet < GW Depth < 20 feet
- ☑ GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

- ☐ Watercourses
- ☐ Seeps
- ☐ Springs
- ☐ Wetlands
- ☑ None

Description / Additional Information:

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 onsite is an existing farmland. The project fronts onto Cox Road and Mulberry Drive. The property drains primarily by overland flow to an existing storm drain system located at the south edge of the project site. The site is relatively level with a small 2:1 cut slope.
The tributary offsite is approximately 10.137 acres total. Storm water drains from the west to the east side of the offsite then bypass from the north to the south of the project site and meets the onsite discharge at the southeast edge of the project site.
The existing brow ditch is located at the south edge of the project site and convey water from both offsite and onsite to the POC, which is located at the most southernly part of the project site.
The total drainage areas of the pre-project is 20.871 acres. The design flows of the pre-project at the POC is 20.62 CFS.

Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

The project is proposing to build residential houses. As part of this project, associated improvements will include biofiltrations basin located at the south edge and southeast corner of the project site. All necessary utilities (storm, sewer, water, etc.) will be installed as part of the project.

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

The proposed impervious areas of the project will include houses, the associated driveway aisles, the associated landscape flatwork and the paved street at the east side of the project site.

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

The proposed pervious features will include two biofiltration BMPs and other minor landscaped areas around the building's footprint.

Does the project include grading and changes to site topography?

☑ Yes

☐ No

Description / Additional Information:

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:

The project is proposed to build two biofiltration basins for storm water quality, which located at the south edge and southeast corner of the project site, respectively, to incorporate the collection of storm water from the building and street and direct the storm water through storm water drainage pipes to POC, which is located at the south edge of the study site. Water from the residential houses area will surface flow into one biofiltration basin (BMP-A) accounting for 9.811 acres of the site. Water from the eastern street portion will surface flow into another biofiltration basin (BMP-B) accounting for 0.985 acres of the site. A pipe directs flow from BMP-B to confluence with an existing brow ditch and meets water from BMP-A at the POC. Then it will follow its existing flow path into an existing brow ditch that drains south westerly to an existing site.

For more information on these flows, see the Drainage Study for this project.

Summary of Q100 Runoff

	Area (AC)	Tc (MIN)	Q (CFS)
Existing Condition	20.871	20.620	25.929
Unmitigated Developed Condition	20.871	21.069	28.092
Mitigated Developed Condition	20.871	21.069	25.352

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

Description / Additional Information:

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 of storm water from the project site discharge the upper of San Marcos Creek then to the Lake San Marcos and ultimate discharge to the Pacific Ocean.

List any 303(d) impaired water bodies 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 Marcos Creek-Upper	DDE, Toxicity, Benthic Community Effects, Indicator Bacteria, Phosphorus, Selenium	Nutrients

Identification of Project Site Pollutants*

***Identification of project site pollutants 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 BMP Design Manual Appendix B.6):

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

Hydromodification Management Requirements

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

☑ Yes, hydromodification management flow control structural BMPs required.

☐ 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 for the watershed in which the project resides.

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

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?

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 BMP Design Manual been performed?

☐ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) 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 2.b 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:

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 is one POC at the south edge of the property. Water flows from both biofiltration basins to the street at this point.

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)

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.

Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)	Form I-4 [March 15, 2016]

Project Identification

Project Name: Manning Homes

Permit Application Number: DSM21-0004

Source Control BMPs

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP 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 may be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☑ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☑ Yes	☐ No	☐ N/A
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
Discussion / justification if SC-3 not implemented:			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
Discussion / justification if SC-4 not implemented:			

Form I-4 Page 2 of 2, Form Date: March 15, 2016			
Source Control Requirement	**Applied?**		
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☑ Yes	☐ No	☐ N/A
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)			
☐ On-site storm drain inlets	☐ Yes	☐ No	☑ N/A
☐ Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☑ N/A
☑ Interior parking garages	☑ Yes	☐ No	☐ N/A
☑ Need for future indoor & structural pest control	☑ Yes	☐ No	☐ N/A
☑ Landscape/Outdoor Pesticide Use	☑Yes	☐ No	☐ N/A
☐ Pools, spas, decorative fountains, and other water features	☐ Yes	☐ No	☑ N/A
☐ Food service	☐ Yes	☐ No	☑ N/A
☑ Refuse areas	☑ Yes	☐ No	☐ N/A
☐ Industrial processes	☐ Yes	☐ No	☑ N/A
☐ Outdoor storage of equipment or materials	☐ Yes	☐ No	☑ N/A
☐ Vehicle and Equipment Cleaning	☐Yes	☐ No	☑ N/A
☐ Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☑ N/A
☐ Fuel Dispensing Areas	☐ Yes	☐ No	☑ N/A
☐ Loading Docks	☐ Yes	☐ No	☑ N/A
☑ Fire Sprinkler Test Water	☑ Yes	☐ No	☐ N/A
☐ Miscellaneous Drain or Wash Water	☐ Yes	☐ No	☑ N/A
☐ 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.			

Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)	Form I-5 [March 15, 2016]

Project Identification

Project Name: Manning Homes

Permit Application Number DSM21-0004

Site Design BMPs

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP 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 may be provided.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-1 not implemented:			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion	☐ Yes	☑ No	☐ N/A
Discussion / justification if SD-5 not implemented: There are no significant areas of level vegetation to implement this BMP. All impervious areas are directed to a biofiltration pond.			

Form I-5 Page 2 of 2, Form Date: March 15, 2016			
Site Design Requirement	**Applied?**		
SD-6 Runoff Collection	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-6 not implemented:			
SD-7 Landscaping with Native or Drought Tolerant Species	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☐ No	☑ N/A
Discussion / justification if SD-8 not implemented:			

Summary of PDP Structural BMPs	Form I-6 (PDPs) [March 15, 2016]

Project Identification

Project Name: Manning Homes

Permit Application Number: DSM21-0004

PDP Structural BMPs

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP 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 BMP 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 local jurisdiction 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 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the BMP Design Manual).

Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the catchbasin below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).

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 BMP Design 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.

Step 1, the project was divided up and evaluated at the DMA scale. Each DMA area was classified as Self-Treating, Self-Retaining or Draining to a Best Management Practice (BMP).

Step 2, For the DMAs that drain to BMPs, the appropriate runoff factors were applied to each area and the required Design Capture Volume (DCV) of each sub area calculated. For this project, Harvest and reuse is not considered feasible.

Step 3, due to the permeability of the underlying soils, (soil type C), infiltration BMPs are feasible.

Step 3A&B for the no infiltration condition leads to section 5.5.3 which is the Biofiltration BMP category. The various sizing methods included in Appendix B.5 were followed and the entire DCV can be treated within the proposed BMPs.

Step 4, each Biofiltration area is sized in accordance with the fact sheet BF-3 found in appendix E of the BMP design manual. This project requires hydromodification controls, so the Biofiltration units accomplish both storm water treatment and flow control mitigation in an integrated design.

(Continue on page 2 as necessary.)

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. **BMP A**

Construction Plan Sheet No.

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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place Escondido, CA 92029
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. **BMP B**

Construction Plan Sheet No.

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)
  -MWS

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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	The Engineer of Work Robert Dentino Excel Engineering 440 State Place Escondido, CA 92029
Who will be the final owner of this BMP?	City
Who will maintain this BMP into perpetuity?	City
What is the funding mechanism for maintenance?	City CFD

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	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	☑ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☑ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☑ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☑ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☑ Included

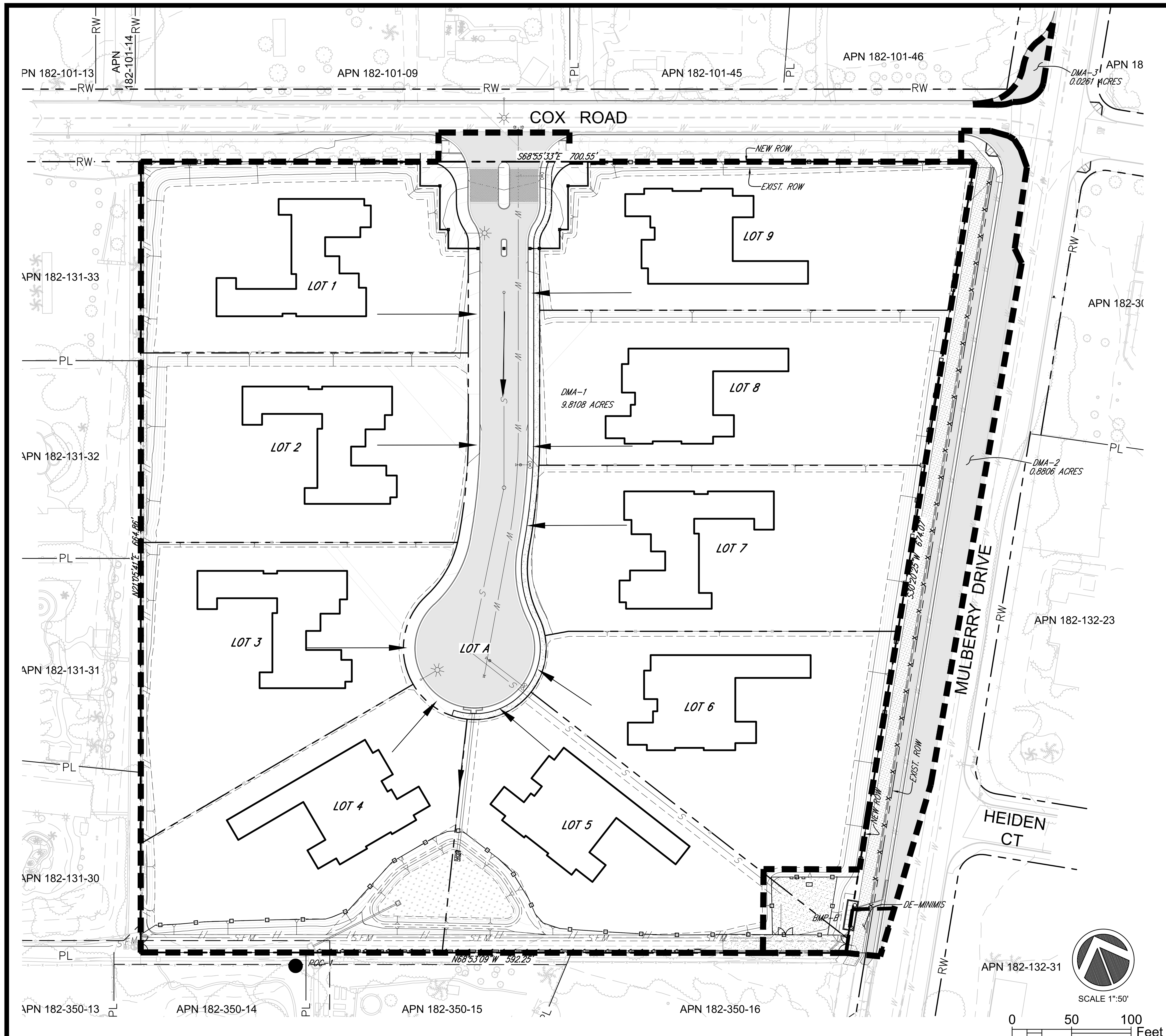
Attachment 1A

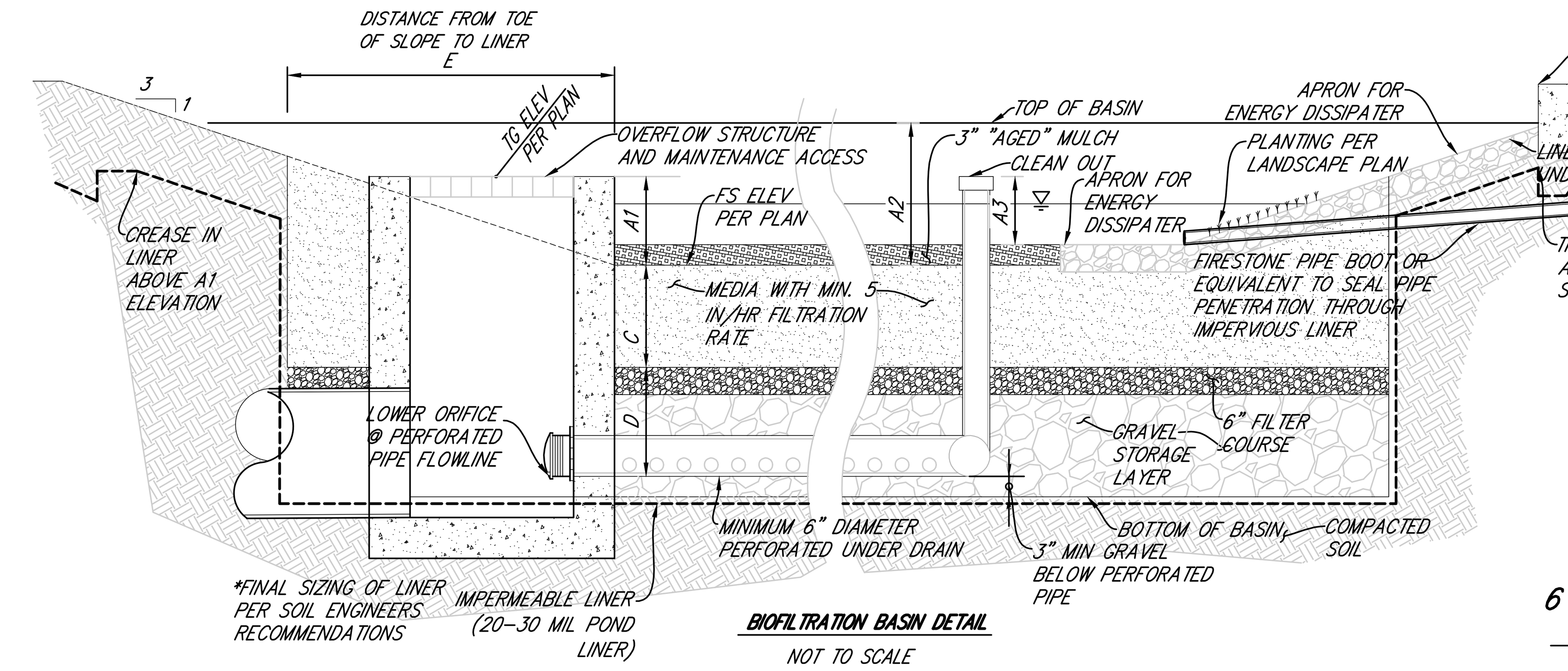
DMA Exhibit

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

The DMA Exhibit must identify:

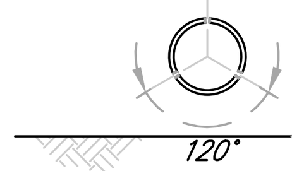
- ☑ Underlying hydrologic soil group
- ☑ Approximate depth to groundwater
- ☑ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☑ Critical coarse sediment yield areas to be protected
- ☑ Existing topography and impervious areas
- ☑ Existing and proposed site drainage network 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 Form I-3B)
- ☑ Structural BMPs (identify location, type of BMP, and size/detail)





BIOFILTRATION BASIN DETAIL

NOT TO SCALE



6" PVC PIPE PERFORATION LAYOUT DETAIL

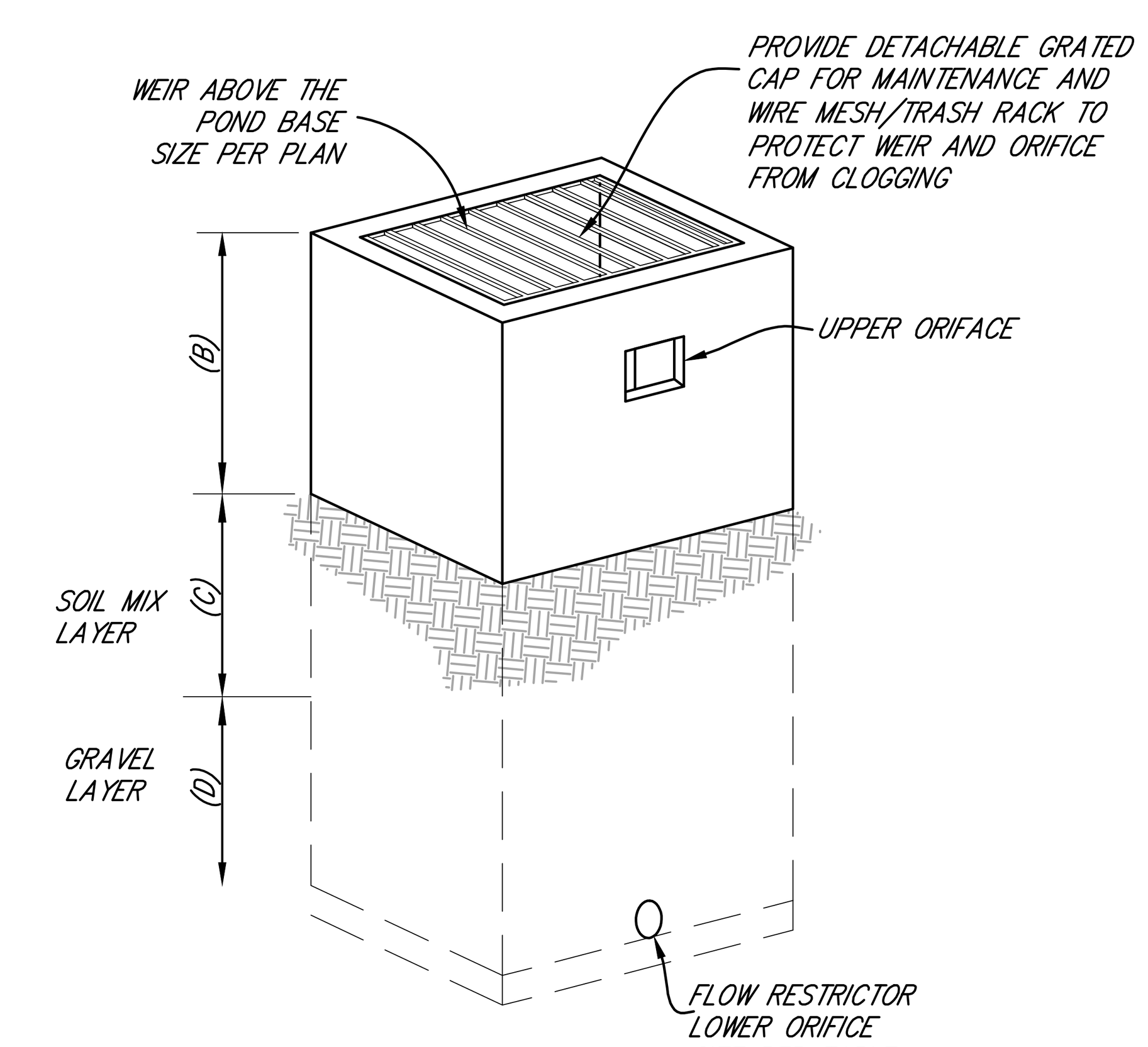
NOT TO SCALE

STRUCTURAL BIO-BASIN SUMMARY TABLE

DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) WATER QUALITY	A2 (INCH) TOP OF BASIN	A3 (INCH) CLEAN OUT	A4 (INCH) TOP OF RISER	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (INCH) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICES DIAMETER		IMPERMEABLE LINER ?
														UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP	BMP-A	BIOFILTRATION	4677	6	36	6	12	3	21	60	47	24X24	3	2	YES
DMA-2+ DMA-3	DRAINS TO BMP	BMP-B	PROPRIETARY BIOFILTRATION (MWS)	FLOW-THROUGH 0.796 CFS	-	-	-	-	-	-	-	-	-	N/A	2.75	-

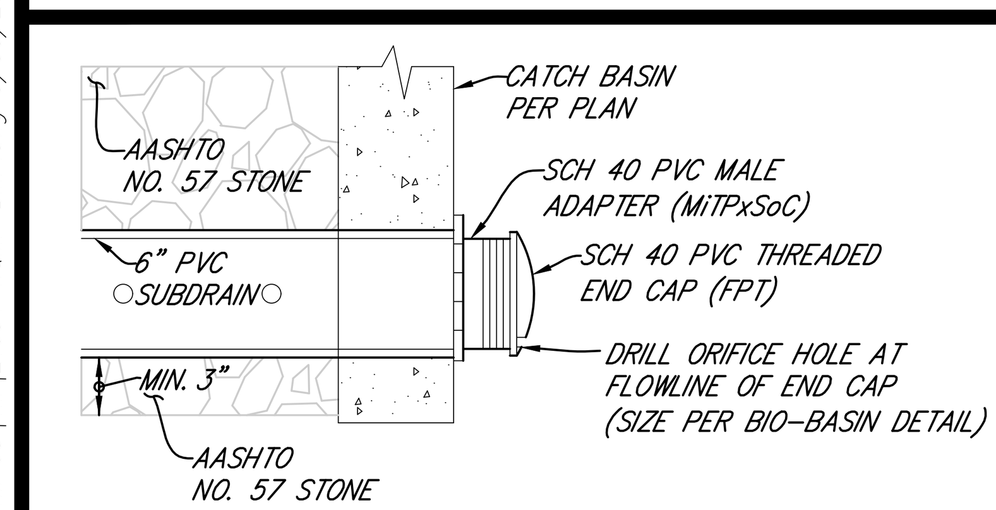
NOTE: FREEBOARD = A2-A1

DMA-ID	IMPERVIOUS (SQFT)	PERVIOUS (SQFT)	TOTAL (SQFT)
DMA-1	93,228.58	334,129.62	427,358.20
DMA-2	19,329.64	17,782.56	37,112.20
DMA-3	1,136.75	0.00	1,136.75
DE-MINIMIS	502.34	733.98	1,236.32



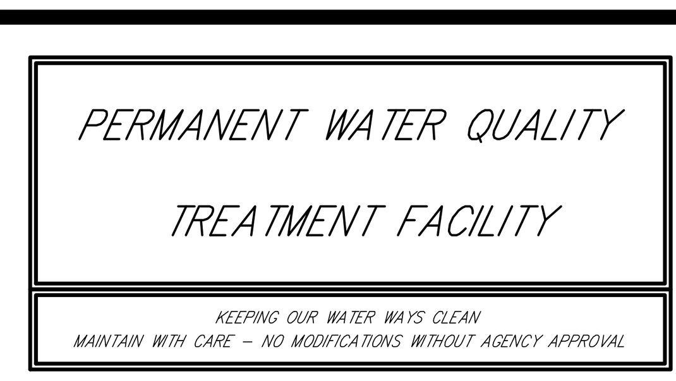
CATCHBASIN DETAIL

NOT TO SCALE



LOWER ORIFICE DETAIL

NOT TO SCALE

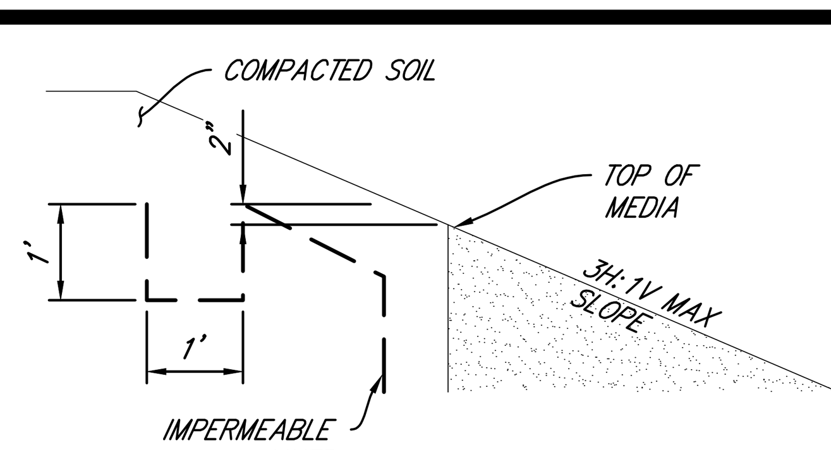


DETAIL
WATER QUALITY SIGN- PLACED AT EACH BIOFILTRATION BASIN

NOTE: ALL BIOFILTRATION AREAS WILL HAVE A SIGN POSTED TO BE VISIBLE AT ALL TIMES.

DETAIL
"NO DUMPING" AT CATCH BASINS

NOTE: ALL CATCH BASINS WITH GRATES SHALL BE STENCILED WITH CITY REQUIRED ITEM PER ABOVE DETAIL (DAS MANUFACTURING #SDO OR EQUIVALENT).



IMPERMEABLE LINER EDGE ANCHOR DETAIL

NOT TO SCALE

LEGEND

- DMA BOUNDARY
- WATER QUALITY EFFECTIVE AREA
- GENERAL DRAINAGE DIRECTION PATH

EXISTING SITE FEATURES:

- THE APPROXIMATE DEPTH TO GROUNDWATER IS GREATER THAN 20 FEET.
- THERE ARE NO NATURAL HYDROLOGIC FEATURES ON THE SITE.
- THE SITE PROPOSES TO CONNECT TO THE EXISTING PUBLIC STORM DRAIN SYSTEM LOCATED IN THE SOUTH EDGE OF THE SITE.
- BASED ON WATERSHED MAPPING OF POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS (CCSYA), THERE ARE NO CCSYA LOCATED WITHIN THE PROJECT BOUNDARY OR TRIBUTARY TO THE RUNOFF BYPASSED AROUND THE SITE.

NOTE:
HOA WILL BE THE FINAL OWNER OF BMP-A, MAINTAIN BMP INTO PERPETUITY, AND FUNDING MECHANISM FOR MAINTENANCE.

HYDROLOGIC SOIL GROUP
THE HYDROLOGICAL SOIL GROUP FOR THIS SITE IS TYPE C.

DATE	REMARKS
12/2021	PLANNING SUBMITTAL

EXCEL ENGINEERING
LAND PLANNING • ENGINEERING • GIS • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760)745-8118 FX (760)745-8134

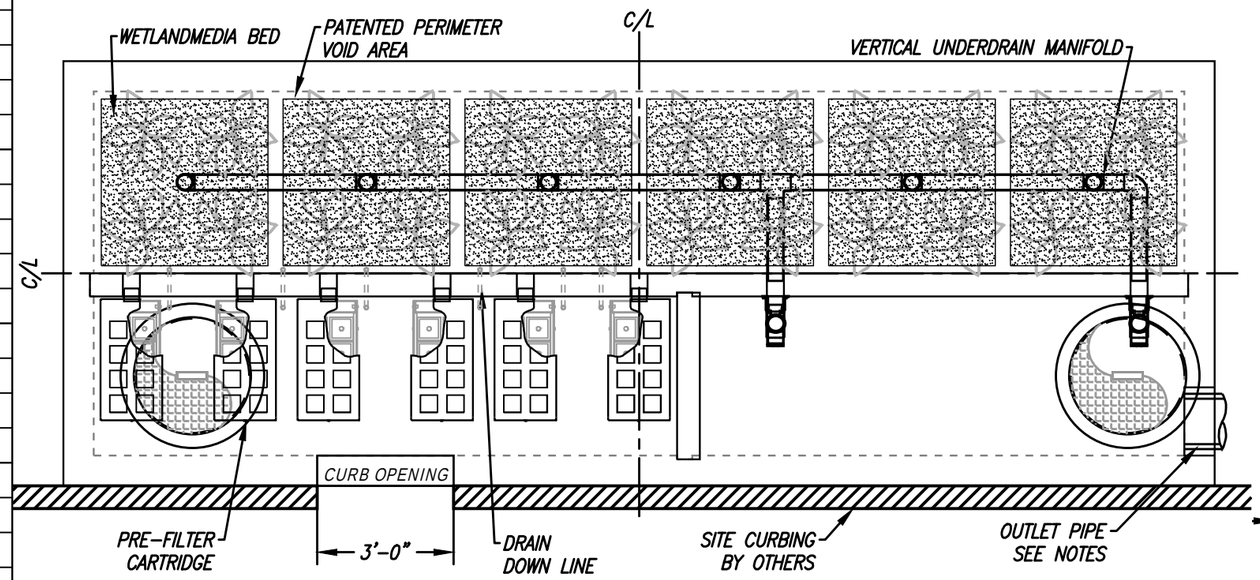
SHEET 7 OF 7 SHEETS

PRELIMINARY WQMP BMP

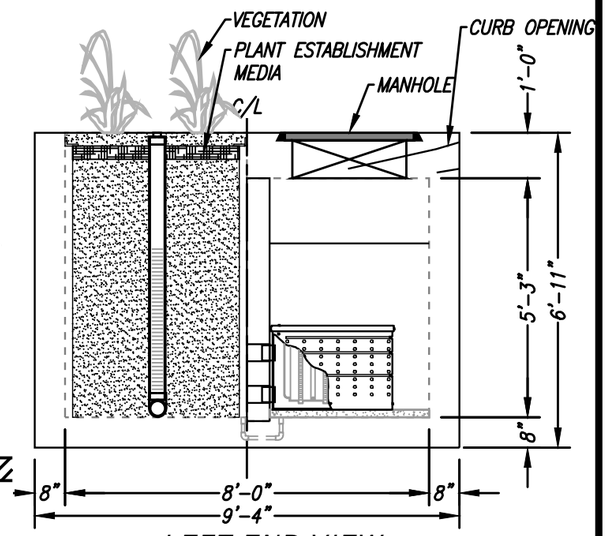
MANNING HOMES
APN 182-131-14-00
COX ROAD / MULBERRY DR, SAN MARCOS CA
TSM21-0004

SITE SPECIFIC DATA			
PROJECT NUMBER			15258
PROJECT NAME			MANNING HOMES
PROJECT LOCATION			SAN MARCOS, CA
STRUCTURE ID			----
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.796	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			21.00
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	N/A	N/A	N/A
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	704.42	RCP	12
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	710.76	710.76	710.76
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30"	OPEN PLANTER	ø30"
WETLANDMEDIA VOLUME (CY)			19.03
ORIFICE SIZE (DIA. INCHES)			ø2.75 EA

NOTES: PRELIMINARY NOT FOR CONSTRUCTION.



PLAN VIEW



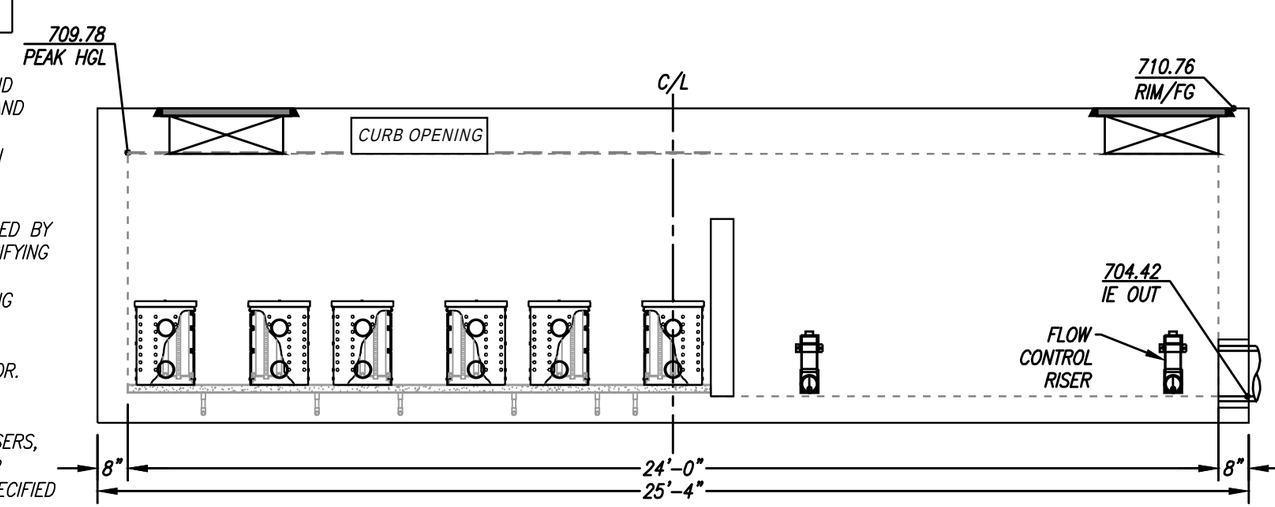
LEFT END VIEW

INSTALLATION NOTES

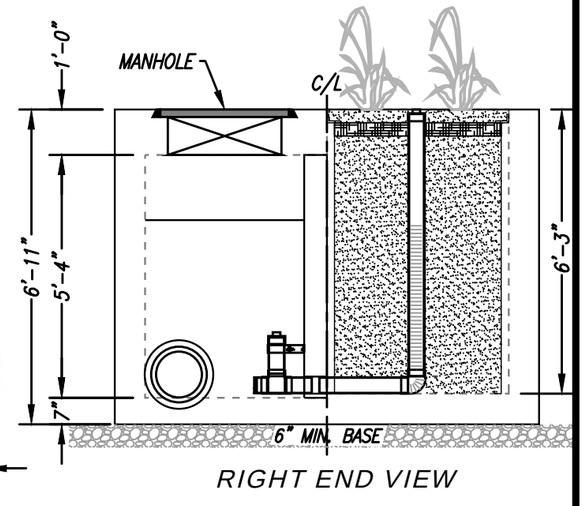
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT FLOW (CFS)	0.796
OPERATING HEAD (FT)	3.9
PRETREATMENT LOADING RATE (GPM/SF)	2.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-8-24-6'-3"-C-HC
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4/14/22MBILLINGS

Attachment 1B

Tabular Summary of DMA's

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.72	inches
2	Area tributary to BMP (s)	A=	9.81	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=	8,205.00	cubic-feet

Drainage Basin ID or Name	**DMA-1**	UNITS
85th Percentile 24-hr Storm Depth	0.72	INCHES
Impervious Surfaces	118,835	SQFT
Engineered Pervious Surfaces	308,524	SQFT
Total Tributary Area	427,359	SQFT
Total Tributary Area	9.81	ACRE

Attachment 1C

Harvest and Use Feasibility
Screening Checklist

Harvest and Use Feasibility Checklist	Form I-7

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.

Flushing: (4 people/house)x(9 houses)x(9.3 gal/res) = 334.8 gallons
(334.8 gal)(1.5 days)/(7.48 gal/cu. ft.) = 97 cu. ft.

Irrigation: 36-hr Mod. Water per Table B.3-3 = (1,470 gal days/acre)(7.5 acres)/(7.48 gal/cu feet) = 1473.93 cu ft.
Total Demand = 1541.07 cu. ft.

3. Calculate the DCV using worksheet B-2.1.

DCV = _____ (cubic feet)

DCV = 9425 cu. ft
0.25xDCV=2356.25 cu. ft

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.

Is harvest and use feasible based on further evaluation?

☐ Yes, refer to Appendix E to select and size harvest and use BMPs.

☑ No, select alternate BMPs.

Attachment 1D

Categorization of Infiltration
Feasibility Condition

Categorization of Infiltration Feasibility Condition — Form I-8

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?

Note that it is not necessary to investigate each and every criterion in the worksheet if infiltration is precluded. Instead a letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues will be required.

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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on review of soil survey maps, the on-site materials consist of NRCS Soil Group C. Additionally, in-situ testing indicated infiltration rates are 0.08 and 0.36 inches per hour.

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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

As noted above, the infiltration rate at the site is not greater than 0.5 inches per hour and is next to a street for one basin and next to a fill slope for another

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

Form I-8 Page 2 of 4			
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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: As noted above, the infiltration rate at the site is not greater than 0.5 inches per hour, however the water going through the basin would be clean. 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: As noted above, the infiltration rate at the site is not greater than 0.5 inches per hour, but this will not affect other items 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

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Form I-8 Page 3 of 4

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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

Based on review of soil survey maps, the on-site materials consist of NRCS Soil Group C. Additionally, in-situ testing indicated infiltration rates are 0.08 and 0.36 inches per hour.

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 must be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

Based on review of soil survey maps, the on-site materials consist of NRCS Soil Group C. Additionally, in-situ testing indicated infiltration rates are 0.08 and 0.36 inches per hour.

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-8 Page 4 of 4			
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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Infiltration in any appreciable quantity is not anticipated to pose a significant risk for groundwater related concerns. 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 must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Infiltration is not anticipated to violate downstream water rights. 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 1-4 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.**	PARTIAL INFILTRATION ALLOWED IF CONFIRMED BY GEOTECH	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Attachment 1E

Pollutant Control BMP Design
Worksheets & Calculations

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
	Drainage Basin ID or Name	**DMA-1**	
1	Remaining DCV after implementing retention BMPs	8205	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.00	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	n/a	inches
7	Assumed surface area of the biofiltration BMP	4,677	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	818.39	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	7386.61	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	21	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Media available pore space	0.20	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)	5.00	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	10.2	inches
19	Total Depth Treated [Line 17 + Line 18]	40.2	inches
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	11079.91	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	3307.44	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]	6153.75	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	7239.71	23
Footprint of the BMP			
24	Area draining to the BMP	9.81	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.32	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	0.09	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	3307.44	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	0.10	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	NO	

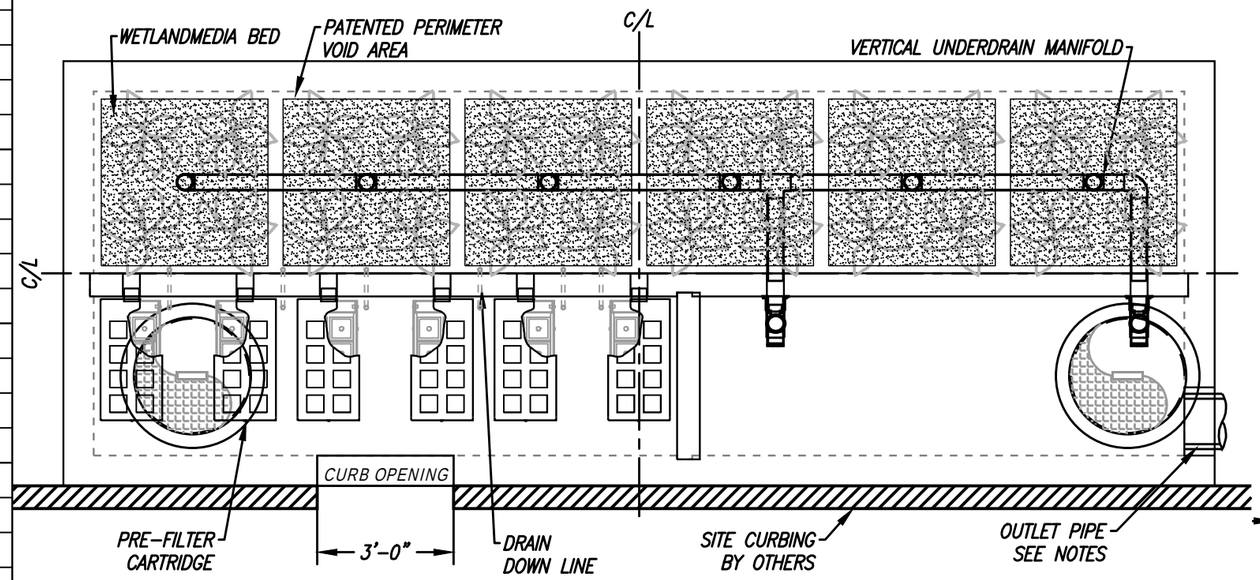
Modular Wetland Flow-Thru Unit

Flow-thru Design Flows		Worksheet B-2.1		
1	DCV	DCV	0	cubic-feet
2	DCV retained	$DCV_{retained}$	0	cubic-feet
3	DCV biofiltered	$DCV_{biofiltered}$	0	cubic-feet
4	DCV requiring flow-thru (Line 1 — Line 2 —0.67*Line 3)	$DCV_{flow-thru}$	0	cubic-feet
5	Adjustment factor (Line 4 / Line 1)	AF=	1	unitless
6	Design rainfall intensity	i=	0.2	in/hr
7	Area tributary to BMP (s)	A=	11.0600	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.4	unitless
9	Calculate Flow Rate = AF x (C x I x A)	Q=	0.7960	cfs

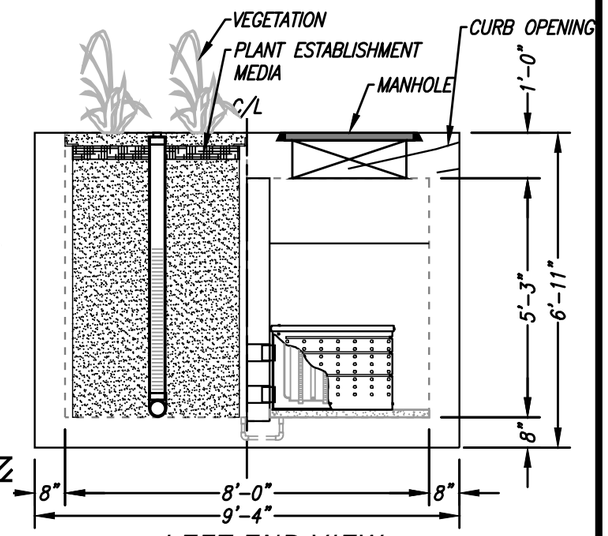
* Note: DMA-2, DMA-3 and offsite area drain to MWS Flow-Thru Unit, therefore, the area tributary to the MWS here is 0.88 acre from DMA-2 + 0.03 acre from DMA-3 +10.15 acre from offsite = 11.06 acre total.

SITE SPECIFIC DATA			
PROJECT NUMBER			15258
PROJECT NAME			MANNING HOMES
PROJECT LOCATION			SAN MARCOS, CA
STRUCTURE ID			----
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.796	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			21.00
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	N/A	N/A	N/A
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	704.42	RCP	12
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	710.76	710.76	710.76
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30"	OPEN PLANTER	ø30"
WETLANDMEDIA VOLUME (CY)			19.03
ORIFICE SIZE (DIA. INCHES)			ø2.75 EA

NOTES: PRELIMINARY NOT FOR CONSTRUCTION.



PLAN VIEW



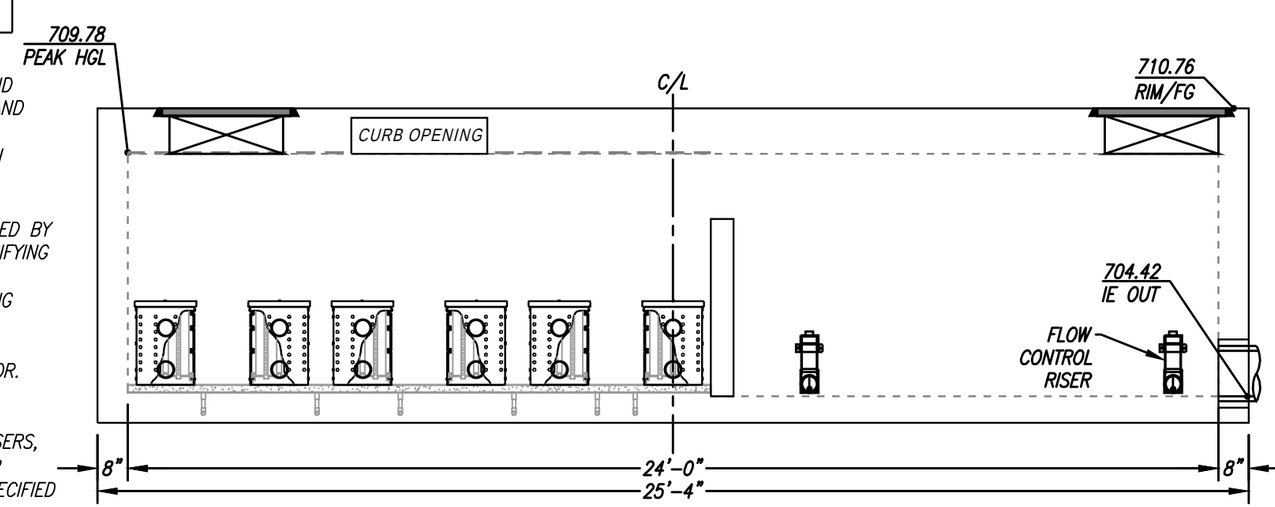
LEFT END VIEW

INSTALLATION NOTES

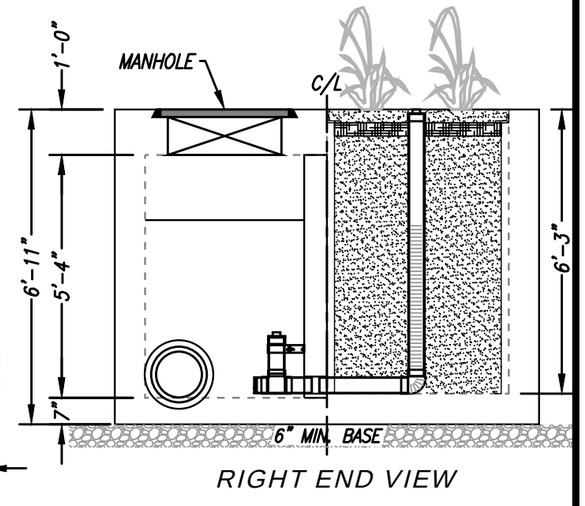
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT FLOW (CFS)	0.796
OPERATING HEAD (FT)	3.9
PRETREATMENT LOADING RATE (GPM/SF)	2.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-8-24-6'-3"-C-HC
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4/14/22MBILLINGS

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	Hydromodification Management Exhibit (Required)	☑ Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☑ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☑ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☑ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☑ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☑ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☑ 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

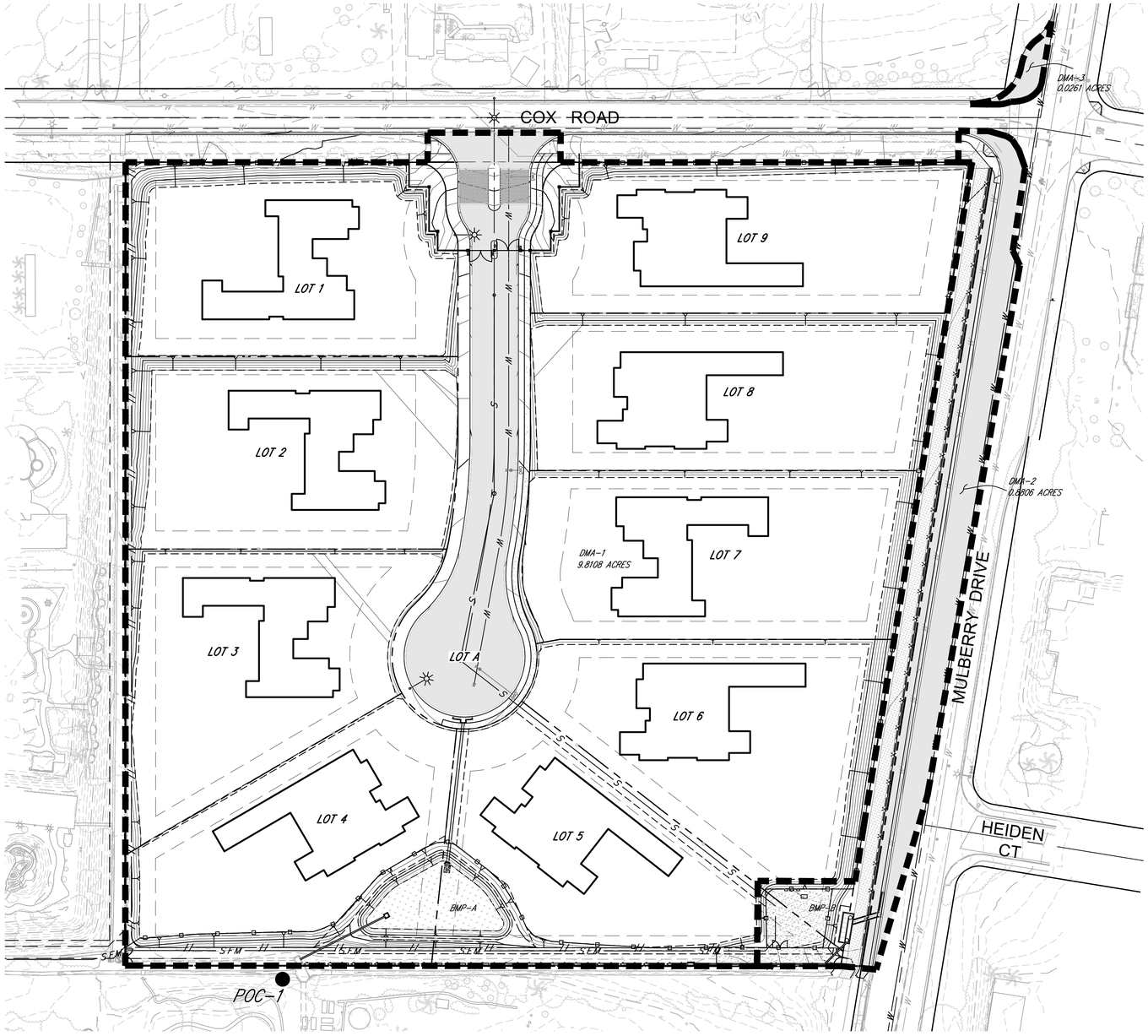
Attachment 2A:

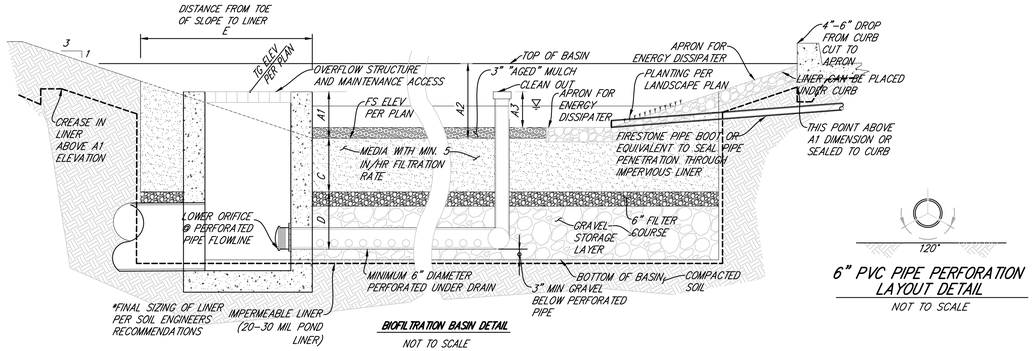
Hydromodification Management Exhibit

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)





BIOFILTRATION BASIN DETAIL
NOT TO SCALE

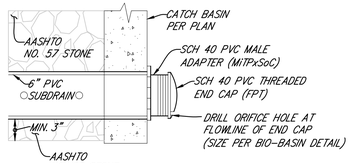
6" PVC PIPE PERFORATION LAYOUT DETAIL
NOT TO SCALE

STRUCTURAL BIO-BASIN SUMMARY TABLE

DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) WATER QUALITY	A2 (INCH) TOP OF BASIN	A3 (INCH) CLEAN OUT	A4 (INCH) TOP OF RISER	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (INCH) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICES DIAMETER		IMPERMEABLE LINER ?
														UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP	BMP-A	BIOFILTRATION	4677	6	36	6	12	3	21	60	47	24X24	3	2	YES
DMA-2+ DMA-3	DRAINS TO BMP	BMP-B	PROPRIETARY BIOFILTRATION (MWS)	FLOW-THROUGH 0.796 CFS	–	–	–	–	–	–	–	–	–	N/A	2.75	–

NOTE: FREEBOARD = A2-A1

DMA-ID	IMPERVIOUS (SQFT)	PERVIOUS (SQFT)	TOTAL (SQFT)
DMA-1	93,228.58	334,129.62	427,358.20
DMA-2	19,329.64	17,782.56	37,112.20
DMA-3	1,136.75	0.00	1,136.75
DE-MINIMIS	502.34	733.98	1,236.32



LOWER ORIFICE DETAIL
NOT TO SCALE

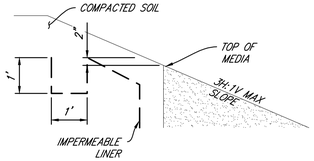
PERMANENT WATER QUALITY TREATMENT FACILITY
KEEPING OUR WATER WAYS CLEAN
MAINTAIN WITH CARE – NO MODIFICATIONS WITHOUT AGENCY APPROVAL

DETAIL
WATER QUALITY SIGN- PLACED AT EACH BIOFILTRATION BASIN

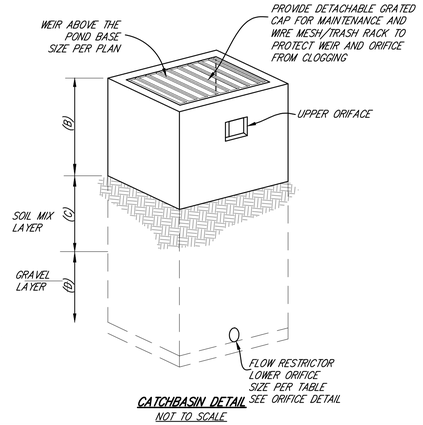
NOTE: ALL BIOFILTRATION AREAS WILL HAVE A SIGN POSTED TO BE VISIBLE AT ALL TIMES.

DETAIL
"NO DUMPING" AT CATCH BASINS

NOTE: ALL CATCH BASINS WITH GRATES SHALL BE STENCILED WITH CITY REQUIRED ITEM PER ABOVE DETAIL (DAS MANUFACTURING #SDO OR EQUIVALENT).



IMPERMEABLE LINER EDGE ANCHOR DETAIL
NOT TO SCALE



CATCHBASIN DETAIL
NOT TO SCALE

HYDROLOGIC SOIL GROUP

THE HYDROLOGICAL SOIL GROUP FOR THIS SITE IS TYPE C.

EXISTING SITE FEATURES:

- THE APPROXIMATE DEPTH TO GROUNDWATER IS GREATER THAN 20 FEET.
- THERE ARE NO NATURAL HYDROLOGIC FEATURES ON THE SITE.
- THE SITE PROPOSES TO CONNECT TO THE EXISTING PUBLIC STORM DRAIN SYSTEM LOCATED IN THE SOUTH EDGE OF THE SITE.
- BASED ON WATERSHED MAPPING OF POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS (CCSYA), THERE ARE NO CCSYA LOCATED WITHIN THE PROJECT BOUNDARY OR TRIBUTARY TO THE RUNOFF BYPASSED AROUND THE SITE.

LEGEND

DMA BOUNDARY

WATER QUALITY EFFECTIVE AREA

NOTE:
HOA WILL BE THE FINAL OWNER OF BMP-A, MAINTAIN BMP INTO PERPETUITY, AND FUNDING MECHANISM FOR MAINTENANCE.

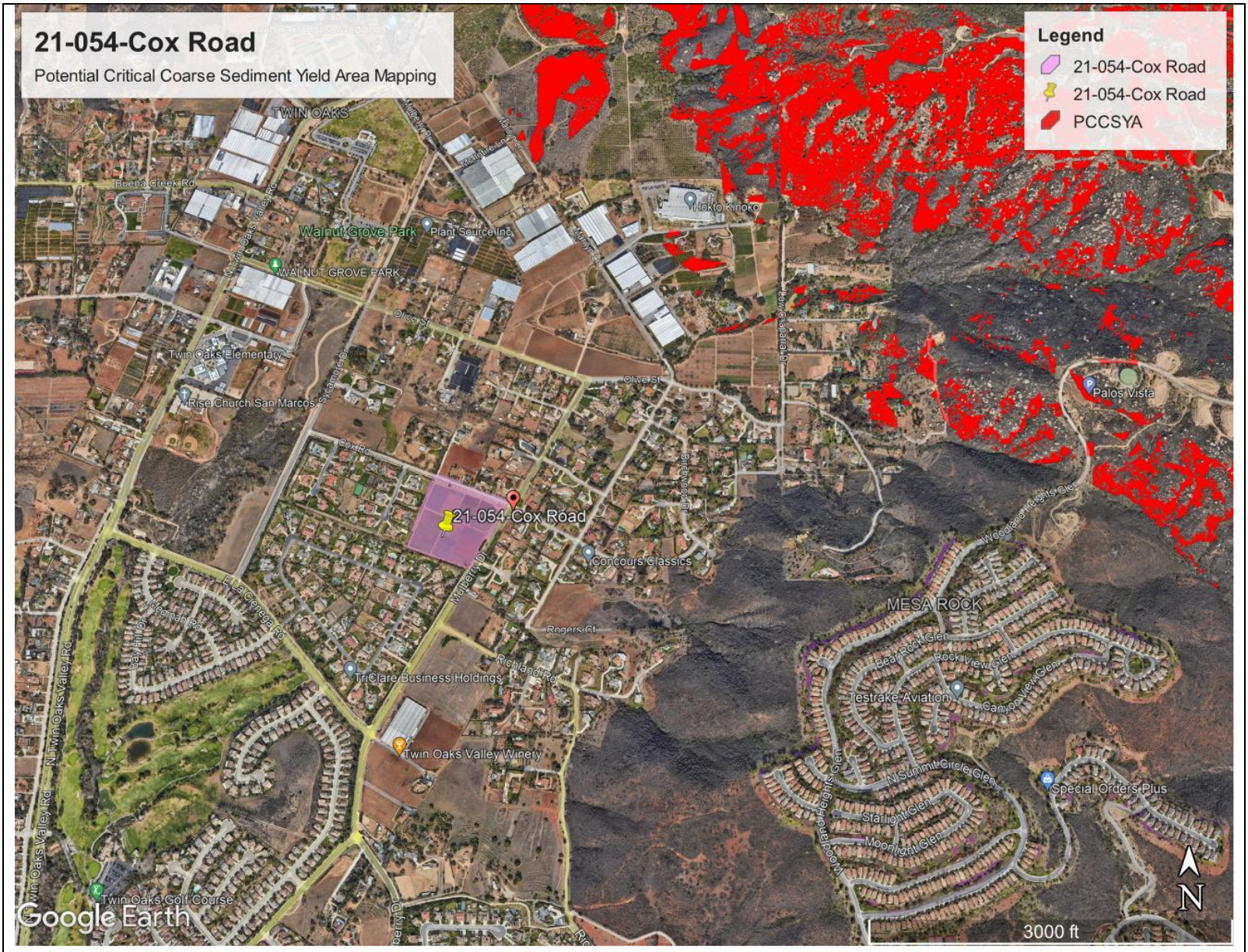
SCALE: 1:50
0 50 100

EXCEL ENGINEERING
LAND PLANNING • ENGINEERING • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760)745-8118 FX (760)745-1890

MANNING HOMES
POST DEVELOPMENT HYDROMODIFICATION EXHIBIT

Attachment 2B:

Management of Critical Coarse Sediment Yield Areas



No Potential Critical Coarse Sediment Yield areas nearby that will influence the project.

Attachment 2C:

Geomorphic Assessment of Receiving Channels

NOT PERFORMED

Attachment 2D:

Flow Control Facility Design

```
[21054 Manning Homes Pre Hydmod.inp]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           09/24/1964
START_TIME           00:00:00
REPORT_START_DATE    09/24/1964
REPORT_START_TIME    00:00:00
END_DATE             05/23/2008
END_TIME             06:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:30:00
WET_STEP             00:30:00
DRY_STEP             24:00:00
ROUTING_STEP         0:00:30
RULE_STEP            01:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.566
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.2    0.16   0.12
0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
Escondido        INTENSITY 1:00     1.0      TIMESERIES Escondido

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope
CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- --------
-------- ----------------
DMA-1            Escondido        POC-1            9.81     0        638      2.6
0
DMA-2            Escondido        POC-1            0.88     50       51       0.8
0
DMA-3            Escondido        POC-1            0.03     0        20       3.25
0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo
PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ----------
```

```
----------
DMA-1            0.012      0.03       0.05       0.1        25         OUTLET
DMA-2            0.012      0.038      0.05       0.1        25         OUTLET
DMA-3            0.012      0.038      0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
DMA-1            6          0.1        0.32
DMA-2            6          0.075      0.32
DMA-3            6          0.075      0.32

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BMP-A            BC
BMP-A            SURFACE    6          0.0        0.1        1.0        5
BMP-A            SOIL       21         0.4        0.2        0.1        5
5          1.5
BMP-A            STORAGE    21         0.67       0.08       0
BMP-A            DRAIN      0          0.5        3          6          0
0

BMP-B            BC
BMP-B            SURFACE    6          0.0        0          0          5
BMP-B            SOIL       21         0.4        0.2        0.1        5
5          1.5
BMP-B            STORAGE    21         0.67       0.36       0
BMP-B            DRAIN      0          0.5        3          6          0
0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp
ToPerv     RptFile                  DrainTo          FromPerv
;;-------------- --------------- ------- ---------- ---------- ---------- ----------
---------- ------------------------ --------------- ----------

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
POC-1            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
Escondido        FILE "R:\_Storm\HydMOD\Rain gauge Data\Escondido\Escondido.prn"

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -2500.000 0.000 12500.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            3538.993           1885.489

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
```

```
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA-1            3677.196           4698.914
DMA-2            7843.040           4846.989
DMA-3            8514.314           8203.356

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Escondido        24.679             8529.121


[BACKDROP]
FILE       "V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\21054 Pre
Dev Hydmod Map.jpg"
DIMENSIONS -2500.000 0.000 12500.000 10000.000

```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.0)

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Starting Date 09/24/1964 00:00:00
Ending Date 05/23/2008 06:00:00
Antecedent Dry Days 0.0
Report Time Step 00:30:00
Wet Time Step 00:30:00
Dry Time Step 00:00:00

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	545.791	610.960
Evaporation Loss	7.429	8.316
Infiltration Loss	479.654	536.926
Surface Runoff	62.989	70.510
Final Storage	0.000	0.000
Continuity Error (%)	-0.784	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	62.989	20.526
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	62.989	20.526
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Perv Precip in	Total Runon in	Total Evap in	Total Infil Runoff in	Imperv Peak Runoff Coeff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS

```
DMA-1                    610.96       0.00       4.76     560.16       0.00
50.32      50.32       13.41     7.24   0.082
DMA-2                    610.96       0.00      48.00     277.57     268.65
27.03     295.68        7.07     0.71   0.484
DMA-3                    610.96       0.00       5.68     548.92       0.00
66.29      66.29        0.05     0.02   0.109


Analysis begun on:  Tue May 17 19:11:15 2022
Analysis ended on:  Tue May 17 19:11:54 2022
Total elapsed time: 00:00:39
```

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option              Value
FLOW_UNITS            CFS
INFILTRATION          GREEN_AMPT
FLOW_ROUTING          KINWAVE
LINK_OFFSETS          DEPTH
MIN_SLOPE             0
ALLOW_PONDING         NO
SKIP_STEADY_STATE     NO

START_DATE            09/24/1964
START_TIME            00:00:00
REPORT_START_DATE     09/24/1964
REPORT_START_TIME     00:00:00
END_DATE              05/23/2008
END_TIME              06:00:00
SWEEP_START           01/01
SWEEP_END             12/31
DRY_DAYS              0
REPORT_STEP           00:30:00
WET_STEP              00:30:00
DRY_STEP              24:00:00
ROUTING_STEP          0:00:30
RULE_STEP             01:00:00

INERTIAL_DAMPING      PARTIAL
NORMAL_FLOW_LIMITED   BOTH
FORCE_MAIN_EQUATION   H-W
VARIABLE_STEP         0.75
LENGTHENING_STEP      0
MIN_SURFAREA          12.566
MAX_TRIALS            8
HEAD_TOLERANCE        0.005
SYS_FLOW_TOL          5
LAT_FLOW_TOL          5
MINIMUM_STEP          0.5
THREADS               1

[EVAPORATION]
;;Data Source       Parameters
;;--------------    ----------------
MONTHLY             0.06    0.08    0.11    0.16    0.18    0.21    0.21    0.2
0.16    0.12    0.08    0.06
DRY_ONLY            NO

[RAINGAGES]
;;Name              Format      Interval    SCF         Source
;;--------------    ---------   ------  ------  ----------
Escondido           INTENSITY   1:00        1.0         TIMESERIES  Escondido

[SUBCATCHMENTS]
;;Name              Rain Gage           Outlet              Area        %Imperv
Width       %Slope      CurbLen     SnowPack
;;--------------    ----------------    ----------------    --------    --------
--------    --------    --------    ----------------
DMA-1               Escondido           BMP-A               0.8386      95
61          1.5         0
DMA-2               Escondido           MWS                 0.88        53.86
51          0.5         0
BMP-A               Escondido           POC-1               0.11        0
113.16      0           0
DMA-3               Escondido           MWS                 0.03        100
20          3.25        0
LOT-9               Escondido           DMA-1               1.0359      11
119         0.5         0
DMA-5               Escondido           DMA-1               0.9869      12
```

```
    119         0.5         0
 62 Lot-7               Escondido           DMA-1               1.0179      11
    119         0.5         0
 63 LOt-6               Escondido           DMA-1               0.9909      11
    119         0.5         0
 64 LOt-8               Escondido           DMA-1               0.9015      11
    119         0.5         0
 65 Lot-4               Escondido           DMA-1               0.9191      11
    119         0.5         0
 66 Lot-3               Escondido           DMA-1               0.9959      11
    119         0.5         0
 67 Lot-2               Escondido           DMA-1               0.9882      11
    119         0.5         0
 68 LOT-1               Escondido           DMA-1               1.0268      11
    119         0.5         0
 69
 70 [SUBAREAS]
 71 ;;Subcatchment      N-Imperv    N-Perv      S-Imperv    S-Perv      PctZero
    RouteTo     PctRouted
 72 ;;--------------    ----------  ----------  ----------  ----------  ----------
    ----------  ----------
 73 DMA-1               0.012       0.050       0.05        0.1         25
    OUTLET
 74 DMA-2               0.012       0.12        0.05        0.1         25
    OUTLET
 75 BMP-A               0.012       0.09        0.05        0.1         25
    OUTLET
 76 DMA-3               0.012       0.035       0.05        0.1         25
    OUTLET
 77 LOT-9               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 78 DMA-5               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 79 Lot-7               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 80 LOt-6               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 81 LOt-8               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 82 Lot-4               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 83 Lot-3               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 84 Lot-2               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 85 LOT-1               0.012       0.05        0.05        0.1         25
    PERVIOUS    35
 86
 87 [INFILTRATION]
 88 ;;Subcatchment      Param1      Param2      Param3      Param4      Param5
 89 ;;--------------    ----------  ----------  ----------  ----------  ----------
 90 DMA-1               6           0.075       0.32
 91 DMA-2               6           0.075       0.32
 92 BMP-A               6           0.075       0.32
 93 DMA-3               6           0.075       0.32
 94 LOT-9               6           0.075       0.32
 95 DMA-5               6           0.075       0.32
 96 Lot-7               6           0.075       0.32
 97 LOt-6               6           0.075       0.32
 98 LOt-8               6           0.075       0.32
 99 Lot-4               6           0.075       0.32
100 Lot-3               6           0.075       0.32
101 Lot-2               6           0.075       0.32
102 LOT-1               6           0.075       0.32
103
104 [LID_CONTROLS]
105 ;;Name              Type/Layer  Parameters
106 ;;--------------    ----------  ----------
107 BMP-A               BC
```

```
BMP-A               SURFACE     6           0.0         0.1         1.0
5
BMP-A               SOIL        21          0.4         0.2         0.1
5           5           1.5
BMP-A               STORAGE     16          0.67        0           0
NO
BMP-A               DRAIN       0.346018386852678   0.5         3           6
0           0

BMP-B               BC
BMP-B               SURFACE     6           0.0         0           0
5
BMP-B               SOIL        21          0.4         0.2         0.1
5           5           1.5
BMP-B               STORAGE     60          0.67        0.36        0
NO
BMP-B               DRAIN       6.76658178734126    0.5         47          6
0           0

[LID_USAGE]
;;Subcatchment      LID Process         Number  Area        Width       InitSat
FromImp     ToPerv      RptFile                         DrainTo             FromPerv
;;--------------    ----------------    ------- ----------  ----------  ----------
----------  ----------  ------------------------    ----------------    ----------
BMP-A               BMP-A               1       4791.60     0           0
0           0           *                           *                   0

[OUTFALLS]
;;Name              Elevation   Type        Stage Data          Gated       Route
To
;;--------------    ----------  ----------  ----------------    --------
----------------
POC-1               0           FREE
NO

[DIVIDERS]
;;Name              Elevation   Diverted Link       Type        Parameters
;;--------------    ----------  ----------------    ----------  ----------
MWS                 0           1                   CUTOFF      0.77        0
0           0           0

[CONDUITS]
;;Name              From Node           To Node             Length      Roughness
InOffset    OutOffset   InitFlow    MaxFlow
;;--------------    ----------------    ----------------    ----------  ----------
----------  ----------  ----------  ----------
1                   MWS                 POC-1               400         0.01
0           0           0           0
Const-Flow          MWS                 POC-1               400         0.01
0           0           0           0

[XSECTIONS]
;;Link              Shape           Geom1               Geom2       Geom3
Geom4       Barrels     Culvert
;;--------------    ------------    ----------------    ----------  ----------
----------  ----------  ----------
1                   DUMMY           0                   0           0
0           1
Const-Flow          DUMMY           0                   0           0
0           1

[CURVES]
;;Name              Type        X-Value     Y-Value
;;--------------    ----------  ----------  ----------
STO-1               Storage     0           1794.42
STO-1                           0.5         2098.52

[TIMESERIES]
;;Name              Date        Time        Value
```

```
;;--------------    ----------  ----------  ----------
Escondido           FILE    "R:\_Storm\HydMOD\Rain gauge Data\Escondido\Escondido.prn"

[REPORT]
;;Reporting Options
SUBCATCHMENTS   ALL
NODES   ALL
LINKS   ALL

[TAGS]

[MAP]
DIMENSIONS  -2500.000   0.000   12500.000   10000.000
Units       None

[COORDINATES]
;;Node              X-Coord             Y-Coord
;;--------------    ------------------  ------------------
POC-1               2502.468            2063.179
MWS                 5910.872            2027.424

[VERTICES]
;;Link              X-Coord             Y-Coord
;;--------------    ------------------  ------------------
1                   5401.567            1067.581
1                   3462.292            999.021
Const-Flow          5303.624            1322.233
Const-Flow          3638.590            1253.673

[Polygons]
;;Subcatchment      X-Coord             Y-Coord
;;--------------    ------------------  ------------------
DMA-1               3677.196            4698.914
DMA-2               6954.590            4945.706
BMP-A               3469.891            2852.912
DMA-3               7635.735            8548.865
LOT-9               5131.965            7028.348
DMA-5               5891.283            6131.244
Lot-7               5391.773            4995.103
LOt-6               5401.567            3917.728
LOt-8               4285.015            2938.296
Lot-4               2610.186            3134.182
Lot-3               2375.122            4378.061
Lot-2               2355.534            5670.911
LOT-1               2522.037            6807.052

[SYMBOLS]
;;Gage              X-Coord             Y-Coord
;;--------------    ------------------  ------------------
Escondido           24.679              8529.121


[BACKDROP]
FILE        "V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\21054 Post
Dev Hydmod Map.jpg"
DIMENSIONS  -2500.000   0.000   12500.000   10000.000

```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.0)
------------------------------------------------------------

WARNING 04: minimum elevation drop used for Conduit 1
WARNING 04: minimum elevation drop used for Conduit Const-Flow

***************
Analysis Options
***************
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ................ NO
  Snowmelt ............ NO
  Groundwater ......... NO
  Flow Routing ........ YES
  Ponding Allowed ..... NO
  Water Quality ....... NO
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ........... 09/24/1964 00:00:00
Ending Date ............. 05/23/2008 06:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ........ 00:30:00
Wet Time Step ........... 00:30:00
Dry Time Step ........... 00:00:00
Routing Time Step ....... 30.00 sec


*************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
*************************     ---------       -------
Initial LID Storage .....         0.019         0.022
Total Precipitation .....       545.877       610.960
Evaporation Loss ........        28.703        32.125
Infiltration Loss .......       398.444       445.949
Surface Runoff ..........        53.583        59.972
LID Drainage ............        71.352        79.859
Final Storage ...........         0.024         0.027
Continuity Error (%) ....        -1.138


*************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
*************************     ---------     ---------
Dry Weather Inflow ......         0.000         0.000
Wet Weather Inflow ......       124.936        40.712
Groundwater Inflow ......         0.000         0.000
RDII Inflow .............         0.000         0.000
External Inflow .........         0.000         0.000
External Outflow ........       124.936        40.712
Flooding Loss ...........         0.000         0.000
Evaporation Loss ........         0.000         0.000
Exfiltration Loss .......         0.000         0.000
Initial Stored Volume ...         0.000         0.000
Final Stored Volume .....         0.000         0.000
Continuity Error (%) ....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     1.00
% of Steps Not Converging   :     0.00


**************************
Subcatchment Runoff Summary
**************************


-----------------------------------------------------------------------------------------
-------------------------------------
                          Total      Total      Total      Total     Imperv
                          Perv      Total      Total     Peak  Runoff
                         Precip      Runon       Evap      Infil     Runoff
                         Runoff     Runoff     Runoff   Runoff   Coeff
Subcatchment                in         in         in         in         in
in         in    10^6 gal      CFS
-----------------------------------------------------------------------------------------
-------------------------------------
DMA-1                      610.96     970.41      89.83      39.37    1430.46
40.15    1470.61       33.49     6.77   0.930
DMA-2                      610.96       0.00      52.46     259.66     287.29
20.37     307.66        7.35     0.66   0.504
BMP-A                      610.96   11211.39     803.58       0.00       0.00
0.00   11018.19       32.91     6.78   0.932
DMA-3                      610.96       0.00      81.23       0.00     549.50
0.00     549.50        0.45     0.03   0.899
LOT-9                      610.96       0.00      14.83     510.71      60.37
51.79      91.03        2.56     0.78   0.149
DMA-5                      610.96       0.00      15.65     506.12      65.86
52.31      95.11        2.55     0.74   0.156
Lot-7                      610.96       0.00      14.82     510.63      60.38
51.92      91.17        2.52     0.76   0.149
LOt-6                      610.96       0.00      14.82     510.42      60.38
52.16      91.41        2.46     0.74   0.150
LOt-8                      610.96       0.00      14.76     510.04      60.39
52.71      91.97        2.25     0.68   0.151
Lot-4                      610.96       0.00      14.78     510.11      60.39
52.61      91.86        2.29     0.69   0.150
Lot-3                      610.96       0.00      14.82     510.45      60.38
52.13      91.37        2.47     0.75   0.150
Lot-2                      610.96       0.00      14.82     510.41      60.38
52.18      91.43        2.45     0.74   0.150
LOT-1                      610.96       0.00      14.83     510.67      60.38
51.86      91.10        2.54     0.77   0.149


**********************
LID Performance Summary
**********************


-----------------------------------------------------------------------------------------
-----------------------------
                                      Total      Evap     Infil   Surface
                                      Drain    Initial     Final  Continuity
                                     Inflow      Loss      Loss   Outflow
                                    Outflow   Storage   Storage       Error
Subcatchment      LID Control            in        in        in        in
in        in        in           %
-----------------------------------------------------------------------------------------
-----------------------------
BMP-A             BMP-A             11822.35    803.61      0.00   3234.41
```

7784.19 2.10 2.64 -0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
POC-1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
1	DIVIDER	0.00	0.00	0.00	0 00:00	0.00

****
Node Inflow Summary
****

Node	Type	Maximum Total Lateral Inflow Volume	Maximum Flow Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Flow Balance Error 10^6 gal	Percent
POC-1	OUTFALL	6.78	6.92	10332 18:00	32.9	40.7	0.000
1	DIVIDER	0.68	0.68	10332 17:00	7.8	7.8	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
POC-1	4.00	0.10	6.92	40.709
System	4.00	0.10	6.92	40.709

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth

```
1                    DUMMY        0.00     0  00:00
Const-Flow           DUMMY        0.68  10332  17:00


************************
Conduit Surcharge Summary
************************

No conduits were surcharged.


Analysis begun on:  Tue May 17 19:10:00 2022
Analysis ended on:  Tue May 17 19:10:53 2022
Total elapsed time: 00:00:53
```

STATISTICS ANALYSIS OF THE SWMM FILES FOR:

DISCHARGE NODE: POC-1

ANALYSIS DETAILS

Stream Susceptibility to Channel Erosion: High
Low Flow Threshold = (0.1)Q2 = (0.1)4.010 = Qlf = 0.4010 (cfs)
Flow Control Upper Limit = Q10 = 6.080 (cfs)
Assumed time between storms (hours): 24

PRE-DEVELOPMENT SWMM FILE

SWMM file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60'' gravel-eric3-this one\21054 pre hydromod.out
SWMM file time stamp: 5/17/2022 7:11:54 PM
Selected Node to Analyze: POC-1

POST-DEVELOPMENT MITIGATED SWMM FILE

SWMM file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60'' gravel-eric3-this one\21054 post hydromod 4.out
SWMM file time stamp: 5/17/2022 7:10:53 PM
Selected Node to Analyze: POC-1

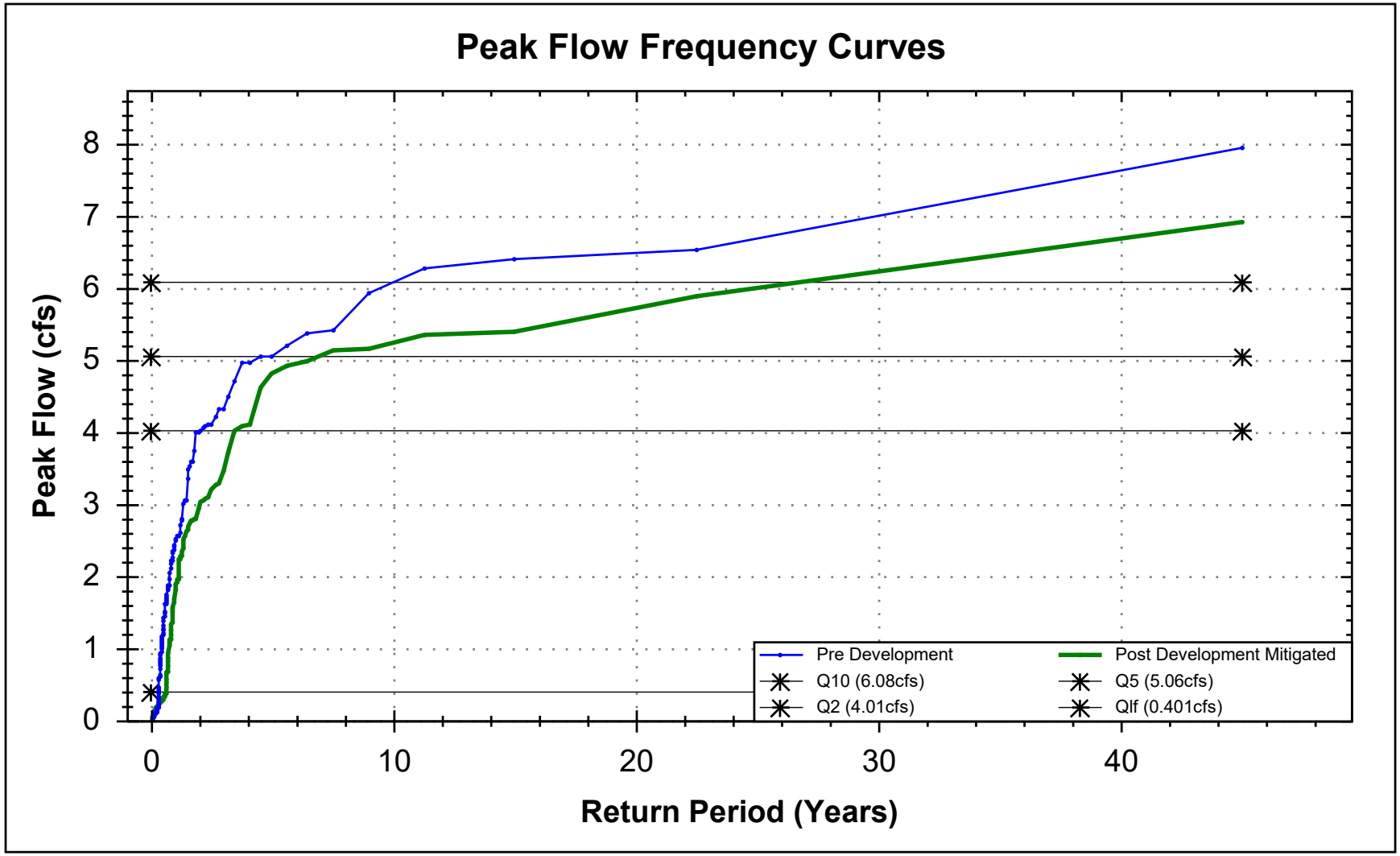
MITIGATED CONDITIONS RESULTS

For the Mitigated Conditions:

Peak Flow Conditions PASS
Flow Duration Conditions PASS

The Mitigated Conditions peak flow frequency curve is composed of 389 points. Of the points, 1 point(s) are above the flow control upper limit (Q10 = 6.08 (cfs)), 316 point(s) are below the low flow threshold value (Qlf = 0.401 (cfs)). Of the points within the flow control range (Qlf to Q10), 72 point(s) have a lower peak flow rate than pre-development conditions. These points all pass. There are no points that failed, therefore the peak flow requirements have been met.

The Mitigated Conditions flow duration curve is composed of 100 flow bins (points). Each point represents the number of hours where the discharge was equal to or greater than the discharge value, but less than the next greater discharge value. Within the flow control range, comparing the post-development flow duration curve to the pre-development flow duration curve, 100 post-development curve point(s) have a lower flow duration than pre-development conditions. These points all pass. There are no points that failed, therefore the flow duration requirements have been met.


Peak Flow Frequency Curves
Peak Flow (cfs)
0
1
2
3
4
5
6
7
8
0
10
20
30
40
Return Period (Years)
Pre Development
Post Development Mitigated
Q10 (6.08cfs)
Q5 (5.06cfs)
Q2 (4.01cfs)
Qlf (0.401cfs)

Compare Post-Development Curve to Pre-Development Curve
Flow Control Upper Limit: 6.08 (cfs)
Flow Control Lower Limit: 0.401 (cfs)

post-development SWMM file: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 p
post-development time stamp: 5/17/2022 7:10:53 PM
Compared to:
pre-development SWMM file: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 pr
pre-development time stamp: 5/17/2022 7:11:54 PM

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
0	45.00	6.92	7.95	FALSE	FALSE	FALSE	Pass- Qpost Above Q10 (6.08 (cfs))
1	22.50	5.89	6.53	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
2	15.00	5.39	6.41	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
3	11.25	5.35	6.27	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
4	9.00	5.15	5.93	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
5	7.50	5.13	5.41	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
6	6.43	4.99	5.37	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
7	5.63	4.92	5.19	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
8	5.00	4.81	5.06	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
9	4.50	4.62	5.04	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
10	4.09	4.10	4.97	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
11	3.75	4.08	4.96	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
12	3.46	4.01	4.71	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
13	3.21	3.71	4.50	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
14	3.00	3.46	4.33	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
15	2.81	3.29	4.31	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
16	2.65	3.26	4.21	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
17	2.50	3.20	4.11	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
18	2.37	3.09	4.11	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
19	2.25	3.07	4.09	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
20	2.14	3.06	4.07	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
21	2.05	3.04	4.03	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
22	1.96	2.94	3.99	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
23	1.88	2.80	3.99	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
24	1.80	2.79	3.73	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
25	1.73	2.77	3.59	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
26	1.67	2.77	3.58	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
27	1.61	2.73	3.53	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
28	1.55	2.70	3.48	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
29	1.50	2.65	3.36	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
30	1.45	2.62	3.06	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
31	1.41	2.57	3.06	TRUE	FALSE	FALSE	Pass- Qpost < Qpre

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
32	1.36	2.52	3.02	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
33	1.32	2.38	3.02	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
34	1.29	2.34	2.79	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
35	1.25	2.29	2.77	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
36	1.22	2.28	2.72	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
37	1.18	2.23	2.60	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
38	1.15	2.23	2.56	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
39	1.13	1.96	2.56	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
40	1.10	1.95	2.55	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
41	1.07	1.95	2.55	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
42	1.05	1.91	2.55	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
43	1.02	1.89	2.52	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
44	1.00	1.82	2.50	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
45	0.98	1.68	2.44	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
46	0.96	1.64	2.41	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
47	0.94	1.64	2.37	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
48	0.92	1.57	2.34	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
49	0.90	1.56	2.32	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
50	0.88	1.50	2.27	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
51	0.87	1.36	2.22	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
52	0.85	1.34	2.21	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
53	0.83	1.25	2.18	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
54	0.82	1.19	2.17	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
55	0.80	1.13	2.12	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
56	0.79	1.12	2.04	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
57	0.78	1.10	1.97	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
58	0.76	1.09	1.88	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
59	0.75	1.06	1.88	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
60	0.74	1.04	1.87	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
61	0.73	0.92	1.87	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
62	0.71	0.87	1.86	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
63	0.70	0.82	1.84	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
64	0.69	0.75	1.82	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
65	0.68	0.68	1.80	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
66	0.67	0.68	1.80	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
67	0.66	0.67	1.75	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
68	0.65	0.56	1.73	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
69	0.64	0.56	1.70	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
70	0.63	0.53	1.69	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
71	0.63	0.53	1.67	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
72	0.62	0.46	1.63	TRUE	FALSE	FALSE	Pass- Qpost < Qpre
73	0.61	0.38	1.62	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
74	0.60	0.37	1.62	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
75	0.59	0.36	1.61	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
76	0.58	0.35	1.52	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
77	0.58	0.35	1.51	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
78	0.57	0.33	1.51	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
79	0.56	0.33	1.51	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
80	0.56	0.33	1.51	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
81	0.55	0.32	1.48	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
82	0.54	0.32	1.45	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
83	0.54	0.32	1.42	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
84	0.53	0.32	1.39	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
85	0.52	0.31	1.38	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
86	0.52	0.30	1.38	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
87	0.51	0.30	1.32	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
88	0.51	0.30	1.28	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
89	0.50	0.29	1.25	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
90	0.50	0.29	1.20	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
91	0.49	0.29	1.20	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
92	0.48	0.29	1.19	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
93	0.48	0.29	1.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
94	0.47	0.28	1.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
95	0.47	0.28	1.17	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
96	0.46	0.28	1.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
97	0.46	0.28	1.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
98	0.46	0.28	1.11	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
99	0.45	0.27	1.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
100	0.45	0.27	1.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
101	0.44	0.27	1.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
102	0.44	0.27	1.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
103	0.43	0.26	1.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
104	0.43	0.26	1.01	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
105	0.43	0.26	1.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
106	0.42	0.26	0.99	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
107	0.42	0.26	0.96	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
108	0.41	0.26	0.95	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
109	0.41	0.25	0.94	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
110	0.41	0.25	0.91	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
111	0.40	0.25	0.86	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
112	0.40	0.25	0.85	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
113	0.40	0.25	0.85	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
114	0.39	0.25	0.84	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
115	0.39	0.25	0.84	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
116	0.39	0.25	0.83	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
117	0.38	0.25	0.83	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
118	0.38	0.25	0.82	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
119	0.38	0.25	0.82	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
120	0.37	0.25	0.81	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
121	0.37	0.25	0.80	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
122	0.37	0.24	0.79	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
123	0.36	0.24	0.79	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
124	0.36	0.24	0.76	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
125	0.36	0.24	0.71	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
126	0.35	0.24	0.64	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
127	0.35	0.24	0.63	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
128	0.35	0.24	0.63	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
129	0.35	0.24	0.60	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
130	0.34	0.24	0.58	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
131	0.34	0.24	0.57	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
132	0.34	0.23	0.56	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
133	0.34	0.23	0.45	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
134	0.33	0.23	0.45	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
135	0.33	0.23	0.45	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
136	0.33	0.23	0.43	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
137	0.33	0.23	0.43	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
138	0.32	0.23	0.42	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
139	0.32	0.23	0.39	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
140	0.32	0.23	0.37	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
141	0.32	0.23	0.34	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
142	0.32	0.23	0.31	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
143	0.31	0.23	0.31	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
144	0.31	0.23	0.29	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
145	0.31	0.22	0.26	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
146	0.31	0.22	0.24	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
147	0.30	0.22	0.22	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
148	0.30	0.22	0.21	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
149	0.30	0.22	0.21	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
150	0.30	0.22	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
151	0.30	0.22	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
152	0.29	0.22	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
153	0.29	0.22	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
154	0.29	0.22	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
155	0.29	0.21	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
156	0.29	0.21	0.18	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
157	0.29	0.21	0.17	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
158	0.28	0.21	0.17	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
159	0.28	0.21	0.17	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
160	0.28	0.21	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
161	0.28	0.21	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
162	0.28	0.21	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
163	0.27	0.21	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
164	0.27	0.20	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
165	0.27	0.20	0.16	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
166	0.27	0.20	0.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
167	0.27	0.20	0.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
168	0.27	0.20	0.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
169	0.27	0.20	0.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
170	0.26	0.20	0.15	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
171	0.26	0.20	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
172	0.26	0.20	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
173	0.26	0.20	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
174	0.26	0.19	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
175	0.26	0.19	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
176	0.25	0.19	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
177	0.25	0.19	0.14	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
178	0.25	0.19	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
179	0.25	0.19	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
180	0.25	0.19	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
181	0.25	0.19	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
182	0.25	0.19	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
183	0.25	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
184	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
185	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
186	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
187	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
188	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
189	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
190	0.24	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
191	0.23	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
192	0.23	0.18	0.13	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
193	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
194	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
195	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
196	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
197	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
198	0.23	0.18	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
199	0.23	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
200	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
201	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
202	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
203	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
204	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
205	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
206	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
207	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
208	0.22	0.17	0.12	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
209	0.21	0.17	0.11	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
210	0.21	0.16	0.11	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
211	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
212	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
213	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
214	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
215	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
216	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
217	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
218	0.21	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
219	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
220	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
221	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
222	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
223	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
224	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
225	0.20	0.16	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
226	0.20	0.15	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
227	0.20	0.15	0.10	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
228	0.20	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
229	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
230	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
231	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
232	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
233	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
234	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
235	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
236	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
237	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
238	0.19	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
239	0.18	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
240	0.18	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
241	0.18	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
242	0.18	0.15	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
243	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
244	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
245	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
246	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
247	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
248	0.18	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
249	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
250	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
251	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
252	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
253	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
254	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
255	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
256	0.17	0.14	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
257	0.17	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
258	0.17	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
259	0.17	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
260	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
261	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
262	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
263	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
264	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
265	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
266	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
267	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
268	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
269	0.16	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
270	0.15	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
271	0.15	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
272	0.15	0.13	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
273	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
274	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
275	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
276	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
277	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
278	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
279	0.15	0.12	0.09	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
280	0.14	0.12	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
281	0.14	0.12	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
282	0.14	0.12	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
283	0.14	0.12	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
284	0.14	0.12	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
285	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
286	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
287	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
288	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
289	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
290	0.14	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
291	0.13	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
292	0.13	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
293	0.13	0.11	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
294	0.13	0.10	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
295	0.13	0.10	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
296	0.13	0.10	0.08	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
297	0.13	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
298	0.13	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
299	0.13	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
300	0.13	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
301	0.12	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
302	0.12	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
303	0.12	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
304	0.12	0.10	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
305	0.12	0.09	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
306	0.12	0.09	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
307	0.12	0.09	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
308	0.12	0.09	0.07	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
309	0.12	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
310	0.12	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
311	0.11	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
312	0.11	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
313	0.11	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
314	0.11	0.09	0.06	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
315	0.11	0.09	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
316	0.11	0.09	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
317	0.11	0.09	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
318	0.11	0.09	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
319	0.11	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
320	0.11	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
321	0.11	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
322	0.10	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
323	0.10	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
324	0.10	0.08	0.05	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
325	0.10	0.08	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
326	0.10	0.08	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
327	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
328	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
329	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
330	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
331	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
332	0.10	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
333	0.09	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
334	0.09	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
335	0.09	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
336	0.09	0.07	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
337	0.09	0.06	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
338	0.09	0.06	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
339	0.09	0.06	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
340	0.09	0.06	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
341	0.09	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
342	0.09	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
343	0.09	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
344	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
345	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
346	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
347	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
348	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
349	0.08	0.05	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
350	0.08	0.04	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
351	0.08	0.04	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
352	0.08	0.04	0.04	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
353	0.08	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
354	0.08	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
355	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
356	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
357	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
358	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
359	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
360	0.07	0.04	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
361	0.07	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
362	0.07	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
363	0.07	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
364	0.07	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
365	0.07	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
366	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
367	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

Post PT #	Rtn Prd (yrs)	Post Dev Q (cfs)	Pre Dev Q (cfs)	Qpost < Qpre	Qpost > Qpre	Qpost > 110% Qpre	Pass/Fail
368	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
369	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
370	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
371	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
372	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
373	0.06	0.03	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
374	0.06	0.02	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
375	0.06	0.02	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
376	0.06	0.02	0.03	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
377	0.05	0.02	0.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
378	0.05	0.01	0.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
379	0.05	0.01	0.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
380	0.05	0.00	0.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
381	0.05	0.00	0.02	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
382	0.05	0.00	0.01	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
383	0.05	0.00	0.01	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
384	0.05	0.00	0.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
385	0.05	0.00	0.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
386	0.05	0.00	0.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
387	0.05	0.00	0.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))
388	0.05	0.00	0.00	FALSE	FALSE	FALSE	Pass- Qpost Below Qlf (0.401 (cfs))

SWMM.out file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 pre hy
SWMM.out time stamp: 5/17/2022 7:11:54 PM

Q10: 6.080 (cfs)
Q5: 5.060 (cfs)
Q2: 4.010 (cfs)

Peak Flow Statistics Table Values

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
1	1993/01/06 01:30:00	1993/01/10 21:00:00	232	7.95	0.09%	45
2	1971/02/23 03:30:00	1971/02/23 19:00:00	32	6.53	0.19%	22.5
3	1995/01/23 20:30:00	1995/01/26 05:00:00	114	6.41	0.28%	15
4	1995/01/04 08:30:00	1995/01/05 16:00:00	64	6.27	0.37%	11.25
5	1998/02/14 01:30:00	1998/02/15 03:30:00	53	5.93	0.47%	9
6	1966/12/04 21:30:00	1966/12/07 02:30:00	107	5.41	0.56%	7.5
7	1978/03/16 17:30:00	1978/03/17 23:30:00	61	5.37	0.66%	6.43
8	1986/02/14 22:30:00	1986/02/16 06:00:00	64	5.19	0.75%	5.63
9	1978/01/16 05:30:00	1978/01/16 16:00:00	22	5.06	0.84%	5
10	1967/11/19 02:30:00	1967/11/20 13:00:00	70	5.04	0.94%	4.5
11	1988/04/19 22:30:00	1988/04/22 07:30:00	115	4.97	1.03%	4.09
12	1983/03/01 13:30:00	1983/03/01 20:30:00	15	4.96	1.12%	3.75
13	2004/10/17 07:30:00	2004/10/21 07:00:00	192	4.71	1.22%	3.46
14	1972/11/14 11:30:00	1972/11/14 18:00:00	14	4.5	1.31%	3.21
15	1980/01/27 19:30:00	1980/01/30 00:30:00	107	4.33	1.40%	3
16	1969/01/24 03:30:00	1969/01/25 20:00:00	82	4.31	1.50%	2.81
17	1983/11/24 22:30:00	1983/11/25 06:00:00	16	4.21	1.59%	2.65
18	1967/12/18 13:30:00	1967/12/19 18:00:00	58	4.11	1.69%	2.5
19	1998/01/09 01:30:00	1998/01/11 03:00:00	100	4.11	1.78%	2.37
20	1981/02/08 16:30:00	1981/02/09 11:00:00	38	4.09	1.87%	2.25
21	2005/01/07 03:30:00	2005/01/12 05:00:00	244	4.07	1.97%	2.14
22	1993/02/07 11:30:00	1993/02/10 00:30:00	123	4.03	2.06%	2.05
23	1983/12/24 18:30:00	1983/12/27 22:00:00	152	3.99	2.15%	1.96
24	2007/01/29 21:30:00	2007/01/31 16:00:00	86	3.99	2.25%	1.88
25	1980/02/17 19:30:00	1980/02/21 13:00:00	180	3.73	2.34%	1.8
26	1998/02/03 01:30:00	1998/02/04 23:00:00	92	3.59	2.43%	1.73
27	1993/01/12 13:30:00	1993/01/14 08:30:00	87	3.58	2.53%	1.67
28	1991/03/19 22:30:00	1991/03/21 11:00:00	74	3.53	2.62%	1.61
29	1992/02/15 04:30:00	1992/02/16 00:30:00	41	3.48	2.72%	1.55
30	1965/11/21 21:30:00	1965/11/23 09:00:00	72	3.36	2.81%	1.5
31	2003/02/25 01:30:00	2003/02/28 03:00:00	148	3.06	2.90%	1.45
32	2007/11/30 06:30:00	2007/12/01 04:00:00	44	3.06	3.00%	1.41
33	1980/01/08 23:30:00	1980/01/11 17:00:00	132	3.02	3.09%	1.36
34	1982/01/01 05:30:00	1982/01/01 14:30:00	19	3.02	3.18%	1.32
35	1978/12/16 21:30:00	1978/12/19 14:00:00	130	2.79	3.28%	1.29
36	2004/02/26 00:30:00	2004/02/27 23:30:00	95	2.77	3.37%	1.25
37	1995/03/05 01:30:00	1995/03/06 07:00:00	60	2.72	3.46%	1.22
38	1974/12/04 02:30:00	1974/12/04 17:00:00	30	2.6	3.56%	1.18
39	1983/02/26 11:30:00	1983/02/28 16:00:00	106	2.56	3.65%	1.15

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
40	2007/08/26 06:30:00	2007/08/26 10:30:00	9	2.56	3.75%	1.13
41	1978/02/04 23:30:00	1978/02/07 01:00:00	100	2.55	3.84%	1.1
42	1980/02/16 10:30:00	1980/02/17 03:00:00	34	2.55	3.93%	1.07
43	1982/03/17 17:30:00	1982/03/20 10:30:00	131	2.55	4.03%	1.05
44	1980/01/30 17:30:00	1980/01/30 22:30:00	11	2.52	4.12%	1.02
45	1973/02/10 21:30:00	1973/02/12 08:00:00	70	2.5	4.21%	1
46	1967/04/11 07:30:00	1967/04/12 07:00:00	48	2.44	4.31%	0.98
47	1979/01/05 06:30:00	1979/01/06 10:00:00	56	2.41	4.40%	0.96
48	2003/02/11 01:30:00	2003/02/15 03:00:00	196	2.37	4.49%	0.94
49	1979/01/17 05:30:00	1979/01/17 15:30:00	21	2.34	4.59%	0.92
50	2003/04/13 14:30:00	2003/04/16 02:00:00	120	2.32	4.68%	0.9
51	1976/12/30 12:30:00	1976/12/31 15:00:00	54	2.27	4.78%	0.88
52	1969/02/06 06:30:00	1969/02/06 21:00:00	30	2.22	4.87%	0.87
53	2006/01/01 20:30:00	2006/01/03 02:00:00	60	2.21	4.96%	0.85
54	1978/01/14 13:30:00	1978/01/15 08:00:00	38	2.18	5.06%	0.83
55	1970/11/28 19:30:00	1970/11/30 06:00:00	70	2.17	5.15%	0.82
56	1970/03/04 20:30:00	1970/03/05 03:30:00	15	2.12	5.24%	0.8
57	1973/01/16 14:30:00	1973/01/17 01:30:00	23	2.04	5.34%	0.79
58	1967/01/24 14:30:00	1967/01/25 03:30:00	27	1.97	5.43%	0.78
59	1970/02/28 12:30:00	1970/03/02 09:30:00	91	1.88	5.52%	0.76
60	1980/02/13 11:30:00	1980/02/15 21:00:00	116	1.88	5.62%	0.75
61	1974/03/07 14:30:00	1974/03/08 16:30:00	53	1.87	5.71%	0.74
62	1983/03/23 16:30:00	1983/03/24 00:30:00	17	1.87	5.81%	0.73
63	1969/01/13 16:30:00	1969/01/14 15:30:00	47	1.86	5.90%	0.71
64	1983/03/02 13:30:00	1983/03/04 11:30:00	93	1.84	5.99%	0.7
65	1965/04/08 02:30:00	1965/04/10 10:00:00	112	1.82	6.09%	0.69
66	1970/12/19 00:30:00	1970/12/22 11:00:00	166	1.8	6.18%	0.68
67	1983/01/27 06:30:00	1983/01/27 17:00:00	22	1.8	6.27%	0.67
68	1991/03/25 05:30:00	1991/03/27 20:00:00	126	1.75	6.37%	0.66
69	2005/01/03 03:30:00	2005/01/05 05:00:00	100	1.73	6.46%	0.65
70	1985/11/29 05:30:00	1985/11/30 02:30:00	43	1.7	6.55%	0.64
71	1968/03/07 20:30:00	1968/03/08 15:30:00	39	1.69	6.65%	0.63
72	1985/11/24 14:30:00	1985/11/25 22:30:00	65	1.67	6.74%	0.63
73	1965/11/14 06:30:00	1965/11/18 18:00:00	216	1.63	6.84%	0.62
74	1991/02/27 12:30:00	1991/03/01 15:00:00	102	1.62	6.93%	0.61
75	2004/10/27 01:30:00	2004/10/28 13:00:00	72	1.62	7.02%	0.6
76	1980/03/02 19:30:00	1980/03/03 20:30:00	51	1.61	7.12%	0.59
77	2002/11/08 01:30:00	2002/11/10 03:00:00	100	1.52	7.21%	0.58
78	1966/12/03 04:30:00	1966/12/04 08:00:00	56	1.51	7.30%	0.58
79	1994/02/07 01:30:00	1994/02/08 09:30:00	65	1.51	7.40%	0.57
80	2003/03/15 01:30:00	2003/03/17 02:30:00	99	1.51	7.49%	0.56
81	2004/02/21 14:30:00	2004/02/23 10:30:00	89	1.51	7.58%	0.56
82	1988/12/24 19:30:00	1988/12/25 05:00:00	20	1.48	7.68%	0.55
83	1995/02/13 09:30:00	1995/02/14 23:30:00	77	1.45	7.77%	0.54
84	1974/01/04 16:30:00	1974/01/05 13:00:00	42	1.42	7.87%	0.54
85	1996/01/31 03:30:00	1996/02/01 15:30:00	73	1.39	7.96%	0.53
86	1976/02/08 02:30:00	1976/02/10 15:00:00	122	1.38	8.05%	0.52

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
87	1998/02/06 01:30:00	1998/02/09 20:00:00	182	1.38	8.15%	0.52
88	1981/02/28 14:30:00	1981/03/02 18:30:00	105	1.32	8.24%	0.51
89	2005/02/20 11:30:00	2005/02/23 15:30:00	153	1.28	8.33%	0.51
90	1976/03/02 10:30:00	1976/03/03 10:30:00	49	1.25	8.43%	0.5
91	1976/02/03 16:30:00	1976/02/06 10:00:00	132	1.2	8.52%	0.5
92	1978/11/13 20:30:00	1978/11/14 15:00:00	38	1.2	8.61%	0.49
93	1978/03/11 16:30:00	1978/03/15 10:30:00	181	1.19	8.71%	0.48
94	1979/03/01 06:30:00	1979/03/01 22:30:00	33	1.18	8.80%	0.48
95	1983/11/20 08:30:00	1983/11/21 13:00:00	58	1.18	8.90%	0.47
96	1987/01/06 16:30:00	1987/01/07 11:30:00	39	1.17	8.99%	0.47
97	1976/09/09 18:30:00	1976/09/10 23:00:00	58	1.15	9.08%	0.46
98	1992/01/05 06:30:00	1992/01/08 01:00:00	134	1.12	9.18%	0.46
99	1965/12/12 05:30:00	1965/12/13 11:30:00	61	1.11	9.27%	0.46
100	2001/11/24 01:30:00	2001/11/25 03:00:00	52	1.1	9.36%	0.45
101	1969/02/23 21:30:00	1969/02/26 09:00:00	120	1.09	9.46%	0.45
102	1986/09/24 17:30:00	1986/09/25 09:00:00	32	1.06	9.55%	0.44
103	1991/03/18 23:30:00	1991/03/19 08:00:00	18	1.03	9.64%	0.44
104	2001/01/10 19:30:00	2001/01/12 17:00:00	92	1.02	9.74%	0.43
105	1993/01/15 03:30:00	1993/01/19 03:00:00	192	1.01	9.83%	0.43
106	2006/04/04 17:30:00	2006/04/05 15:30:00	45	1	9.93%	0.43
107	1964/11/17 12:30:00	1964/11/18 02:00:00	28	0.99	10.02%	0.42
108	1998/02/22 01:30:00	1998/02/25 03:00:00	148	0.96	10.11%	0.42
109	1986/03/10 04:30:00	1986/03/11 21:00:00	82	0.95	10.21%	0.41
110	1967/11/21 12:30:00	1967/11/22 18:00:00	60	0.94	10.30%	0.41
111	1993/03/28 01:30:00	1993/03/28 05:30:00	9	0.91	10.39%	0.41
112	1971/12/24 14:30:00	1971/12/26 02:00:00	72	0.86	10.49%	0.4
113	1969/01/20 00:30:00	1969/01/22 01:00:00	98	0.85	10.58%	0.4
114	1974/01/06 10:30:00	1974/01/08 15:00:00	106	0.85	10.67%	0.4
115	1970/03/08 06:30:00	1970/03/08 21:30:00	31	0.84	10.77%	0.39
116	1973/03/08 07:30:00	1973/03/08 22:30:00	31	0.84	10.86%	0.39
117	1990/01/16 05:30:00	1990/01/17 16:00:00	70	0.83	10.96%	0.39
118	1998/02/16 03:30:00	1998/02/18 03:00:00	96	0.83	11.05%	0.38
119	1973/01/18 19:30:00	1973/01/19 05:00:00	20	0.82	11.14%	0.38
120	1986/03/15 19:30:00	1986/03/17 01:00:00	60	0.82	11.24%	0.38
121	2003/12/24 22:30:00	2003/12/25 23:00:00	50	0.81	11.33%	0.37
122	1972/11/16 07:30:00	1972/11/17 14:00:00	62	0.8	11.42%	0.37
123	1967/03/13 10:30:00	1967/03/14 00:30:00	29	0.79	11.52%	0.37
124	1980/03/10 13:30:00	1980/03/10 22:30:00	19	0.79	11.61%	0.36
125	1979/10/19 21:30:00	1979/10/20 17:30:00	41	0.76	11.70%	0.36
126	1982/11/29 14:30:00	1982/11/30 22:00:00	64	0.71	11.80%	0.36
127	1977/05/08 09:30:00	1977/05/10 03:00:00	84	0.64	11.89%	0.35
128	1979/02/21 00:30:00	1979/02/22 01:00:00	50	0.63	11.99%	0.35
129	1995/01/07 15:30:00	1995/01/08 12:00:00	42	0.63	12.08%	0.35
130	1982/11/09 12:30:00	1982/11/11 04:00:00	80	0.6	12.17%	0.35
131	1977/08/16 13:30:00	1977/08/17 23:00:00	68	0.58	12.27%	0.34
132	1992/02/06 07:30:00	1992/02/07 06:30:00	47	0.57	12.36%	0.34
133	2002/12/20 01:30:00	2002/12/21 23:00:00	92	0.56	12.45%	0.34

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
134	1973/03/11 10:30:00	1973/03/12 07:30:00	43	0.45	12.55%	0.34
135	1983/04/29 01:30:00	1983/04/30 07:00:00	60	0.45	12.64%	0.33
136	1993/02/18 12:30:00	1993/02/20 22:30:00	117	0.45	12.73%	0.33
137	1965/12/14 13:30:00	1965/12/14 19:30:00	13	0.43	12.83%	0.33
138	1994/02/20 11:30:00	1994/02/20 23:30:00	25	0.43	12.92%	0.33
139	1998/03/25 01:30:00	1998/03/30 02:30:00	243	0.42	13.01%	0.32
140	2008/01/05 00:30:00	2008/01/07 10:00:00	116	0.39	13.11%	0.32
141	2008/02/22 01:30:00	2008/02/22 15:30:00	29	0.37	13.20%	0.32
142	1976/04/14 10:30:00	1976/04/14 13:30:00	7	0.34	13.30%	0.32
143	1983/02/07 01:30:00	1983/02/08 14:00:00	74	0.31	13.39%	0.32
144	1994/03/24 20:30:00	1994/03/25 17:30:00	43	0.31	13.48%	0.31
145	1998/05/12 01:30:00	1998/05/13 19:00:00	84	0.29	13.58%	0.31
146	1992/12/29 11:30:00	1992/12/29 23:00:00	24	0.26	13.67%	0.31
147	1993/11/14 05:30:00	1993/11/14 20:00:00	30	0.24	13.76%	0.31
148	1981/03/19 19:30:00	1981/03/20 11:30:00	33	0.22	13.86%	0.3
149	1965/12/09 03:30:00	1965/12/11 02:00:00	94	0.21	13.95%	0.3
150	1965/12/29 07:30:00	1965/12/30 02:00:00	38	0.21	14.04%	0.3
151	1966/11/07 13:30:00	1966/11/07 23:00:00	20	0.18	14.14%	0.3
152	1972/12/04 11:30:00	1972/12/04 22:00:00	22	0.18	14.23%	0.3
153	1975/12/11 22:30:00	1975/12/12 22:00:00	48	0.18	14.33%	0.29
154	1982/12/22 17:30:00	1982/12/23 03:30:00	21	0.18	14.42%	0.29
155	1987/12/04 20:30:00	1987/12/05 02:00:00	12	0.18	14.51%	0.29
156	1991/12/29 14:30:00	1991/12/30 07:00:00	34	0.18	14.61%	0.29
157	1996/11/21 15:30:00	1996/11/23 06:30:00	79	0.18	14.70%	0.29
158	1968/04/01 18:30:00	1968/04/02 13:00:00	38	0.17	14.79%	0.29
159	1978/09/05 16:30:00	1978/09/06 01:00:00	18	0.17	14.89%	0.28
160	1987/11/04 14:30:00	1987/11/05 18:30:00	57	0.17	14.98%	0.28
161	1992/02/12 17:30:00	1992/02/13 09:30:00	33	0.16	15.07%	0.28
162	1995/03/11 01:30:00	1995/03/12 03:30:00	53	0.16	15.17%	0.28
163	1995/12/20 16:30:00	1995/12/20 21:00:00	10	0.16	15.26%	0.28
164	1996/12/09 14:30:00	1996/12/10 12:00:00	44	0.16	15.36%	0.27
165	2005/04/28 06:30:00	2005/04/29 03:00:00	42	0.16	15.45%	0.27
166	2008/02/14 10:30:00	2008/02/14 19:00:00	18	0.16	15.54%	0.27
167	1967/01/22 15:30:00	1967/01/23 07:00:00	32	0.15	15.64%	0.27
168	1975/03/08 07:30:00	1975/03/08 15:30:00	17	0.15	15.73%	0.27
169	1980/03/05 23:30:00	1980/03/06 16:30:00	35	0.15	15.82%	0.27
170	1986/11/17 17:30:00	1986/11/18 05:30:00	25	0.15	15.92%	0.27
171	1990/01/13 02:30:00	1990/01/15 14:30:00	121	0.15	16.01%	0.26
172	1985/11/11 02:30:00	1985/11/12 10:30:00	65	0.14	16.10%	0.26
173	1987/10/22 15:30:00	1987/10/23 06:30:00	31	0.14	16.20%	0.26
174	1994/02/17 10:30:00	1994/02/19 04:30:00	85	0.14	16.29%	0.26
175	1997/04/04 09:30:00	1997/04/04 12:30:00	7	0.14	16.39%	0.26
176	2004/02/02 22:30:00	2004/02/04 08:30:00	69	0.14	16.48%	0.26
177	2006/03/10 12:30:00	2006/03/11 17:00:00	58	0.14	16.57%	0.25
178	2006/05/22 03:30:00	2006/05/22 13:30:00	21	0.14	16.67%	0.25
179	1970/10/03 13:30:00	1970/10/03 17:30:00	9	0.13	16.76%	0.25
180	1972/11/11 00:30:00	1972/11/11 12:00:00	24	0.13	16.85%	0.25

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
181	1973/03/20 07:30:00	1973/03/20 13:30:00	13	0.13	16.95%	0.25
182	1973/11/22 18:30:00	1973/11/23 05:00:00	22	0.13	17.04%	0.25
183	1976/03/01 07:30:00	1976/03/01 21:30:00	29	0.13	17.13%	0.25
184	1976/10/22 19:30:00	1976/10/22 22:30:00	7	0.13	17.23%	0.25
185	1976/11/11 21:30:00	1976/11/12 14:00:00	34	0.13	17.32%	0.24
186	1978/04/07 00:30:00	1978/04/07 04:00:00	8	0.13	17.42%	0.24
187	1978/11/21 17:30:00	1978/11/21 23:00:00	12	0.13	17.51%	0.24
188	1980/12/04 12:30:00	1980/12/05 04:00:00	32	0.13	17.60%	0.24
189	1981/02/25 04:30:00	1981/02/26 03:00:00	46	0.13	17.70%	0.24
190	1982/03/15 11:30:00	1982/03/16 02:30:00	31	0.13	17.79%	0.24
191	1983/03/20 19:30:00	1983/03/21 05:30:00	21	0.13	17.88%	0.24
192	1992/03/02 00:30:00	1992/03/03 20:00:00	88	0.13	17.98%	0.23
193	1997/01/12 12:30:00	1997/01/14 02:00:00	76	0.13	18.07%	0.23
194	1986/03/08 14:30:00	1986/03/09 15:00:00	50	0.12	18.16%	0.23
195	1986/09/23 19:30:00	1986/09/24 03:00:00	16	0.12	18.26%	0.23
196	1987/01/04 12:30:00	1987/01/06 01:00:00	74	0.12	18.35%	0.23
197	1988/01/17 02:30:00	1988/01/18 00:00:00	44	0.12	18.45%	0.23
198	1993/01/31 00:30:00	1993/01/31 05:30:00	11	0.12	18.54%	0.23
199	1994/03/19 01:30:00	1994/03/20 11:00:00	68	0.12	18.63%	0.23
200	1994/04/27 23:30:00	1994/04/28 03:00:00	8	0.12	18.73%	0.23
201	1995/03/21 08:30:00	1995/03/21 17:30:00	19	0.12	18.82%	0.22
202	1995/03/23 08:30:00	1995/03/23 15:30:00	15	0.12	18.91%	0.22
203	1995/04/18 07:30:00	1995/04/19 13:30:00	61	0.12	19.01%	0.22
204	1996/01/21 17:30:00	1996/01/22 14:00:00	42	0.12	19.10%	0.22
205	1996/02/25 08:30:00	1996/02/26 13:30:00	59	0.12	19.19%	0.22
206	2002/12/16 01:30:00	2002/12/17 19:30:00	85	0.12	19.29%	0.22
207	2004/03/01 23:30:00	2004/03/02 19:00:00	40	0.12	19.38%	0.22
208	2004/12/28 05:30:00	2004/12/30 15:00:00	116	0.12	19.48%	0.22
209	2006/02/27 18:30:00	2006/02/28 14:30:00	41	0.12	19.57%	0.22
210	1965/03/31 13:30:00	1965/04/02 04:00:00	78	0.11	19.66%	0.21
211	1987/12/16 11:30:00	1987/12/17 20:00:00	66	0.11	19.76%	0.21
212	1965/03/11 06:30:00	1965/03/11 18:30:00	25	0.1	19.85%	0.21
213	1982/02/09 15:30:00	1982/02/11 00:00:00	66	0.1	19.94%	0.21
214	1984/12/07 22:30:00	1984/12/08 04:30:00	13	0.1	20.04%	0.21
215	1985/09/18 07:30:00	1985/09/18 14:00:00	14	0.1	20.13%	0.21
216	1986/02/07 18:30:00	1986/02/08 21:30:00	55	0.1	20.22%	0.21
217	1988/11/25 04:30:00	1988/11/26 14:30:00	69	0.1	20.32%	0.21
218	1989/03/25 08:30:00	1989/03/26 13:00:00	58	0.1	20.41%	0.21
219	1990/01/30 23:30:00	1990/01/31 06:00:00	14	0.1	20.51%	0.21
220	1990/06/09 06:30:00	1990/06/09 13:00:00	14	0.1	20.60%	0.21
221	1990/06/10 03:30:00	1990/06/10 11:30:00	17	0.1	20.69%	0.2
222	1991/01/09 08:30:00	1991/01/09 18:00:00	20	0.1	20.79%	0.2
223	1991/10/26 19:30:00	1991/10/27 03:30:00	17	0.1	20.88%	0.2
224	1995/12/23 09:30:00	1995/12/23 14:00:00	10	0.1	20.97%	0.2
225	2000/04/17 15:30:00	2000/04/18 10:30:00	39	0.1	21.07%	0.2
226	2002/03/17 19:30:00	2002/03/18 05:30:00	21	0.1	21.16%	0.2
227	2004/02/18 15:30:00	2004/02/18 20:30:00	11	0.1	21.25%	0.2

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
228	2004/04/01 21:30:00	2004/04/02 18:00:00	42	0.1	21.35%	0.2
229	2007/04/20 13:30:00	2007/04/20 18:00:00	10	0.1	21.44%	0.2
230	2008/02/03 05:30:00	2008/02/04 05:00:00	48	0.1	21.54%	0.2
231	1964/10/15 08:30:00	1964/10/15 16:30:00	17	0.09	21.63%	0.2
232	1964/11/09 11:30:00	1964/11/09 19:00:00	16	0.09	21.72%	0.19
233	1964/11/10 15:30:00	1964/11/10 21:00:00	12	0.09	21.82%	0.19
234	1965/02/05 23:30:00	1965/02/07 04:00:00	58	0.09	21.91%	0.19
235	1966/02/06 09:30:00	1966/02/08 03:00:00	84	0.09	22.00%	0.19
236	1968/12/25 17:30:00	1968/12/26 13:00:00	40	0.09	22.10%	0.19
237	1969/02/18 08:30:00	1969/02/20 07:00:00	94	0.09	22.19%	0.19
238	1969/02/22 01:30:00	1969/02/22 14:00:00	26	0.09	22.28%	0.19
239	1969/03/10 01:30:00	1969/03/10 13:30:00	25	0.09	22.38%	0.19
240	1969/03/12 20:30:00	1969/03/13 20:30:00	49	0.09	22.47%	0.19
241	1969/03/21 12:30:00	1969/03/21 22:30:00	21	0.09	22.57%	0.19
242	1969/11/06 17:30:00	1969/11/07 05:00:00	24	0.09	22.66%	0.19
243	1970/03/11 09:30:00	1970/03/12 06:30:00	43	0.09	22.75%	0.19
244	1971/01/02 03:30:00	1971/01/02 21:00:00	36	0.09	22.85%	0.18
245	1971/02/16 15:30:00	1971/02/17 13:00:00	44	0.09	22.94%	0.18
246	1971/04/14 10:30:00	1971/04/14 17:00:00	14	0.09	23.03%	0.18
247	1971/05/07 17:30:00	1971/05/08 05:00:00	24	0.09	23.13%	0.18
248	1971/05/28 00:30:00	1971/05/29 04:00:00	56	0.09	23.22%	0.18
249	1971/10/16 03:30:00	1971/10/17 13:30:00	69	0.09	23.31%	0.18
250	1971/12/22 04:30:00	1971/12/23 06:00:00	52	0.09	23.41%	0.18
251	1971/12/27 12:30:00	1971/12/27 21:00:00	18	0.09	23.50%	0.18
252	1973/02/27 22:30:00	1973/02/28 09:00:00	22	0.09	23.60%	0.18
253	1973/03/21 22:30:00	1973/03/22 04:30:00	13	0.09	23.69%	0.18
254	1974/01/01 03:30:00	1974/01/02 00:00:00	42	0.09	23.78%	0.18
255	1974/04/02 00:30:00	1974/04/02 13:00:00	26	0.09	23.88%	0.18
256	1974/10/28 04:30:00	1974/10/29 16:30:00	73	0.09	23.97%	0.18
257	1975/03/05 13:30:00	1975/03/06 17:30:00	57	0.09	24.06%	0.18
258	1975/03/10 09:30:00	1975/03/11 16:30:00	63	0.09	24.16%	0.17
259	1975/04/08 01:30:00	1975/04/09 18:00:00	82	0.09	24.25%	0.17
260	1975/11/27 16:30:00	1975/11/29 01:00:00	66	0.09	24.34%	0.17
261	1976/04/12 17:30:00	1976/04/13 06:00:00	26	0.09	24.44%	0.17
262	1977/03/16 11:30:00	1977/03/17 02:30:00	31	0.09	24.53%	0.17
263	1977/03/24 10:30:00	1977/03/25 14:30:00	57	0.09	24.63%	0.17
264	1977/12/18 00:30:00	1977/12/18 10:00:00	20	0.09	24.72%	0.17
265	1977/12/25 10:30:00	1977/12/27 09:00:00	94	0.09	24.81%	0.17
266	1978/01/30 06:30:00	1978/01/31 06:00:00	48	0.09	24.91%	0.17
267	1978/03/18 13:30:00	1978/03/18 16:30:00	7	0.09	25.00%	0.17
268	1978/03/22 03:30:00	1978/03/23 15:30:00	73	0.09	25.09%	0.17
269	1978/03/30 13:30:00	1978/03/31 07:30:00	37	0.09	25.19%	0.17
270	1978/11/10 17:30:00	1978/11/12 06:00:00	74	0.09	25.28%	0.17
271	1979/01/18 05:30:00	1979/01/18 19:30:00	29	0.09	25.37%	0.17
272	1979/01/30 23:30:00	1979/02/02 19:00:00	136	0.09	25.47%	0.17
273	1979/03/17 04:30:00	1979/03/17 10:30:00	13	0.09	25.56%	0.17
274	1979/03/27 02:30:00	1979/03/28 13:30:00	71	0.09	25.66%	0.16

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
275	1980/01/18 03:30:00	1980/01/19 03:30:00	49	0.09	25.75%	0.16
276	1980/03/25 21:30:00	1980/03/26 03:30:00	13	0.09	25.84%	0.16
277	1981/01/28 05:30:00	1981/01/28 17:00:00	24	0.09	25.94%	0.16
278	1981/01/29 16:30:00	1981/01/30 22:00:00	60	0.09	26.03%	0.16
279	1981/03/05 05:30:00	1981/03/05 17:30:00	25	0.09	26.12%	0.16
280	1981/03/26 21:30:00	1981/03/27 01:30:00	9	0.09	26.22%	0.16
281	1981/11/26 17:30:00	1981/11/27 05:00:00	24	0.09	26.31%	0.16
282	1981/11/28 05:30:00	1981/11/29 13:00:00	64	0.09	26.40%	0.16
283	1981/12/30 06:30:00	1981/12/30 18:00:00	24	0.09	26.50%	0.16
284	1982/01/20 02:30:00	1982/01/21 17:00:00	78	0.09	26.59%	0.16
285	1982/01/28 16:30:00	1982/01/29 02:30:00	21	0.09	26.69%	0.16
286	1983/01/28 10:30:00	1983/01/29 07:00:00	42	0.09	26.78%	0.16
287	1983/02/24 08:30:00	1983/02/25 03:00:00	38	0.09	26.87%	0.16
288	1983/03/18 00:30:00	1983/03/19 01:30:00	51	0.09	26.97%	0.16
289	1983/10/01 03:30:00	1983/10/01 20:30:00	35	0.09	27.06%	0.16
290	1983/10/07 06:30:00	1983/10/07 12:30:00	13	0.09	27.15%	0.16
291	1983/12/03 14:30:00	1983/12/04 05:00:00	30	0.09	27.25%	0.16
292	1985/02/01 14:30:00	1985/02/02 19:00:00	58	0.09	27.34%	0.15
293	1986/03/12 09:30:00	1986/03/12 16:30:00	15	0.09	27.43%	0.15
294	1986/04/06 04:30:00	1986/04/06 21:30:00	35	0.09	27.53%	0.15
295	1986/12/06 02:30:00	1986/12/07 10:00:00	64	0.09	27.62%	0.15
296	1988/04/14 17:30:00	1988/04/15 03:00:00	20	0.09	27.72%	0.15
297	1988/12/21 00:30:00	1988/12/21 10:30:00	21	0.09	27.81%	0.15
298	1990/02/17 09:30:00	1990/02/19 09:30:00	97	0.09	27.90%	0.15
299	1992/02/09 22:30:00	1992/02/10 04:30:00	13	0.09	28.00%	0.15
300	1992/12/07 07:30:00	1992/12/08 02:00:00	38	0.09	28.09%	0.15
301	1993/02/23 18:30:00	1993/02/24 09:30:00	31	0.09	28.18%	0.15
302	1994/11/10 10:30:00	1994/11/10 15:30:00	11	0.09	28.28%	0.15
303	1995/01/03 06:30:00	1995/01/03 17:30:00	23	0.09	28.37%	0.15
304	1995/04/16 05:30:00	1995/04/17 01:00:00	40	0.09	28.46%	0.15
305	1996/10/30 12:30:00	1996/10/30 19:30:00	15	0.09	28.56%	0.15
306	2000/02/21 01:30:00	2000/02/23 03:00:00	100	0.09	28.65%	0.15
307	2000/10/29 19:30:00	2000/10/30 02:30:00	15	0.09	28.75%	0.15
308	2005/02/18 03:30:00	2005/02/19 22:30:00	87	0.09	28.84%	0.15
309	2006/03/28 19:30:00	2006/03/29 10:00:00	30	0.09	28.93%	0.15
310	2006/12/09 21:30:00	2006/12/10 09:00:00	24	0.09	29.03%	0.15
311	1964/09/24 13:30:00	1964/09/24 16:00:00	6	0.08	29.12%	0.15
312	1964/12/27 06:30:00	1964/12/29 10:00:00	104	0.08	29.21%	0.14
313	1966/10/03 23:30:00	1966/10/04 16:30:00	35	0.08	29.31%	0.14
314	1966/10/10 11:30:00	1966/10/10 15:30:00	9	0.08	29.40%	0.14
315	1967/04/21 11:30:00	1967/04/22 07:00:00	40	0.08	29.49%	0.14
316	1967/08/31 01:30:00	1967/08/31 09:00:00	16	0.08	29.59%	0.14
317	1968/02/13 08:30:00	1968/02/14 02:00:00	36	0.08	29.68%	0.14
318	1968/12/20 08:30:00	1968/12/20 13:00:00	10	0.08	29.78%	0.14
319	1970/04/30 08:30:00	1970/04/30 11:00:00	6	0.08	29.87%	0.14
320	1971/03/13 05:30:00	1971/03/13 19:30:00	29	0.08	29.96%	0.14
321	1972/04/30 03:30:00	1972/04/30 12:00:00	18	0.08	30.06%	0.14

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
322	1972/05/19 03:30:00	1972/05/20 15:00:00	72	0.08	30.15%	0.14
323	1972/10/19 02:30:00	1972/10/19 05:30:00	7	0.08	30.24%	0.14
324	1973/03/03 23:30:00	1973/03/04 02:30:00	7	0.08	30.34%	0.14
325	1973/04/30 04:30:00	1973/04/30 13:00:00	18	0.08	30.43%	0.14
326	1973/12/01 14:30:00	1973/12/01 18:30:00	9	0.08	30.52%	0.14
327	1975/04/05 20:30:00	1975/04/06 23:00:00	54	0.08	30.62%	0.14
328	1976/04/11 18:30:00	1976/04/11 21:00:00	6	0.08	30.71%	0.14
329	1976/11/27 03:30:00	1976/11/27 09:00:00	12	0.08	30.81%	0.14
330	1979/02/14 02:30:00	1979/02/14 08:00:00	12	0.08	30.90%	0.14
331	1979/11/07 18:30:00	1979/11/08 06:00:00	24	0.08	30.99%	0.14
332	1980/03/21 18:30:00	1980/03/22 02:30:00	17	0.08	31.09%	0.14
333	1982/03/28 17:30:00	1982/03/28 20:30:00	7	0.08	31.18%	0.14
334	1982/12/09 18:30:00	1982/12/10 00:00:00	12	0.08	31.27%	0.14
335	1983/05/01 06:30:00	1983/05/01 10:00:00	8	0.08	31.37%	0.13
336	1983/08/16 14:30:00	1983/08/16 19:00:00	10	0.08	31.46%	0.13
337	1983/11/11 21:30:00	1983/11/13 07:00:00	68	0.08	31.55%	0.13
338	1985/10/07 13:30:00	1985/10/07 16:30:00	7	0.08	31.65%	0.13
339	1985/10/09 11:30:00	1985/10/09 22:00:00	22	0.08	31.74%	0.13
340	1992/03/20 15:30:00	1992/03/21 12:00:00	42	0.08	31.84%	0.13
341	1994/04/26 08:30:00	1994/04/26 23:00:00	30	0.08	31.93%	0.13
342	1996/03/12 16:30:00	1996/03/14 10:00:00	84	0.08	32.02%	0.13
343	1997/12/06 01:30:00	1997/12/08 03:00:00	100	0.08	32.12%	0.13
344	1998/04/11 01:30:00	1998/04/12 20:00:00	86	0.08	32.21%	0.13
345	2001/05/29 14:30:00	2001/05/29 17:00:00	6	0.08	32.30%	0.13
346	2002/11/29 01:30:00	2002/11/30 03:00:00	52	0.08	32.40%	0.13
347	2005/10/16 15:30:00	2005/10/16 22:00:00	14	0.08	32.49%	0.13
348	2006/03/21 01:30:00	2006/03/21 08:00:00	14	0.08	32.58%	0.13
349	1965/12/15 11:30:00	1965/12/16 13:00:00	52	0.07	32.68%	0.13
350	1985/12/02 11:30:00	1985/12/03 16:00:00	58	0.07	32.77%	0.13
351	1986/01/30 00:30:00	1986/01/30 15:00:00	30	0.07	32.87%	0.13
352	1986/10/09 17:30:00	1986/10/10 13:30:00	41	0.07	32.96%	0.13
353	1987/02/23 12:30:00	1987/02/26 05:30:00	131	0.07	33.05%	0.13
354	1987/04/03 03:30:00	1987/04/04 02:00:00	46	0.07	33.15%	0.13
355	1988/01/05 12:30:00	1988/01/05 22:00:00	20	0.07	33.24%	0.13
356	1989/10/21 22:30:00	1989/10/22 08:00:00	20	0.07	33.33%	0.13
357	1990/01/02 00:30:00	1990/01/02 15:00:00	30	0.07	33.43%	0.13
358	1990/11/26 01:30:00	1990/11/26 10:30:00	19	0.07	33.52%	0.13
359	1991/12/27 23:30:00	1991/12/28 06:00:00	14	0.07	33.61%	0.13
360	1992/03/22 07:30:00	1992/03/23 15:00:00	64	0.07	33.71%	0.13
361	1992/03/26 15:30:00	1992/03/26 21:30:00	13	0.07	33.80%	0.13
362	1992/12/17 21:30:00	1992/12/18 08:00:00	22	0.07	33.90%	0.12
363	1994/01/24 23:30:00	1994/01/26 10:00:00	70	0.07	33.99%	0.12
364	1994/02/03 19:30:00	1994/02/04 14:00:00	38	0.07	34.08%	0.12
365	1994/03/06 04:30:00	1994/03/07 16:00:00	72	0.07	34.18%	0.12
366	1994/04/25 14:30:00	1994/04/25 20:00:00	12	0.07	34.27%	0.12
367	1994/12/24 04:30:00	1994/12/25 10:00:00	60	0.07	34.36%	0.12
368	1995/01/10 15:30:00	1995/01/12 23:00:00	112	0.07	34.46%	0.12

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
369	1997/02/27 10:30:00	1997/02/28 04:30:00	37	0.07	34.55%	0.12
370	2000/02/13 01:30:00	2000/02/14 19:30:00	85	0.07	34.64%	0.12
371	2001/01/26 10:30:00	2001/01/27 05:00:00	38	0.07	34.74%	0.12
372	2001/04/20 23:30:00	2001/04/21 14:30:00	31	0.07	34.83%	0.12
373	2003/11/12 02:30:00	2003/11/12 14:30:00	25	0.07	34.93%	0.12
374	2004/01/28 04:30:00	2004/01/28 09:30:00	11	0.07	35.02%	0.12
375	2004/12/04 13:30:00	2004/12/05 21:00:00	64	0.07	35.11%	0.12
376	2005/01/28 14:30:00	2005/01/29 08:00:00	36	0.07	35.21%	0.12
377	2005/02/11 00:30:00	2005/02/13 08:30:00	113	0.07	35.30%	0.12
378	2005/03/04 14:30:00	2005/03/05 06:00:00	32	0.07	35.39%	0.12
379	2005/03/22 18:30:00	2005/03/23 02:00:00	16	0.07	35.49%	0.12
380	2006/10/13 19:30:00	2006/10/14 14:30:00	39	0.07	35.58%	0.12
381	2006/12/16 19:30:00	2006/12/17 11:00:00	32	0.07	35.67%	0.12
382	2007/02/12 21:30:00	2007/02/14 01:30:00	57	0.07	35.77%	0.12
383	2007/02/19 00:30:00	2007/02/19 19:00:00	38	0.07	35.86%	0.12
384	2007/12/07 03:30:00	2007/12/08 23:00:00	88	0.07	35.96%	0.12
385	2008/01/23 18:30:00	2008/01/24 11:00:00	34	0.07	36.05%	0.12
386	1965/01/24 05:30:00	1965/01/24 12:30:00	15	0.06	36.14%	0.12
387	1965/04/07 03:30:00	1965/04/07 11:00:00	16	0.06	36.24%	0.12
388	1965/11/24 18:30:00	1965/11/25 17:30:00	47	0.06	36.33%	0.12
389	1983/12/09 17:30:00	1983/12/10 00:00:00	14	0.06	36.42%	0.12
390	1984/04/06 05:30:00	1984/04/06 16:30:00	23	0.06	36.52%	0.12
391	1984/12/14 13:30:00	1984/12/14 17:30:00	9	0.06	36.61%	0.12
392	1986/03/13 16:30:00	1986/03/14 04:30:00	25	0.06	36.70%	0.12
393	1987/11/02 02:30:00	1987/11/02 06:30:00	9	0.06	36.80%	0.12
394	1988/02/29 21:30:00	1988/03/01 06:00:00	18	0.06	36.89%	0.11
395	1990/02/04 10:30:00	1990/02/04 14:30:00	9	0.06	36.99%	0.11
396	1995/06/15 20:30:00	1995/06/17 14:30:00	85	0.06	37.08%	0.11
397	1996/02/27 20:30:00	1996/02/28 01:00:00	10	0.06	37.17%	0.11
398	1997/01/25 14:30:00	1997/01/26 12:00:00	44	0.06	37.27%	0.11
399	1998/01/29 01:30:00	1998/01/30 03:00:00	52	0.06	37.36%	0.11
400	2000/02/17 01:30:00	2000/02/18 03:00:00	52	0.06	37.45%	0.11
401	2001/12/21 01:30:00	2001/12/22 03:00:00	52	0.06	37.55%	0.11
402	2003/05/03 01:30:00	2003/05/04 02:00:00	50	0.06	37.64%	0.11
403	2004/11/29 11:30:00	2004/11/29 15:00:00	8	0.06	37.73%	0.11
404	2006/03/17 19:30:00	2006/03/18 11:00:00	32	0.06	37.83%	0.11
405	2007/02/28 04:30:00	2007/02/28 08:00:00	8	0.06	37.92%	0.11
406	1965/04/02 22:30:00	1965/04/05 16:00:00	132	0.05	38.01%	0.11
407	1985/12/10 12:30:00	1985/12/11 10:00:00	44	0.05	38.11%	0.11
408	1986/01/31 04:30:00	1986/02/01 00:00:00	40	0.05	38.20%	0.11
409	1986/07/19 11:30:00	1986/07/19 17:30:00	13	0.05	38.30%	0.11
410	1987/10/12 17:30:00	1987/10/12 22:30:00	11	0.05	38.39%	0.11
411	1987/10/30 23:30:00	1987/11/01 00:30:00	51	0.05	38.48%	0.11
412	1988/02/02 02:30:00	1988/02/02 20:30:00	37	0.05	38.58%	0.11
413	1988/11/14 04:30:00	1988/11/14 12:30:00	17	0.05	38.67%	0.11
414	1989/01/05 16:30:00	1989/01/06 04:00:00	24	0.05	38.76%	0.11
415	1990/03/11 00:30:00	1990/03/11 05:30:00	11	0.05	38.86%	0.11

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
416	1990/04/04 08:30:00	1990/04/04 14:30:00	13	0.05	38.95%	0.11
417	1990/05/28 03:30:00	1990/05/28 15:30:00	25	0.05	39.04%	0.11
418	1990/11/19 21:30:00	1990/11/20 08:30:00	23	0.05	39.14%	0.11
419	1991/03/13 16:30:00	1991/03/14 06:00:00	28	0.05	39.23%	0.11
420	1992/01/02 22:30:00	1992/01/04 09:00:00	70	0.05	39.33%	0.11
421	1992/12/27 15:30:00	1992/12/28 07:00:00	32	0.05	39.42%	0.11
422	1993/03/25 23:30:00	1993/03/26 22:00:00	46	0.05	39.51%	0.11
423	1993/11/22 21:30:00	1993/11/23 07:00:00	20	0.05	39.61%	0.11
424	1993/12/11 15:30:00	1993/12/12 06:00:00	30	0.05	39.70%	0.11
425	1993/12/14 16:30:00	1993/12/15 12:00:00	40	0.05	39.79%	0.11
426	1994/01/27 04:30:00	1994/01/27 15:00:00	22	0.05	39.89%	0.11
427	1994/04/09 04:30:00	1994/04/09 16:00:00	24	0.05	39.98%	0.11
428	1996/03/04 16:30:00	1996/03/05 06:00:00	28	0.05	40.07%	0.11
429	1996/04/17 23:30:00	1996/04/18 09:00:00	20	0.05	40.17%	0.11
430	1996/12/11 01:30:00	1996/12/11 23:00:00	44	0.05	40.26%	0.11
431	1997/01/15 17:30:00	1997/01/15 23:00:00	12	0.05	40.36%	0.1
432	1997/01/23 02:30:00	1997/01/23 14:00:00	24	0.05	40.45%	0.1
433	1998/03/31 01:30:00	1998/04/02 02:00:00	98	0.05	40.54%	0.1
434	2001/12/09 01:30:00	2001/12/10 03:00:00	52	0.05	40.64%	0.1
435	2004/04/17 12:30:00	2004/04/17 17:00:00	10	0.05	40.73%	0.1
436	2004/11/21 04:30:00	2004/11/21 11:00:00	14	0.05	40.82%	0.1
437	2004/12/31 13:30:00	2004/12/31 20:00:00	14	0.05	40.92%	0.1
438	2005/09/20 01:30:00	2005/09/20 05:00:00	8	0.05	41.01%	0.1
439	2005/10/17 13:30:00	2005/10/18 13:00:00	48	0.05	41.10%	0.1
440	2005/12/31 15:30:00	2006/01/01 01:00:00	20	0.05	41.20%	0.1
441	2006/04/14 12:30:00	2006/04/15 10:30:00	45	0.05	41.29%	0.1
442	2007/12/20 21:30:00	2007/12/21 06:00:00	18	0.05	41.39%	0.1
443	2008/01/26 20:30:00	2008/01/28 15:00:00	86	0.05	41.48%	0.1
444	1964/11/12 02:30:00	1964/11/12 08:00:00	12	0.04	41.57%	0.1
445	1967/03/03 23:30:00	1967/03/04 12:30:00	27	0.04	41.67%	0.1
446	1967/03/31 09:30:00	1967/03/31 14:30:00	11	0.04	41.76%	0.1
447	1967/04/01 11:30:00	1967/04/02 08:00:00	42	0.04	41.85%	0.1
448	1967/04/04 15:30:00	1967/04/04 21:00:00	12	0.04	41.95%	0.1
449	1967/04/18 18:30:00	1967/04/19 22:00:00	56	0.04	42.04%	0.1
450	1967/06/13 11:30:00	1967/06/13 18:00:00	14	0.04	42.13%	0.1
451	1967/09/29 20:30:00	1967/09/30 03:00:00	14	0.04	42.23%	0.1
452	1967/11/30 15:30:00	1967/12/01 00:00:00	18	0.04	42.32%	0.1
453	1967/12/13 09:30:00	1967/12/13 16:00:00	14	0.04	42.42%	0.1
454	1967/12/16 12:30:00	1967/12/17 05:00:00	34	0.04	42.51%	0.1
455	1967/12/20 07:30:00	1967/12/20 11:00:00	8	0.04	42.60%	0.1
456	1968/01/27 06:30:00	1968/01/28 10:00:00	56	0.04	42.70%	0.1
457	1968/03/18 12:30:00	1968/03/18 16:30:00	9	0.04	42.79%	0.1
458	1968/05/12 04:30:00	1968/05/12 10:00:00	12	0.04	42.88%	0.1
459	1968/07/09 20:30:00	1968/07/10 00:00:00	8	0.04	42.98%	0.1
460	1968/11/15 05:30:00	1968/11/15 22:00:00	34	0.04	43.07%	0.1
461	1969/01/18 21:30:00	1969/01/19 03:00:00	12	0.04	43.16%	0.1
462	1969/01/26 17:30:00	1969/01/26 23:00:00	12	0.04	43.26%	0.1

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
463	1969/01/28 00:30:00	1969/01/28 23:00:00	46	0.04	43.35%	0.1
464	1969/02/05 02:30:00	1969/02/05 11:00:00	18	0.04	43.45%	0.1
465	1969/02/15 17:30:00	1969/02/16 00:00:00	14	0.04	43.54%	0.1
466	1969/02/28 21:30:00	1969/03/01 04:30:00	15	0.04	43.63%	0.1
467	1969/04/05 19:30:00	1969/04/05 23:00:00	8	0.04	43.73%	0.1
468	1969/06/11 08:30:00	1969/06/11 14:00:00	12	0.04	43.82%	0.1
469	1969/11/09 23:30:00	1969/11/10 05:00:00	12	0.04	43.91%	0.1
470	1969/12/08 18:30:00	1969/12/09 03:00:00	18	0.04	44.01%	0.1
471	1970/01/11 13:30:00	1970/01/12 07:00:00	36	0.04	44.10%	0.1
472	1970/01/16 15:30:00	1970/01/16 22:00:00	14	0.04	44.19%	0.1
473	1970/02/10 00:30:00	1970/02/11 09:00:00	66	0.04	44.29%	0.1
474	1970/03/06 18:30:00	1970/03/07 03:30:00	19	0.04	44.38%	0.1
475	1970/11/25 22:30:00	1970/11/26 14:00:00	32	0.04	44.48%	0.1
476	1970/12/09 04:30:00	1970/12/09 14:00:00	20	0.04	44.57%	0.1
477	1970/12/16 21:30:00	1970/12/18 11:00:00	76	0.04	44.66%	0.09
478	1971/01/12 18:30:00	1971/01/13 02:00:00	16	0.04	44.76%	0.09
479	1971/02/19 16:30:00	1971/02/20 10:00:00	36	0.04	44.85%	0.09
480	1971/04/15 21:30:00	1971/04/16 11:00:00	28	0.04	44.94%	0.09
481	1971/04/23 06:30:00	1971/04/23 11:00:00	10	0.04	45.04%	0.09
482	1971/05/06 05:30:00	1971/05/06 13:00:00	16	0.04	45.13%	0.09
483	1971/12/03 23:30:00	1971/12/04 04:00:00	10	0.04	45.22%	0.09
484	1971/12/07 00:30:00	1971/12/07 05:00:00	10	0.04	45.32%	0.09
485	1971/12/28 11:30:00	1971/12/28 18:00:00	14	0.04	45.41%	0.09
486	1971/12/31 03:30:00	1971/12/31 09:00:00	12	0.04	45.51%	0.09
487	1972/01/09 08:30:00	1972/01/10 03:00:00	38	0.04	45.60%	0.09
488	1972/02/05 07:30:00	1972/02/06 11:00:00	56	0.04	45.69%	0.09
489	1972/04/13 02:30:00	1972/04/13 10:00:00	16	0.04	45.79%	0.09
490	1972/10/19 21:30:00	1972/10/20 17:30:00	41	0.04	45.88%	0.09
491	1972/12/07 03:30:00	1972/12/07 12:00:00	18	0.04	45.97%	0.09
492	1972/12/08 06:30:00	1972/12/09 05:00:00	46	0.04	46.07%	0.09
493	1973/01/04 00:30:00	1973/01/04 20:00:00	40	0.04	46.16%	0.09
494	1973/01/09 09:30:00	1973/01/10 04:00:00	38	0.04	46.25%	0.09
495	1973/02/03 12:30:00	1973/02/04 00:00:00	24	0.04	46.35%	0.09
496	1973/02/06 00:30:00	1973/02/06 06:00:00	12	0.04	46.44%	0.09
497	1973/02/12 21:30:00	1973/02/13 04:00:00	14	0.04	46.54%	0.09
498	1973/03/05 02:30:00	1973/03/05 07:30:00	11	0.04	46.63%	0.09
499	1973/03/06 02:30:00	1973/03/07 03:30:00	51	0.04	46.72%	0.09
500	1973/03/13 11:30:00	1973/03/13 23:30:00	25	0.04	46.82%	0.09
501	1973/03/27 02:30:00	1973/03/27 17:30:00	31	0.04	46.91%	0.09
502	1973/11/17 05:30:00	1973/11/18 14:00:00	66	0.04	47.00%	0.09
503	1974/01/20 16:30:00	1974/01/21 01:00:00	18	0.04	47.10%	0.09
504	1974/03/02 09:30:00	1974/03/02 14:30:00	11	0.04	47.19%	0.09
505	1974/03/03 10:30:00	1974/03/03 15:30:00	11	0.04	47.28%	0.09
506	1974/03/27 08:30:00	1974/03/27 12:30:00	9	0.04	47.38%	0.09
507	1974/12/28 05:30:00	1974/12/29 13:00:00	64	0.04	47.47%	0.09
508	1975/01/30 17:30:00	1975/01/31 00:00:00	14	0.04	47.57%	0.09
509	1975/02/03 08:30:00	1975/02/03 20:00:00	24	0.04	47.66%	0.09

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
510	1975/02/04 11:30:00	1975/02/04 18:00:00	14	0.04	47.75%	0.09
511	1975/02/09 05:30:00	1975/02/10 06:00:00	50	0.04	47.85%	0.09
512	1975/03/14 01:30:00	1975/03/14 13:30:00	25	0.04	47.94%	0.09
513	1975/03/22 07:30:00	1975/03/22 12:30:00	11	0.04	48.03%	0.09
514	1975/03/31 20:30:00	1975/04/01 07:00:00	22	0.04	48.13%	0.09
515	1975/04/17 02:30:00	1975/04/17 10:00:00	16	0.04	48.22%	0.09
516	1976/02/07 02:30:00	1976/02/07 12:00:00	20	0.04	48.31%	0.09
517	1976/04/15 14:30:00	1976/04/15 23:00:00	18	0.04	48.41%	0.09
518	1977/01/03 11:30:00	1977/01/04 03:00:00	32	0.04	48.50%	0.09
519	1977/01/06 18:30:00	1977/01/07 10:00:00	32	0.04	48.60%	0.09
520	1977/01/28 16:30:00	1977/01/28 22:00:00	12	0.04	48.69%	0.09
521	1977/02/22 00:30:00	1977/02/22 05:00:00	10	0.04	48.78%	0.09
522	1977/02/23 11:30:00	1977/02/24 04:00:00	34	0.04	48.88%	0.09
523	1977/05/12 18:30:00	1977/05/13 02:00:00	16	0.04	48.97%	0.09
524	1977/05/24 05:30:00	1977/05/24 11:00:00	12	0.04	49.06%	0.09
525	1977/12/23 02:30:00	1977/12/23 09:00:00	14	0.04	49.16%	0.09
526	1977/12/28 06:30:00	1977/12/29 18:00:00	72	0.04	49.25%	0.09
527	1978/01/10 16:30:00	1978/01/10 23:00:00	14	0.04	49.34%	0.09
528	1978/04/15 19:30:00	1978/04/16 01:00:00	12	0.04	49.44%	0.09
529	1978/11/23 06:30:00	1978/11/23 16:00:00	20	0.04	49.53%	0.09
530	1979/01/09 07:30:00	1979/01/09 16:00:00	18	0.04	49.63%	0.09
531	1979/01/15 13:30:00	1979/01/16 01:00:00	24	0.04	49.72%	0.09
532	1979/02/23 02:30:00	1979/02/23 11:00:00	18	0.04	49.81%	0.09
533	1979/03/18 13:30:00	1979/03/19 07:30:00	37	0.04	49.91%	0.08
534	1979/03/20 01:30:00	1979/03/21 08:30:00	63	0.04	50.00%	0.08
535	1979/11/08 21:30:00	1979/11/09 04:00:00	14	0.04	50.09%	0.08
536	1980/01/07 13:30:00	1980/01/08 05:00:00	32	0.04	50.19%	0.08
537	1980/01/12 06:30:00	1980/01/13 03:00:00	42	0.04	50.28%	0.08
538	1980/04/22 14:30:00	1980/04/23 06:00:00	32	0.04	50.37%	0.08
539	1980/04/28 16:30:00	1980/04/29 02:00:00	20	0.04	50.47%	0.08
540	1980/05/10 10:30:00	1980/05/10 14:00:00	8	0.04	50.56%	0.08
541	1980/12/07 10:30:00	1980/12/07 15:00:00	10	0.04	50.66%	0.08
542	1981/02/10 01:30:00	1981/02/10 11:00:00	20	0.04	50.75%	0.08
543	1981/04/18 12:30:00	1981/04/19 11:00:00	46	0.04	50.84%	0.08
544	1981/10/11 05:30:00	1981/10/11 09:30:00	9	0.04	50.94%	0.08
545	1981/12/31 09:30:00	1981/12/31 13:00:00	8	0.04	51.03%	0.08
546	1982/01/02 07:30:00	1982/01/02 12:00:00	10	0.04	51.12%	0.08
547	1982/01/05 03:30:00	1982/01/05 17:00:00	28	0.04	51.22%	0.08
548	1982/01/10 17:30:00	1982/01/11 00:00:00	14	0.04	51.31%	0.08
549	1982/03/02 18:30:00	1982/03/03 02:30:00	17	0.04	51.40%	0.08
550	1982/03/26 20:30:00	1982/03/27 08:30:00	25	0.04	51.50%	0.08
551	1982/03/31 01:30:00	1982/03/31 11:30:00	21	0.04	51.59%	0.08
552	1982/04/02 10:30:00	1982/04/03 11:00:00	50	0.04	51.69%	0.08
553	1982/09/26 00:30:00	1982/09/26 19:00:00	38	0.04	51.78%	0.08
554	1982/11/19 01:30:00	1982/11/19 16:00:00	30	0.04	51.87%	0.08
555	1982/12/07 22:30:00	1982/12/08 03:00:00	10	0.04	51.97%	0.08
556	1982/12/08 17:30:00	1982/12/08 21:00:00	8	0.04	52.06%	0.08

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
557	1982/12/29 18:30:00	1982/12/30 13:00:00	38	0.04	52.15%	0.08
558	1983/01/19 03:30:00	1983/01/19 10:00:00	14	0.04	52.25%	0.08
559	1983/01/22 23:30:00	1983/01/23 07:00:00	16	0.04	52.34%	0.08
560	1983/01/24 17:30:00	1983/01/24 22:00:00	10	0.04	52.43%	0.08
561	1983/02/02 11:30:00	1983/02/02 23:00:00	24	0.04	52.53%	0.08
562	1983/02/05 16:30:00	1983/02/06 04:00:00	24	0.04	52.62%	0.08
563	1983/03/06 02:30:00	1983/03/06 14:30:00	25	0.04	52.72%	0.08
564	1983/03/17 03:30:00	1983/03/17 08:30:00	11	0.04	52.81%	0.08
565	1983/03/22 11:30:00	1983/03/22 17:30:00	13	0.04	52.90%	0.08
566	1983/04/10 22:30:00	1983/04/11 06:00:00	16	0.04	53.00%	0.08
567	1983/04/12 03:30:00	1983/04/13 02:00:00	46	0.04	53.09%	0.08
568	1983/04/17 21:30:00	1983/04/18 07:00:00	20	0.04	53.18%	0.08
569	1983/04/20 00:30:00	1983/04/21 11:00:00	70	0.04	53.28%	0.08
570	1984/03/24 12:30:00	1984/03/24 15:30:00	7	0.04	53.37%	0.08
571	1984/12/16 03:30:00	1984/12/16 07:00:00	8	0.04	53.46%	0.08
572	1985/02/09 04:30:00	1985/02/09 18:00:00	28	0.04	53.56%	0.08
573	1985/02/20 19:30:00	1985/02/21 00:00:00	10	0.04	53.65%	0.08
574	1985/03/02 12:30:00	1985/03/03 03:30:00	31	0.04	53.75%	0.08
575	1985/03/27 07:30:00	1985/03/28 11:30:00	57	0.04	53.84%	0.08
576	1985/08/10 13:30:00	1985/08/10 16:00:00	6	0.04	53.93%	0.08
577	1986/01/02 14:30:00	1986/01/02 19:00:00	10	0.04	54.03%	0.08
578	1986/09/18 10:30:00	1986/09/18 13:00:00	6	0.04	54.12%	0.08
579	1986/12/20 05:30:00	1986/12/20 16:00:00	22	0.04	54.21%	0.08
580	1992/03/31 15:30:00	1992/03/31 18:30:00	7	0.04	54.31%	0.08
581	1993/01/02 01:30:00	1993/01/03 03:00:00	52	0.04	54.40%	0.08
582	1997/01/05 08:30:00	1997/01/05 18:00:00	20	0.04	54.49%	0.08
583	1998/05/04 15:30:00	1998/05/06 02:00:00	70	0.04	54.59%	0.08
584	2000/10/21 17:30:00	2000/10/21 20:30:00	7	0.04	54.68%	0.08
585	2002/03/07 10:30:00	2002/03/08 04:00:00	36	0.04	54.78%	0.08
586	2006/03/12 20:30:00	2006/03/13 01:00:00	10	0.04	54.87%	0.08
587	2007/02/22 20:30:00	2007/02/23 07:30:00	23	0.04	54.96%	0.08
588	1965/03/15 01:30:00	1965/03/15 06:30:00	11	0.03	55.06%	0.08
589	1965/12/21 22:30:00	1965/12/23 00:30:00	53	0.03	55.15%	0.08
590	1966/02/10 14:30:00	1966/02/10 18:00:00	8	0.03	55.24%	0.08
591	1966/02/25 02:30:00	1966/02/25 06:00:00	8	0.03	55.34%	0.08
592	1966/03/02 09:30:00	1966/03/02 12:30:00	7	0.03	55.43%	0.08
593	1966/03/13 14:30:00	1966/03/13 17:30:00	7	0.03	55.52%	0.08
594	1966/03/24 18:30:00	1966/03/24 21:30:00	7	0.03	55.62%	0.08
595	1966/05/10 04:30:00	1966/05/10 07:00:00	6	0.03	55.71%	0.08
596	1966/09/29 23:30:00	1966/09/30 13:00:00	28	0.03	55.81%	0.08
597	1966/10/05 13:30:00	1966/10/05 16:30:00	7	0.03	55.90%	0.08
598	1966/10/18 11:30:00	1966/10/18 14:30:00	7	0.03	55.99%	0.08
599	1967/01/31 03:30:00	1967/01/31 07:00:00	8	0.03	56.09%	0.08
600	1967/03/11 08:30:00	1967/03/11 11:30:00	7	0.03	56.18%	0.08
601	1967/03/29 05:30:00	1967/03/29 08:30:00	7	0.03	56.27%	0.08
602	1967/04/24 10:30:00	1967/04/24 13:00:00	6	0.03	56.37%	0.08
603	1967/04/28 18:30:00	1967/04/28 21:00:00	6	0.03	56.46%	0.08

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
604	1967/06/09 06:30:00	1967/06/09 09:00:00	6	0.03	56.55%	0.08
605	1967/07/26 20:30:00	1967/07/26 23:00:00	6	0.03	56.65%	0.07
606	1967/09/02 20:30:00	1967/09/02 23:00:00	6	0.03	56.74%	0.07
607	1967/11/23 08:30:00	1967/11/23 12:00:00	8	0.03	56.84%	0.07
608	1967/11/28 09:30:00	1967/11/28 13:00:00	8	0.03	56.93%	0.07
609	1967/12/08 00:30:00	1967/12/08 04:00:00	8	0.03	57.02%	0.07
610	1968/01/10 04:30:00	1968/01/10 08:00:00	8	0.03	57.12%	0.07
611	1968/02/10 03:30:00	1968/02/10 07:00:00	8	0.03	57.21%	0.07
612	1968/03/13 21:30:00	1968/03/14 00:30:00	7	0.03	57.30%	0.07
613	1968/03/17 01:30:00	1968/03/17 04:30:00	7	0.03	57.40%	0.07
614	1968/06/07 06:30:00	1968/06/07 09:00:00	6	0.03	57.49%	0.07
615	1968/09/13 10:30:00	1968/09/13 13:00:00	6	0.03	57.58%	0.07
616	1968/10/30 09:30:00	1968/10/30 12:30:00	7	0.03	57.68%	0.07
617	1968/12/01 10:30:00	1968/12/01 14:00:00	8	0.03	57.77%	0.07
618	1968/12/19 13:30:00	1968/12/19 17:00:00	8	0.03	57.87%	0.07
619	1969/01/17 10:30:00	1969/01/17 14:00:00	8	0.03	57.96%	0.07
620	1969/02/23 05:30:00	1969/02/23 09:00:00	8	0.03	58.05%	0.07
621	1969/03/11 08:30:00	1969/03/11 11:30:00	7	0.03	58.15%	0.07
622	1969/04/03 01:30:00	1969/04/03 04:00:00	6	0.03	58.24%	0.07
623	1969/06/17 08:30:00	1969/06/17 11:00:00	6	0.03	58.33%	0.07
624	1969/08/10 04:30:00	1969/08/10 07:00:00	6	0.03	58.43%	0.07
625	1969/09/06 23:30:00	1969/09/07 02:00:00	6	0.03	58.52%	0.07
626	1969/11/15 20:30:00	1969/11/16 00:00:00	8	0.03	58.61%	0.07
627	1969/12/26 09:30:00	1969/12/26 13:00:00	8	0.03	58.71%	0.07
628	1970/01/10 00:30:00	1970/01/10 04:00:00	8	0.03	58.80%	0.07
629	1970/01/15 01:30:00	1970/01/15 05:00:00	8	0.03	58.90%	0.07
630	1970/01/18 13:30:00	1970/01/18 17:00:00	8	0.03	58.99%	0.07
631	1970/12/02 14:30:00	1970/12/02 18:00:00	8	0.03	59.08%	0.07
632	1971/05/03 08:30:00	1971/05/03 11:00:00	6	0.03	59.18%	0.07
633	1971/06/02 11:30:00	1971/06/02 14:00:00	6	0.03	59.27%	0.07
634	1971/06/05 13:30:00	1971/06/05 16:00:00	6	0.03	59.36%	0.07
635	1971/10/22 12:30:00	1971/10/22 15:30:00	7	0.03	59.46%	0.07
636	1971/10/24 10:30:00	1971/10/24 13:30:00	7	0.03	59.55%	0.07
637	1971/10/25 12:30:00	1971/10/25 15:30:00	7	0.03	59.64%	0.07
638	1971/10/30 09:30:00	1971/10/30 12:30:00	7	0.03	59.74%	0.07
639	1971/11/13 12:30:00	1971/11/13 16:00:00	8	0.03	59.83%	0.07
640	1971/11/15 15:30:00	1971/11/15 19:00:00	8	0.03	59.93%	0.07
641	1971/11/29 05:30:00	1971/11/29 09:00:00	8	0.03	60.02%	0.07
642	1971/12/02 23:30:00	1971/12/03 03:00:00	8	0.03	60.11%	0.07
643	1972/04/21 08:30:00	1972/04/21 11:00:00	6	0.03	60.21%	0.07
644	1972/06/07 03:30:00	1972/06/07 06:00:00	6	0.03	60.30%	0.07
645	1972/06/10 01:30:00	1972/06/10 04:00:00	6	0.03	60.39%	0.07
646	1972/06/22 12:30:00	1972/06/22 15:00:00	6	0.03	60.49%	0.07
647	1972/09/06 04:30:00	1972/09/06 07:00:00	6	0.03	60.58%	0.07
648	1972/09/06 20:30:00	1972/09/06 23:00:00	6	0.03	60.67%	0.07
649	1972/10/11 14:30:00	1972/10/11 17:30:00	7	0.03	60.77%	0.07
650	1972/10/17 08:30:00	1972/10/17 11:30:00	7	0.03	60.86%	0.07

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
651	1972/11/08 00:30:00	1972/11/08 04:00:00	8	0.03	60.96%	0.07
652	1973/01/25 20:30:00	1973/01/26 00:00:00	8	0.03	61.05%	0.07
653	1973/01/30 12:30:00	1973/01/30 16:00:00	8	0.03	61.14%	0.07
654	1973/02/07 14:30:00	1973/02/07 18:00:00	8	0.03	61.24%	0.07
655	1973/02/21 08:30:00	1973/02/21 12:00:00	8	0.03	61.33%	0.07
656	1973/03/21 05:30:00	1973/03/21 08:30:00	7	0.03	61.42%	0.07
657	1973/03/28 20:30:00	1973/03/28 23:30:00	7	0.03	61.52%	0.07
658	1973/04/21 09:30:00	1973/04/21 12:00:00	6	0.03	61.61%	0.07
659	1973/05/23 14:30:00	1973/05/23 17:00:00	6	0.03	61.70%	0.07
660	1973/05/28 09:30:00	1973/05/28 12:00:00	6	0.03	61.80%	0.07
661	1973/05/31 08:30:00	1973/05/31 11:00:00	6	0.03	61.89%	0.07
662	1973/11/24 18:30:00	1973/11/24 22:00:00	8	0.03	61.99%	0.07
663	1973/12/16 14:30:00	1973/12/16 18:00:00	8	0.03	62.08%	0.07
664	1973/12/20 13:30:00	1973/12/20 17:00:00	8	0.03	62.17%	0.07
665	1973/12/22 02:30:00	1973/12/22 06:00:00	8	0.03	62.27%	0.07
666	1974/01/09 15:30:00	1974/01/09 19:00:00	8	0.03	62.36%	0.07
667	1974/02/18 15:30:00	1974/02/18 19:00:00	8	0.03	62.45%	0.07
668	1974/02/19 18:30:00	1974/02/19 22:00:00	8	0.03	62.55%	0.07
669	1974/03/06 18:30:00	1974/03/06 21:30:00	7	0.03	62.64%	0.07
670	1974/06/08 11:30:00	1974/06/08 14:00:00	6	0.03	62.73%	0.07
671	1974/11/01 22:30:00	1974/11/02 02:00:00	8	0.03	62.83%	0.07
672	1974/11/03 15:30:00	1974/11/03 19:00:00	8	0.03	62.92%	0.07
673	1975/02/05 08:30:00	1975/02/05 12:00:00	8	0.03	63.01%	0.07
674	1975/02/14 04:30:00	1975/02/14 08:00:00	8	0.03	63.11%	0.07
675	1975/03/09 06:30:00	1975/03/09 09:30:00	7	0.03	63.20%	0.07
676	1975/03/23 13:30:00	1975/03/23 16:30:00	7	0.03	63.30%	0.07
677	1975/03/25 09:30:00	1975/03/26 00:30:00	31	0.03	63.39%	0.07
678	1975/04/18 12:30:00	1975/04/18 15:00:00	6	0.03	63.48%	0.07
679	1975/04/23 14:30:00	1975/04/23 17:00:00	6	0.03	63.58%	0.07
680	1975/05/20 01:30:00	1975/05/20 04:00:00	6	0.03	63.67%	0.07
681	1975/06/07 13:30:00	1975/06/07 16:00:00	6	0.03	63.76%	0.07
682	1975/10/28 21:30:00	1975/10/29 00:30:00	7	0.03	63.86%	0.07
683	1975/12/19 23:30:00	1975/12/20 03:00:00	8	0.03	63.95%	0.07
684	1976/04/04 08:30:00	1976/04/04 11:00:00	6	0.03	64.04%	0.07
685	1976/04/04 23:30:00	1976/04/05 02:00:00	6	0.03	64.14%	0.07
686	1976/09/03 16:30:00	1976/09/03 19:00:00	6	0.03	64.23%	0.07
687	1976/09/14 10:30:00	1976/09/14 13:00:00	6	0.03	64.33%	0.07
688	1976/10/23 13:30:00	1976/10/23 16:30:00	7	0.03	64.42%	0.07
689	1977/01/21 14:30:00	1977/01/21 18:00:00	8	0.03	64.51%	0.07
690	1977/04/02 00:30:00	1977/04/02 03:00:00	6	0.03	64.61%	0.07
691	1977/05/05 20:30:00	1977/05/05 23:00:00	6	0.03	64.70%	0.07
692	1977/08/12 10:30:00	1977/08/12 13:00:00	6	0.03	64.79%	0.07
693	1977/10/06 02:30:00	1977/10/06 05:30:00	7	0.03	64.89%	0.07
694	1977/11/06 01:30:00	1977/11/06 05:00:00	8	0.03	64.98%	0.07
695	1978/01/12 15:30:00	1978/01/12 19:00:00	8	0.03	65.07%	0.07
696	1978/01/26 09:30:00	1978/01/26 13:00:00	8	0.03	65.17%	0.07
697	1978/03/31 22:30:00	1978/04/01 01:00:00	6	0.03	65.26%	0.07

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
698	1978/04/02 16:30:00	1978/04/02 19:00:00	6	0.03	65.36%	0.06
699	1978/04/07 20:30:00	1978/04/08 12:00:00	32	0.03	65.45%	0.06
700	1978/04/26 08:30:00	1978/04/26 11:00:00	6	0.03	65.54%	0.06
701	1978/05/01 10:30:00	1978/05/01 13:00:00	6	0.03	65.64%	0.06
702	1978/09/07 11:30:00	1978/09/07 14:00:00	6	0.03	65.73%	0.06
703	1978/09/19 12:30:00	1978/09/19 15:00:00	6	0.03	65.82%	0.06
704	1979/01/29 08:30:00	1979/01/29 12:00:00	8	0.03	65.92%	0.06
705	1979/03/13 09:30:00	1979/03/13 12:30:00	7	0.03	66.01%	0.06
706	1979/03/15 21:30:00	1979/03/16 00:30:00	7	0.03	66.10%	0.06
707	1979/03/29 08:30:00	1979/03/29 11:30:00	7	0.03	66.20%	0.06
708	1979/05/19 14:30:00	1979/05/19 17:00:00	6	0.03	66.29%	0.06
709	1979/08/13 14:30:00	1979/08/13 17:00:00	6	0.03	66.39%	0.06
710	1979/10/21 10:30:00	1979/10/21 13:30:00	7	0.03	66.48%	0.06
711	1979/11/04 06:30:00	1979/11/04 10:00:00	8	0.03	66.57%	0.06
712	1979/11/05 13:30:00	1979/11/05 17:00:00	8	0.03	66.67%	0.06
713	1979/12/22 09:30:00	1979/12/22 13:00:00	8	0.03	66.76%	0.06
714	1980/01/15 09:30:00	1980/01/15 13:00:00	8	0.03	66.85%	0.06
715	1980/03/18 07:30:00	1980/03/18 21:30:00	29	0.03	66.95%	0.06
716	1980/04/21 03:30:00	1980/04/21 06:00:00	6	0.03	67.04%	0.06
717	1980/04/24 11:30:00	1980/04/24 14:00:00	6	0.03	67.13%	0.06
718	1980/04/29 19:30:00	1980/04/29 22:00:00	6	0.03	67.23%	0.06
719	1980/05/01 22:30:00	1980/05/02 01:00:00	6	0.03	67.32%	0.06
720	1980/10/26 09:30:00	1980/10/26 12:30:00	7	0.03	67.42%	0.06
721	1980/12/11 13:30:00	1980/12/11 17:00:00	8	0.03	67.51%	0.06
722	1981/01/11 16:30:00	1981/01/11 20:00:00	8	0.03	67.60%	0.06
723	1981/03/04 06:30:00	1981/03/04 09:30:00	7	0.03	67.70%	0.06
724	1981/03/14 01:30:00	1981/03/14 04:30:00	7	0.03	67.79%	0.06
725	1981/04/02 05:30:00	1981/04/02 08:00:00	6	0.03	67.88%	0.06
726	1981/04/02 20:30:00	1981/04/02 23:00:00	6	0.03	67.98%	0.06
727	1981/05/16 10:30:00	1981/05/16 13:00:00	6	0.03	68.07%	0.06
728	1981/05/27 00:30:00	1981/05/27 03:00:00	6	0.03	68.16%	0.06
729	1981/10/01 01:30:00	1981/10/01 04:30:00	7	0.03	68.26%	0.06
730	1981/10/28 22:30:00	1981/10/29 01:30:00	7	0.03	68.35%	0.06
731	1981/12/21 03:30:00	1981/12/21 07:00:00	8	0.03	68.45%	0.06
732	1982/02/05 13:30:00	1982/02/05 17:00:00	8	0.03	68.54%	0.06
733	1982/02/08 02:30:00	1982/02/08 06:00:00	8	0.03	68.63%	0.06
734	1982/02/16 08:30:00	1982/02/16 12:00:00	8	0.03	68.73%	0.06
735	1982/03/12 13:30:00	1982/03/12 16:30:00	7	0.03	68.82%	0.06
736	1982/04/01 13:30:00	1982/04/01 16:00:00	6	0.03	68.91%	0.06
737	1982/04/05 14:30:00	1982/04/05 17:00:00	6	0.03	69.01%	0.06
738	1982/05/11 07:30:00	1982/05/11 10:00:00	6	0.03	69.10%	0.06
739	1982/05/26 12:30:00	1982/05/26 15:00:00	6	0.03	69.19%	0.06
740	1982/09/16 12:30:00	1982/09/16 15:00:00	6	0.03	69.29%	0.06
741	1982/09/22 12:30:00	1982/09/22 15:00:00	6	0.03	69.38%	0.06
742	1982/10/26 09:30:00	1982/10/26 12:30:00	7	0.03	69.48%	0.06
743	1982/10/31 14:30:00	1982/10/31 17:30:00	7	0.03	69.57%	0.06
744	1983/03/15 09:30:00	1983/03/15 12:30:00	7	0.03	69.66%	0.06

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
745	1983/03/24 16:30:00	1983/03/24 19:30:00	7	0.03	69.76%	0.06
746	1983/08/07 08:30:00	1983/08/07 11:00:00	6	0.03	69.85%	0.06
747	1983/08/18 08:30:00	1983/08/18 18:00:00	20	0.03	69.94%	0.06
748	1983/11/18 01:30:00	1983/11/18 05:00:00	8	0.03	70.04%	0.06
749	1984/01/16 15:30:00	1984/01/17 00:00:00	18	0.03	70.13%	0.06
750	1984/12/18 13:30:00	1984/12/19 02:00:00	26	0.03	70.22%	0.06
751	1985/01/09 12:30:00	1985/01/09 16:00:00	8	0.03	70.32%	0.06
752	1985/02/03 15:30:00	1985/02/03 19:00:00	8	0.03	70.41%	0.06
753	1985/03/12 10:30:00	1985/03/12 13:30:00	7	0.03	70.51%	0.06
754	1985/04/21 13:30:00	1985/04/22 04:00:00	30	0.03	70.60%	0.06
755	1986/08/18 05:30:00	1986/08/18 08:00:00	6	0.03	70.69%	0.06
756	1987/10/28 18:30:00	1987/10/29 01:30:00	15	0.03	70.79%	0.06
757	1987/11/14 01:30:00	1987/11/14 06:00:00	10	0.03	70.88%	0.06
758	1987/12/19 13:30:00	1987/12/19 20:00:00	14	0.03	70.97%	0.06
759	1988/03/01 18:30:00	1988/03/02 05:00:00	22	0.03	71.07%	0.06
760	1988/12/15 06:30:00	1988/12/16 21:00:00	78	0.03	71.16%	0.06
761	1988/12/18 05:30:00	1988/12/19 07:00:00	52	0.03	71.25%	0.06
762	1988/12/25 20:30:00	1988/12/26 03:00:00	14	0.03	71.35%	0.06
763	1989/02/02 09:30:00	1989/02/02 15:30:00	13	0.03	71.44%	0.06
764	1989/02/04 03:30:00	1989/02/04 17:00:00	28	0.03	71.54%	0.06
765	1990/03/28 17:30:00	1990/03/28 20:30:00	7	0.03	71.63%	0.06
766	1990/08/05 23:30:00	1990/08/06 02:00:00	6	0.03	71.72%	0.06
767	1990/08/09 15:30:00	1990/08/09 18:00:00	6	0.03	71.82%	0.06
768	1990/12/19 12:30:00	1990/12/20 10:00:00	44	0.03	71.91%	0.06
769	1991/01/03 11:30:00	1991/01/04 15:00:00	56	0.03	72.00%	0.06
770	1991/03/15 03:30:00	1991/03/15 23:00:00	40	0.03	72.10%	0.06
771	1991/07/31 10:30:00	1991/07/31 13:00:00	6	0.03	72.19%	0.06
772	1991/09/20 16:30:00	1991/09/20 20:00:00	8	0.03	72.28%	0.06
773	1991/12/09 22:30:00	1991/12/10 11:00:00	26	0.03	72.38%	0.06
774	1991/12/17 10:30:00	1991/12/18 08:00:00	44	0.03	72.47%	0.06
775	1992/10/23 03:30:00	1992/10/23 09:00:00	12	0.03	72.57%	0.06
776	1992/10/30 16:30:00	1992/10/30 21:30:00	11	0.03	72.66%	0.06
777	1992/12/03 22:30:00	1992/12/04 22:00:00	48	0.03	72.75%	0.06
778	1993/06/05 12:30:00	1993/06/05 18:30:00	13	0.03	72.85%	0.06
779	1993/11/11 04:30:00	1993/11/12 19:30:00	79	0.03	72.94%	0.06
780	1993/11/30 03:30:00	1993/11/30 09:00:00	12	0.03	73.03%	0.06
781	1994/11/16 07:30:00	1994/11/16 12:00:00	10	0.03	73.13%	0.06
782	1994/11/18 02:30:00	1994/11/18 07:30:00	11	0.03	73.22%	0.06
783	1995/01/15 02:30:00	1995/01/17 12:00:00	116	0.03	73.31%	0.06
784	1995/01/21 01:30:00	1995/01/21 08:00:00	14	0.03	73.41%	0.06
785	1995/05/14 20:30:00	1995/05/15 03:30:00	15	0.03	73.50%	0.06
786	1995/12/13 03:30:00	1995/12/14 11:00:00	64	0.03	73.60%	0.06
787	1996/01/16 18:30:00	1996/01/17 03:00:00	18	0.03	73.69%	0.06
788	1996/02/21 01:30:00	1996/02/22 03:30:00	53	0.03	73.78%	0.06
789	1996/12/22 14:30:00	1996/12/22 22:00:00	16	0.03	73.88%	0.06
790	1997/01/02 00:30:00	1997/01/02 04:00:00	8	0.03	73.97%	0.06
791	1997/02/10 18:30:00	1997/02/11 03:30:00	19	0.03	74.06%	0.06

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
792	1998/01/19 03:30:00	1998/01/20 01:00:00	44	0.03	74.16%	0.06
793	1998/02/19 01:30:00	1998/02/20 21:00:00	88	0.03	74.25%	0.06
794	1998/03/06 03:30:00	1998/03/07 00:30:00	43	0.03	74.34%	0.06
795	1998/04/14 07:30:00	1998/04/16 00:00:00	82	0.03	74.44%	0.06
796	2000/11/10 03:30:00	2000/11/11 09:30:00	61	0.03	74.53%	0.06
797	2001/01/08 15:30:00	2001/01/09 07:00:00	32	0.03	74.63%	0.06
798	2001/12/03 04:30:00	2001/12/04 00:00:00	40	0.03	74.72%	0.06
799	2002/04/24 10:30:00	2002/04/24 15:30:00	11	0.03	74.81%	0.06
800	2003/12/07 20:30:00	2003/12/08 03:00:00	14	0.03	74.91%	0.06
801	2006/02/17 22:30:00	2006/02/18 06:30:00	17	0.03	75.00%	0.06
802	2006/02/19 01:30:00	2006/02/19 07:30:00	13	0.03	75.09%	0.06
803	2006/03/07 20:30:00	2006/03/08 08:30:00	25	0.03	75.19%	0.06
804	2006/11/27 09:30:00	2006/11/28 02:30:00	35	0.03	75.28%	0.06
805	2006/12/27 06:30:00	2006/12/27 14:00:00	16	0.03	75.37%	0.06
806	2007/04/22 22:30:00	2007/04/23 04:00:00	12	0.03	75.47%	0.06
807	2007/05/23 00:30:00	2007/05/23 04:00:00	8	0.03	75.56%	0.06
808	2007/12/18 23:30:00	2007/12/19 11:00:00	24	0.03	75.66%	0.06
809	2008/01/21 07:30:00	2008/01/21 12:00:00	10	0.03	75.75%	0.06
810	2008/02/20 08:30:00	2008/02/20 16:30:00	17	0.03	75.84%	0.06
811	2008/02/24 06:30:00	2008/02/24 13:30:00	15	0.03	75.94%	0.06
812	1965/01/07 09:30:00	1965/01/07 17:00:00	16	0.02	76.03%	0.06
813	1965/12/31 08:30:00	1966/01/01 10:00:00	52	0.02	76.12%	0.06
814	1966/01/19 15:30:00	1966/01/20 04:00:00	26	0.02	76.22%	0.06
815	1984/11/13 09:30:00	1984/11/13 12:30:00	7	0.02	76.31%	0.06
816	1984/12/19 17:30:00	1984/12/19 21:00:00	8	0.02	76.40%	0.06
817	1985/05/30 14:30:00	1985/05/30 17:30:00	7	0.02	76.50%	0.06
818	1985/10/21 23:30:00	1985/10/22 03:00:00	8	0.02	76.59%	0.06
819	1987/02/13 18:30:00	1987/02/14 03:30:00	19	0.02	76.69%	0.06
820	1987/05/20 07:30:00	1987/05/20 10:00:00	6	0.02	76.78%	0.06
821	1987/07/17 23:30:00	1987/07/18 01:30:00	5	0.02	76.87%	0.06
822	1987/10/07 08:30:00	1987/10/07 11:30:00	7	0.02	76.97%	0.06
823	1987/11/20 15:30:00	1987/11/20 18:30:00	7	0.02	77.06%	0.06
824	1988/12/22 23:30:00	1988/12/23 04:00:00	10	0.02	77.15%	0.06
825	1989/01/04 07:30:00	1989/01/04 15:00:00	16	0.02	77.25%	0.06
826	1989/01/07 15:30:00	1989/01/07 20:00:00	10	0.02	77.34%	0.05
827	1989/03/02 18:30:00	1989/03/03 03:00:00	18	0.02	77.43%	0.05
828	1989/09/17 03:30:00	1989/09/17 17:30:00	29	0.02	77.53%	0.05
829	1989/11/26 07:30:00	1989/11/26 20:30:00	27	0.02	77.62%	0.05
830	1990/03/12 11:30:00	1990/03/12 21:30:00	21	0.02	77.72%	0.05
831	1991/03/11 01:30:00	1991/03/11 09:00:00	16	0.02	77.81%	0.05
832	1991/12/19 05:30:00	1991/12/19 11:00:00	12	0.02	77.90%	0.05
833	1992/05/22 16:30:00	1992/05/22 20:30:00	9	0.02	78.00%	0.05
834	1992/10/21 15:30:00	1992/10/21 18:30:00	7	0.02	78.09%	0.05
835	1992/12/11 16:30:00	1992/12/12 00:00:00	16	0.02	78.18%	0.05
836	1993/02/26 14:30:00	1993/02/27 13:30:00	47	0.02	78.28%	0.05
837	1994/02/05 03:30:00	1994/02/05 06:30:00	7	0.02	78.37%	0.05
838	1994/04/24 03:30:00	1994/04/24 07:00:00	8	0.02	78.46%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
839	1995/01/27 11:30:00	1995/01/27 15:00:00	8	0.02	78.56%	0.05
840	1995/03/03 04:30:00	1995/03/04 02:00:00	44	0.02	78.65%	0.05
841	1996/11/29 01:30:00	1996/11/29 04:30:00	7	0.02	78.75%	0.05
842	1996/12/05 21:30:00	1996/12/06 14:00:00	34	0.02	78.84%	0.05
843	1996/12/27 15:30:00	1996/12/28 11:00:00	40	0.02	78.93%	0.05
844	1997/01/27 01:30:00	1997/01/27 11:00:00	20	0.02	79.03%	0.05
845	1997/04/03 16:30:00	1997/04/03 19:00:00	6	0.02	79.12%	0.05
846	1997/12/21 07:30:00	1997/12/21 23:00:00	32	0.02	79.21%	0.05
847	1998/01/03 15:30:00	1998/01/04 23:00:00	64	0.02	79.31%	0.05
848	1998/01/13 10:30:00	1998/01/13 21:30:00	23	0.02	79.40%	0.05
849	2000/01/01 08:30:00	2000/01/01 23:00:00	30	0.02	79.49%	0.05
850	2000/02/11 08:30:00	2000/02/11 22:00:00	28	0.02	79.59%	0.05
851	2000/11/22 20:30:00	2000/11/22 23:30:00	7	0.02	79.68%	0.05
852	2001/11/13 10:30:00	2001/11/13 21:00:00	22	0.02	79.78%	0.05
853	2001/11/29 08:30:00	2001/11/29 23:00:00	30	0.02	79.87%	0.05
854	2001/12/14 10:30:00	2001/12/14 21:30:00	23	0.02	79.96%	0.05
855	2002/01/28 02:30:00	2002/01/29 12:00:00	68	0.02	80.06%	0.05
856	2002/03/16 05:30:00	2002/03/16 10:00:00	10	0.02	80.15%	0.05
857	2003/11/16 00:30:00	2003/11/16 05:30:00	11	0.02	80.24%	0.05
858	2004/01/02 18:30:00	2004/01/03 04:00:00	20	0.02	80.34%	0.05
859	2005/01/26 21:30:00	2005/01/27 03:00:00	12	0.02	80.43%	0.05
860	2007/02/11 11:30:00	2007/02/11 15:30:00	9	0.02	80.52%	0.05
861	2007/03/21 03:30:00	2007/03/21 12:00:00	18	0.02	80.62%	0.05
862	2007/10/13 02:30:00	2007/10/13 09:00:00	14	0.02	80.71%	0.05
863	2008/05/22 14:30:00	2008/05/22 17:00:00	6	0.02	80.81%	0.05
864	1965/03/07 00:30:00	1965/03/07 11:00:00	22	0.01	80.90%	0.05
865	1965/03/13 05:30:00	1965/03/13 11:30:00	13	0.01	80.99%	0.05
866	1965/03/24 08:30:00	1965/03/24 19:00:00	22	0.01	81.09%	0.05
867	1965/04/11 00:30:00	1965/04/11 12:00:00	24	0.01	81.18%	0.05
868	1965/04/12 00:30:00	1965/04/12 04:30:00	9	0.01	81.27%	0.05
869	1985/06/02 21:30:00	1985/06/03 03:30:00	13	0.01	81.37%	0.05
870	1985/09/04 10:30:00	1985/09/04 14:00:00	8	0.01	81.46%	0.05
871	1987/11/17 20:30:00	1987/11/18 02:30:00	13	0.01	81.55%	0.05
872	1987/12/29 14:30:00	1987/12/30 08:00:00	36	0.01	81.65%	0.05
873	1988/05/29 03:30:00	1988/05/29 08:30:00	11	0.01	81.74%	0.05
874	1988/11/23 21:30:00	1988/11/24 03:30:00	13	0.01	81.84%	0.05
875	1989/09/19 09:30:00	1989/09/19 13:00:00	8	0.01	81.93%	0.05
876	1990/04/05 07:30:00	1990/04/05 13:30:00	13	0.01	82.02%	0.05
877	1991/12/11 05:30:00	1991/12/11 11:00:00	12	0.01	82.12%	0.05
878	1992/03/07 10:30:00	1992/03/08 05:00:00	38	0.01	82.21%	0.05
879	1992/08/13 15:30:00	1992/08/13 18:30:00	7	0.01	82.30%	0.05
880	1992/10/28 22:30:00	1992/10/29 05:00:00	14	0.01	82.40%	0.05
881	1993/12/19 03:30:00	1993/12/19 11:00:00	16	0.01	82.49%	0.05
882	1994/12/17 14:30:00	1994/12/17 19:00:00	10	0.01	82.58%	0.05
883	1994/12/22 06:30:00	1994/12/23 00:00:00	36	0.01	82.68%	0.05
884	1995/04/07 09:30:00	1995/04/07 13:00:00	8	0.01	82.77%	0.05
885	1995/05/06 01:30:00	1995/05/06 11:30:00	21	0.01	82.87%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
886	1995/11/01 02:30:00	1995/11/01 10:30:00	17	0.01	82.96%	0.05
887	1996/01/25 10:30:00	1996/01/25 22:00:00	24	0.01	83.05%	0.05
888	1997/01/24 02:30:00	1997/01/24 06:00:00	8	0.01	83.15%	0.05
889	1998/03/15 10:30:00	1998/03/15 20:30:00	21	0.01	83.24%	0.05
890	1998/04/28 10:30:00	1998/04/28 20:00:00	20	0.01	83.33%	0.05
891	2000/01/25 11:30:00	2000/01/25 21:30:00	21	0.01	83.43%	0.05
892	2000/05/25 22:30:00	2000/05/26 01:30:00	7	0.01	83.52%	0.05
893	2000/10/10 07:30:00	2000/10/10 12:00:00	10	0.01	83.61%	0.05
894	2001/01/28 02:30:00	2001/01/28 09:00:00	14	0.01	83.71%	0.05
895	2003/04/17 10:30:00	2003/04/17 20:00:00	20	0.01	83.80%	0.05
896	2003/11/03 17:30:00	2003/11/04 01:30:00	17	0.01	83.90%	0.05
897	2004/01/19 07:30:00	2004/01/19 13:00:00	12	0.01	83.99%	0.05
898	2005/03/18 16:30:00	2005/03/19 09:00:00	34	0.01	84.08%	0.05
899	2005/03/19 23:30:00	2005/03/20 07:00:00	16	0.01	84.18%	0.05
900	2006/03/25 23:30:00	2006/03/26 05:00:00	12	0.01	84.27%	0.05
901	2006/07/28 23:30:00	2006/07/29 06:30:00	15	0.01	84.36%	0.05
902	2007/01/04 21:30:00	2007/01/05 05:00:00	16	0.01	84.46%	0.05
903	1964/11/26 11:30:00	1964/11/26 19:30:00	17	0	84.55%	0.05
904	1965/05/23 01:30:00	1965/05/23 16:00:00	30	0	84.64%	0.05
905	1965/05/24 06:30:00	1965/05/24 10:30:00	9	0	84.74%	0.05
906	1965/06/25 05:30:00	1965/06/25 09:00:00	8	0	84.83%	0.05
907	1965/09/05 17:30:00	1965/09/05 19:00:00	4	0	84.93%	0.05
908	1983/12/22 10:30:00	1983/12/22 14:00:00	8	0	85.02%	0.05
909	1984/10/17 07:30:00	1984/10/17 10:00:00	6	0	85.11%	0.05
910	1984/11/22 15:30:00	1984/11/22 18:30:00	7	0	85.21%	0.05
911	1984/11/24 15:30:00	1984/11/24 18:30:00	7	0	85.30%	0.05
912	1984/12/12 22:30:00	1984/12/13 02:00:00	8	0	85.39%	0.05
913	1985/07/18 15:30:00	1985/07/18 17:30:00	5	0	85.49%	0.05
914	1985/11/27 08:30:00	1985/11/27 11:30:00	7	0	85.58%	0.05
915	1985/12/09 15:30:00	1985/12/09 19:00:00	8	0	85.67%	0.05
916	1986/02/13 08:30:00	1986/02/13 11:30:00	7	0	85.77%	0.05
917	1986/02/18 21:30:00	1986/02/19 00:30:00	7	0	85.86%	0.05
918	1986/02/19 13:30:00	1986/02/19 16:30:00	7	0	85.96%	0.05
919	1986/03/17 13:30:00	1986/03/17 16:00:00	6	0	86.05%	0.05
920	1986/05/22 09:30:00	1986/05/22 11:30:00	5	0	86.14%	0.05
921	1986/07/22 13:30:00	1986/07/22 17:30:00	9	0	86.24%	0.05
922	1986/09/26 06:30:00	1986/09/26 08:30:00	5	0	86.33%	0.05
923	1986/10/08 15:30:00	1986/10/08 18:00:00	6	0	86.42%	0.05
924	1986/10/11 06:30:00	1986/10/11 09:00:00	6	0	86.52%	0.05
925	1986/12/30 15:30:00	1986/12/30 19:00:00	8	0	86.61%	0.05
926	1987/02/01 00:30:00	1987/02/01 03:30:00	7	0	86.70%	0.05
927	1987/02/15 14:30:00	1987/02/15 17:30:00	7	0	86.80%	0.05
928	1987/03/06 11:30:00	1987/03/06 14:00:00	6	0	86.89%	0.05
929	1987/03/15 00:30:00	1987/03/15 03:00:00	6	0	86.99%	0.05
930	1987/03/21 15:30:00	1987/03/21 23:00:00	16	0	87.08%	0.05
931	1987/03/23 20:30:00	1987/03/23 23:00:00	6	0	87.17%	0.05
932	1987/05/01 00:30:00	1987/05/01 02:30:00	5	0	87.27%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
933	1987/08/14 08:30:00	1987/08/14 10:30:00	5	0	87.36%	0.05
934	1987/09/01 00:30:00	1987/09/01 02:30:00	5	0	87.45%	0.05
935	1987/09/13 04:30:00	1987/09/13 06:30:00	5	0	87.55%	0.05
936	1987/10/24 07:30:00	1987/10/24 10:00:00	6	0	87.64%	0.05
937	1987/12/07 04:30:00	1987/12/07 08:00:00	8	0	87.73%	0.05
938	1988/02/01 00:30:00	1988/02/01 03:30:00	7	0	87.83%	0.05
939	1988/04/16 04:30:00	1988/04/16 06:30:00	5	0	87.92%	0.05
940	1988/04/23 13:30:00	1988/04/23 15:30:00	5	0	88.01%	0.05
941	1988/05/05 21:30:00	1988/05/05 23:30:00	5	0	88.11%	0.05
942	1988/05/31 15:30:00	1988/05/31 17:30:00	5	0	88.20%	0.05
943	1988/12/27 23:30:00	1988/12/28 03:00:00	8	0	88.30%	0.05
944	1989/01/28 13:30:00	1989/01/28 17:00:00	8	0	88.39%	0.05
945	1989/03/08 19:30:00	1989/03/08 22:00:00	6	0	88.48%	0.05
946	1989/04/12 05:30:00	1989/04/12 07:30:00	5	0	88.58%	0.05
947	1989/04/26 02:30:00	1989/04/26 04:30:00	5	0	88.67%	0.05
948	1989/05/15 11:30:00	1989/05/15 13:30:00	5	0	88.76%	0.05
949	1989/10/25 19:30:00	1989/10/25 22:00:00	6	0	88.86%	0.05
950	1990/03/05 15:30:00	1990/03/05 18:00:00	6	0	88.95%	0.05
951	1990/04/16 20:30:00	1990/04/17 13:30:00	35	0	89.04%	0.05
952	1990/04/18 18:30:00	1990/04/18 20:30:00	5	0	89.14%	0.05
953	1990/04/19 18:30:00	1990/04/19 20:30:00	5	0	89.23%	0.05
954	1990/04/24 23:30:00	1990/04/25 01:30:00	5	0	89.33%	0.05
955	1990/05/29 04:30:00	1990/05/29 06:30:00	5	0	89.42%	0.05
956	1990/07/13 11:30:00	1990/07/13 13:30:00	5	0	89.51%	0.05
957	1990/12/15 21:30:00	1990/12/16 01:00:00	8	0	89.61%	0.05
958	1991/04/21 02:30:00	1991/04/21 04:30:00	5	0	89.70%	0.05
959	1991/11/29 18:30:00	1991/11/29 21:30:00	7	0	89.79%	0.05
960	1991/12/08 16:30:00	1991/12/08 20:00:00	8	0	89.89%	0.05
961	1992/03/06 17:30:00	1992/03/06 20:00:00	6	0	89.98%	0.05
962	1992/03/29 10:30:00	1992/03/29 13:00:00	6	0	90.07%	0.05
963	1992/04/01 12:30:00	1992/04/01 14:30:00	5	0	90.17%	0.05
964	1992/05/05 21:30:00	1992/05/05 23:30:00	5	0	90.26%	0.05
965	1992/11/20 15:30:00	1992/11/20 18:30:00	7	0	90.36%	0.05
966	1992/11/22 22:30:00	1992/11/23 01:30:00	7	0	90.45%	0.05
967	1993/02/22 05:30:00	1993/02/22 08:30:00	7	0	90.54%	0.05
968	1993/10/16 05:30:00	1993/10/16 08:00:00	6	0	90.64%	0.05
969	1994/02/11 06:30:00	1994/02/11 09:30:00	7	0	90.73%	0.05
970	1994/05/08 08:30:00	1994/05/08 10:30:00	5	0	90.82%	0.05
971	1994/05/15 01:30:00	1994/05/15 03:30:00	5	0	90.92%	0.05
972	1994/11/26 10:30:00	1994/11/26 13:30:00	7	0	91.01%	0.05
973	1994/12/13 05:30:00	1994/12/13 09:00:00	8	0	91.10%	0.05
974	1995/02/15 13:30:00	1995/02/15 16:30:00	7	0	91.20%	0.05
975	1995/03/24 04:30:00	1995/03/24 07:00:00	6	0	91.29%	0.05
976	1995/05/13 06:30:00	1995/05/13 13:30:00	15	0	91.39%	0.05
977	1995/05/23 12:30:00	1995/05/23 14:30:00	5	0	91.48%	0.05
978	1995/07/16 07:30:00	1995/07/16 09:30:00	5	0	91.57%	0.05
979	1995/10/01 00:30:00	1995/10/01 03:00:00	6	0	91.67%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
980	1996/01/28 07:30:00	1996/01/28 11:00:00	8	0	91.76%	0.05
981	1996/05/24 14:30:00	1996/05/24 17:00:00	6	0	91.85%	0.05
982	1996/07/10 13:30:00	1996/07/10 15:30:00	5	0	91.95%	0.05
983	1996/07/19 09:30:00	1996/07/19 11:30:00	5	0	92.04%	0.05
984	1996/10/25 21:30:00	1996/10/26 00:00:00	6	0	92.13%	0.05
985	1997/02/17 17:30:00	1997/02/17 20:30:00	7	0	92.23%	0.05
986	1997/02/18 12:30:00	1997/02/18 15:30:00	7	0	92.32%	0.05
987	1997/04/08 09:30:00	1997/04/08 11:30:00	5	0	92.42%	0.05
988	1997/05/24 06:30:00	1997/05/24 08:30:00	5	0	92.51%	0.05
989	1997/12/18 14:30:00	1997/12/18 20:30:00	13	0	92.60%	0.05
990	1997/12/22 16:30:00	1997/12/22 19:00:00	6	0	92.70%	0.05
991	1998/01/02 15:30:00	1998/01/02 19:30:00	9	0	92.79%	0.05
992	1998/01/15 14:30:00	1998/01/15 20:30:00	13	0	92.88%	0.05
993	1998/01/16 15:30:00	1998/01/16 19:30:00	9	0	92.98%	0.05
994	1998/02/25 16:30:00	1998/02/25 18:30:00	5	0	93.07%	0.05
995	1998/03/01 16:30:00	1998/03/01 18:00:00	4	0	93.16%	0.05
996	1998/04/02 16:30:00	1998/04/02 18:00:00	4	0	93.26%	0.05
997	1998/04/06 16:30:00	1998/04/06 18:00:00	4	0	93.35%	0.05
998	1998/04/07 14:30:00	1998/04/07 19:00:00	10	0	93.45%	0.05
999	1998/04/19 14:30:00	1998/04/19 19:00:00	10	0	93.54%	0.05
1000	1998/05/06 15:30:00	1998/05/06 18:00:00	6	0	93.63%	0.05
1001	1998/05/26 16:30:00	1998/05/26 18:00:00	4	0	93.73%	0.05
1002	1998/06/12 16:30:00	1998/06/12 17:30:00	3	0	93.82%	0.05
1003	2000/01/02 14:30:00	2000/01/02 20:00:00	12	0	93.91%	0.05
1004	2000/01/17 16:30:00	2000/01/17 19:00:00	6	0	94.01%	0.05
1005	2000/02/28 14:30:00	2000/02/28 19:30:00	11	0	94.10%	0.05
1006	2000/04/14 21:30:00	2000/04/14 23:30:00	5	0	94.19%	0.05
1007	2000/04/21 18:30:00	2000/04/22 06:30:00	25	0	94.29%	0.05
1008	2000/09/23 01:30:00	2000/09/23 03:30:00	5	0	94.38%	0.05
1009	2000/10/06 12:30:00	2000/10/06 15:00:00	6	0	94.48%	0.05
1010	2000/10/11 08:30:00	2000/10/11 11:00:00	6	0	94.57%	0.05
1011	2000/10/26 08:30:00	2000/10/26 11:00:00	6	0	94.66%	0.05
1012	2000/10/27 01:30:00	2000/10/27 04:00:00	6	0	94.76%	0.04
1013	2001/01/15 20:30:00	2001/01/16 00:00:00	8	0	94.85%	0.04
1014	2001/08/20 14:30:00	2001/08/20 19:00:00	10	0	94.94%	0.04
1015	2001/08/21 16:30:00	2001/08/21 17:30:00	3	0	95.04%	0.04
1016	2001/11/04 15:30:00	2001/11/04 19:00:00	8	0	95.13%	0.04
1017	2001/11/12 16:30:00	2001/11/12 18:30:00	5	0	95.22%	0.04
1018	2001/12/15 16:30:00	2001/12/15 19:00:00	6	0	95.32%	0.04
1019	2001/12/30 15:30:00	2001/12/30 19:30:00	9	0	95.41%	0.04
1020	2002/01/03 16:30:00	2002/01/03 19:00:00	6	0	95.51%	0.04
1021	2002/02/17 16:30:00	2002/02/17 18:30:00	5	0	95.60%	0.04
1022	2002/02/18 15:30:00	2002/02/18 19:00:00	8	0	95.69%	0.04
1023	2002/03/24 01:30:00	2002/03/24 06:00:00	10	0	95.79%	0.04
1024	2002/04/15 08:30:00	2002/04/15 10:30:00	5	0	95.88%	0.04
1025	2002/04/26 08:30:00	2002/04/26 10:30:00	5	0	95.97%	0.04
1026	2002/05/20 22:30:00	2002/05/21 00:30:00	5	0	96.07%	0.04

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
1027	2002/09/06 15:30:00	2002/09/06 18:30:00	7	0	96.16%	0.04
1028	2002/11/10 15:30:00	2002/11/10 19:00:00	8	0	96.25%	0.04
1029	2002/11/30 16:30:00	2002/11/30 18:30:00	5	0	96.35%	0.04
1030	2002/12/29 15:30:00	2002/12/29 19:30:00	9	0	96.44%	0.04
1031	2003/02/28 15:30:00	2003/02/28 19:00:00	8	0	96.54%	0.04
1032	2003/03/04 15:30:00	2003/03/04 19:00:00	8	0	96.63%	0.04
1033	2003/03/17 16:30:00	2003/03/17 18:00:00	4	0	96.72%	0.04
1034	2003/04/05 16:30:00	2003/04/05 18:00:00	4	0	96.82%	0.04
1035	2003/05/07 16:30:00	2003/05/07 18:00:00	4	0	96.91%	0.04
1036	2003/06/10 16:30:00	2003/06/10 17:30:00	3	0	97.00%	0.04
1037	2003/06/11 16:30:00	2003/06/11 17:30:00	3	0	97.10%	0.04
1038	2003/06/20 16:30:00	2003/06/20 17:30:00	3	0	97.19%	0.04
1039	2003/07/30 06:30:00	2003/07/30 08:30:00	5	0	97.28%	0.04
1040	2003/11/01 04:30:00	2003/11/01 07:30:00	7	0	97.38%	0.04
1041	2003/12/11 16:30:00	2003/12/11 20:00:00	8	0	97.47%	0.04
1042	2004/01/25 02:30:00	2004/01/25 06:00:00	8	0	97.57%	0.04
1043	2004/01/31 06:30:00	2004/01/31 10:00:00	8	0	97.66%	0.04
1044	2004/03/03 08:30:00	2004/03/03 11:00:00	6	0	97.75%	0.04
1045	2004/03/26 09:30:00	2004/03/26 12:00:00	6	0	97.85%	0.04
1046	2004/11/12 11:30:00	2004/11/12 14:30:00	7	0	97.94%	0.04
1047	2004/12/08 06:30:00	2004/12/08 10:00:00	8	0	98.03%	0.04
1048	2005/01/26 01:30:00	2005/01/26 05:00:00	8	0	98.13%	0.04
1049	2005/02/07 07:30:00	2005/02/07 10:30:00	7	0	98.22%	0.04
1050	2005/03/24 14:30:00	2005/03/24 17:00:00	6	0	98.31%	0.04
1051	2005/05/06 01:30:00	2005/05/06 03:30:00	5	0	98.41%	0.04
1052	2005/07/23 04:30:00	2005/07/23 06:30:00	5	0	98.50%	0.04
1053	2005/12/03 01:30:00	2005/12/03 05:00:00	8	0	98.60%	0.04
1054	2006/03/03 16:30:00	2006/03/03 19:00:00	6	0	98.69%	0.04
1055	2006/03/07 00:30:00	2006/03/07 03:00:00	6	0	98.78%	0.04
1056	2006/03/19 00:30:00	2006/03/19 03:00:00	6	0	98.88%	0.04
1057	2006/03/20 03:30:00	2006/03/20 06:00:00	6	0	98.97%	0.04
1058	2006/03/28 01:30:00	2006/03/28 04:00:00	6	0	99.06%	0.04
1059	2006/04/23 05:30:00	2006/04/23 07:30:00	5	0	99.16%	0.04
1060	2006/07/30 07:30:00	2006/07/30 09:30:00	5	0	99.25%	0.04
1061	2006/07/31 06:30:00	2006/07/31 08:30:00	5	0	99.34%	0.04
1062	2006/12/11 00:30:00	2006/12/11 04:00:00	8	0	99.44%	0.04
1063	2006/12/22 07:30:00	2006/12/22 11:00:00	8	0	99.53%	0.04
1064	2007/02/26 23:30:00	2007/02/27 02:30:00	7	0	99.63%	0.04
1065	2007/03/27 04:30:00	2007/03/27 18:00:00	28	0	99.72%	0.04
1066	2007/09/22 10:30:00	2007/09/22 12:30:00	5	0	99.81%	0.04
1067	2007/10/17 08:30:00	2007/10/17 11:00:00	6	0	99.91%	0.04
--End of Data----------						

SWMM.out file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 post h
SWMM.out time stamp: 5/17/2022 7:10:53 PM

Peak Flow Statistics Table Values

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
1	1993/01/06 01:30:00	1993/01/11 00:00:00	238	6.92	0.10%	45
2	1995/01/03 06:30:00	1995/01/05 17:30:00	119	5.89	0.20%	22.5
3	1971/02/23 03:30:00	1971/02/24 03:00:00	48	5.39	0.30%	15
4	1966/12/03 04:30:00	1966/12/07 14:00:00	212	5.35	0.40%	11.25
5	1998/02/14 01:30:00	1998/02/15 12:00:00	70	5.15	0.50%	9
6	1986/02/14 22:30:00	1986/02/16 08:30:00	69	5.13	0.60%	7.5
7	1978/03/16 17:30:00	1978/03/18 20:30:00	103	4.99	0.70%	6.43
8	1978/01/14 13:30:00	1978/01/17 02:00:00	122	4.92	0.80%	5.63
9	1983/03/01 13:30:00	1983/03/04 13:30:00	145	4.81	0.89%	5
10	1995/01/23 20:30:00	1995/01/26 13:00:00	130	4.62	0.99%	4.5
11	1980/01/27 19:30:00	1980/01/31 09:30:00	173	4.1	1.09%	4.09
12	1969/01/24 03:30:00	1969/01/27 02:30:00	143	4.08	1.19%	3.75
13	1967/11/19 02:30:00	1967/11/20 15:00:00	74	4.01	1.29%	3.46
14	2004/10/17 07:30:00	2004/10/21 08:30:00	195	3.71	1.39%	3.21
15	1965/11/21 21:30:00	1965/11/23 19:30:00	93	3.46	1.49%	3
16	1988/04/19 22:30:00	1988/04/22 12:30:00	125	3.29	1.59%	2.81
17	1998/01/09 01:30:00	1998/01/11 05:00:00	104	3.26	1.69%	2.65
18	1983/12/24 18:30:00	1983/12/27 23:30:00	155	3.2	1.79%	2.5
19	1981/02/08 16:30:00	1981/02/10 13:00:00	90	3.09	1.89%	2.37
20	1980/02/13 11:30:00	1980/02/21 16:30:00	395	3.07	1.99%	2.25
21	2005/01/07 03:30:00	2005/01/12 06:30:00	247	3.06	2.09%	2.14
22	1993/01/12 13:30:00	1993/01/19 04:30:00	319	3.04	2.19%	2.05
23	1979/01/05 06:30:00	1979/01/06 21:00:00	78	2.94	2.29%	1.96
24	1992/02/15 04:30:00	1992/02/16 08:00:00	56	2.8	2.39%	1.88
25	1993/02/07 11:30:00	1993/02/10 02:30:00	127	2.79	2.49%	1.8
26	2004/02/26 00:30:00	2004/02/28 01:00:00	98	2.77	2.58%	1.73
27	2007/11/30 06:30:00	2007/12/01 14:00:00	64	2.77	2.68%	1.67
28	1991/03/18 23:30:00	1991/03/21 13:30:00	125	2.73	2.78%	1.61
29	1995/03/05 01:30:00	1995/03/06 16:00:00	78	2.7	2.88%	1.55
30	1998/02/03 01:30:00	1998/02/05 00:30:00	95	2.65	2.98%	1.5
31	1972/11/14 11:30:00	1972/11/15 05:30:00	37	2.62	3.08%	1.45
32	2007/08/26 06:30:00	2007/08/26 23:00:00	34	2.57	3.18%	1.41
33	2004/10/27 01:30:00	2004/10/28 14:30:00	75	2.52	3.28%	1.36
34	2007/01/29 21:30:00	2007/01/31 17:30:00	89	2.38	3.38%	1.32
35	1985/11/29 05:30:00	1985/11/30 07:00:00	52	2.34	3.48%	1.29
36	1983/11/24 22:30:00	1983/11/25 16:30:00	37	2.29	3.58%	1.25
37	1970/03/04 20:30:00	1970/03/05 15:30:00	39	2.28	3.68%	1.22
38	1967/12/18 13:30:00	1967/12/20 13:00:00	96	2.23	3.78%	1.18
39	1980/01/08 23:30:00	1980/01/13 05:00:00	204	2.23	3.88%	1.15

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
40	1980/03/02 19:30:00	1980/03/03 22:30:00	55	1.96	3.98%	1.13
41	1969/02/06 06:30:00	1969/02/07 03:30:00	43	1.95	4.08%	1.1
42	2003/02/25 01:30:00	2003/02/28 20:30:00	183	1.95	4.17%	1.07
43	1967/04/11 07:30:00	1967/04/12 11:30:00	57	1.91	4.27%	1.05
44	1991/03/25 05:30:00	1991/03/28 02:00:00	138	1.89	4.37%	1.02
45	1974/03/07 14:30:00	1974/03/09 04:30:00	77	1.82	4.47%	1
46	1970/02/28 12:30:00	1970/03/02 21:30:00	115	1.68	4.57%	0.98
47	1965/11/14 06:30:00	1965/11/18 19:30:00	219	1.64	4.67%	0.96
48	1982/01/01 05:30:00	1982/01/02 14:30:00	67	1.64	4.77%	0.94
49	1967/01/24 14:30:00	1967/01/25 15:00:00	50	1.57	4.87%	0.92
50	2005/02/18 03:30:00	2005/02/23 19:00:00	272	1.56	4.97%	0.9
51	1976/02/03 16:30:00	1976/02/10 17:00:00	338	1.5	5.07%	0.88
52	1986/09/23 19:30:00	1986/09/26 09:00:00	124	1.36	5.17%	0.87
53	1985/11/24 14:30:00	1985/11/26 00:30:00	69	1.34	5.27%	0.85
54	1969/02/22 01:30:00	1969/02/26 13:30:00	217	1.25	5.37%	0.83
55	1991/02/27 12:30:00	1991/03/02 03:00:00	126	1.19	5.47%	0.82
56	1977/05/08 09:30:00	1977/05/10 05:00:00	88	1.13	5.57%	0.8
57	1970/11/28 19:30:00	1970/11/30 12:00:00	82	1.12	5.67%	0.79
58	1994/02/07 01:30:00	1994/02/08 13:00:00	72	1.1	5.77%	0.78
59	1965/04/08 02:30:00	1965/04/12 06:00:00	200	1.09	5.86%	0.76
60	1982/03/17 17:30:00	1982/03/20 12:30:00	135	1.06	5.96%	0.75
61	2004/02/21 14:30:00	2004/02/23 18:30:00	105	1.04	6.06%	0.74
62	2003/02/11 01:30:00	2003/02/15 04:30:00	199	0.92	6.16%	0.73
63	2008/02/22 01:30:00	2008/02/23 00:30:00	47	0.87	6.26%	0.71
64	1974/12/04 02:30:00	1974/12/05 01:00:00	46	0.82	6.36%	0.7
65	2003/04/13 14:30:00	2003/04/16 03:30:00	123	0.75	6.46%	0.69
66	1976/03/01 07:30:00	1976/03/03 18:00:00	118	0.68	6.56%	0.68
67	1995/01/07 15:30:00	1995/01/08 17:00:00	52	0.68	6.66%	0.67
68	2006/01/01 20:30:00	2006/01/03 07:00:00	70	0.67	6.76%	0.66
69	1983/02/26 11:30:00	1983/02/28 18:00:00	110	0.56	6.86%	0.65
70	1988/12/24 19:30:00	1988/12/26 05:00:00	68	0.56	6.96%	0.64
71	1974/01/06 10:30:00	1974/01/08 20:00:00	116	0.53	7.06%	0.63
72	1992/01/05 06:30:00	1992/01/08 06:00:00	144	0.53	7.16%	0.63
73	1978/12/16 21:30:00	1978/12/19 16:00:00	134	0.46	7.26%	0.62
74	1981/02/28 14:30:00	1981/03/02 20:30:00	109	0.38	7.36%	0.61
75	1967/01/22 15:30:00	1967/01/23 15:00:00	48	0.37	7.46%	0.6
76	2001/01/10 19:30:00	2001/01/12 18:30:00	95	0.36	7.55%	0.59
77	1986/11/17 17:30:00	1986/11/18 14:00:00	42	0.35	7.65%	0.58
78	1996/11/21 15:30:00	1996/11/23 08:00:00	82	0.35	7.75%	0.58
79	1978/02/04 23:30:00	1978/02/07 05:30:00	109	0.33	7.85%	0.57
80	1978/03/11 16:30:00	1978/03/15 14:30:00	189	0.33	7.95%	0.56
81	1995/03/11 01:30:00	1995/03/12 08:00:00	62	0.33	8.05%	0.56
82	1965/12/09 03:30:00	1965/12/11 04:00:00	98	0.32	8.15%	0.55
83	1966/11/07 13:30:00	1966/11/08 06:30:00	35	0.32	8.25%	0.54
84	1982/12/22 17:30:00	1982/12/23 12:00:00	38	0.32	8.35%	0.54
85	1992/02/06 07:30:00	1992/02/07 14:00:00	62	0.32	8.45%	0.53
86	1996/01/31 03:30:00	1996/02/01 19:00:00	80	0.31	8.55%	0.52

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
87	1969/01/13 16:30:00	1969/01/14 23:00:00	62	0.3	8.65%	0.52
88	1975/03/08 07:30:00	1975/03/09 11:00:00	56	0.3	8.75%	0.51
89	1987/11/04 14:30:00	1987/11/05 20:00:00	60	0.3	8.85%	0.51
90	1972/12/04 11:30:00	1972/12/05 05:30:00	37	0.29	8.95%	0.5
91	1974/01/04 16:30:00	1974/01/05 15:00:00	46	0.29	9.05%	0.5
92	1983/03/23 16:30:00	1983/03/24 21:00:00	58	0.29	9.15%	0.49
93	1986/03/08 14:30:00	1986/03/12 22:30:00	209	0.29	9.24%	0.48
94	2006/04/04 17:30:00	2006/04/05 20:30:00	55	0.29	9.34%	0.48
95	1968/03/07 20:30:00	1968/03/08 23:30:00	55	0.28	9.44%	0.47
96	1970/12/16 21:30:00	1970/12/22 13:00:00	272	0.28	9.54%	0.47
97	1979/01/17 05:30:00	1979/01/18 23:00:00	84	0.28	9.64%	0.46
98	1983/01/27 06:30:00	1983/01/29 12:00:00	108	0.28	9.74%	0.46
99	1992/02/12 17:30:00	1992/02/13 16:00:00	46	0.28	9.84%	0.46
100	1970/03/08 06:30:00	1970/03/09 04:30:00	45	0.27	9.94%	0.45
101	1971/12/24 14:30:00	1971/12/26 10:00:00	88	0.27	10.04%	0.45
102	1979/03/01 06:30:00	1979/03/02 06:00:00	48	0.27	10.14%	0.44
103	1992/12/07 07:30:00	1992/12/08 04:30:00	43	0.27	10.24%	0.44
104	1965/12/29 07:30:00	1965/12/30 11:30:00	57	0.26	10.34%	0.43
105	1973/03/08 07:30:00	1973/03/09 05:30:00	45	0.26	10.44%	0.43
106	1976/12/30 12:30:00	1976/12/31 22:00:00	68	0.26	10.54%	0.43
107	1994/02/17 10:30:00	1994/02/19 06:30:00	89	0.26	10.64%	0.42
108	1995/04/18 07:30:00	1995/04/19 15:00:00	64	0.26	10.74%	0.42
109	2008/01/05 00:30:00	2008/01/07 13:00:00	122	0.26	10.83%	0.41
110	1973/01/16 14:30:00	1973/01/17 11:00:00	42	0.25	10.93%	0.41
111	1976/11/11 21:30:00	1976/11/12 19:30:00	45	0.25	11.03%	0.41
112	1980/03/05 23:30:00	1980/03/06 20:30:00	43	0.25	11.13%	0.4
113	1981/03/19 19:30:00	1981/03/20 14:00:00	38	0.25	11.23%	0.4
114	1982/03/15 11:30:00	1982/03/16 07:30:00	41	0.25	11.33%	0.4
115	1987/01/04 12:30:00	1987/01/06 02:30:00	77	0.25	11.43%	0.39
116	1987/12/16 11:30:00	1987/12/17 21:30:00	69	0.25	11.53%	0.39
117	1988/01/17 02:30:00	1988/01/18 07:00:00	58	0.25	11.63%	0.39
118	1991/12/29 14:30:00	1991/12/30 08:30:00	37	0.25	11.73%	0.38
119	1998/02/06 01:30:00	1998/02/09 21:30:00	185	0.25	11.83%	0.38
120	2002/11/08 01:30:00	2002/11/10 20:30:00	135	0.25	11.93%	0.38
121	2003/03/15 01:30:00	2003/03/17 04:00:00	102	0.25	12.03%	0.37
122	2005/01/03 03:30:00	2005/01/05 06:30:00	103	0.25	12.13%	0.37
123	1967/11/21 12:30:00	1967/11/22 19:30:00	63	0.24	12.23%	0.37
124	1969/01/20 00:30:00	1969/01/22 03:30:00	103	0.24	12.33%	0.36
125	1973/02/10 21:30:00	1973/02/13 08:00:00	118	0.24	12.43%	0.36
126	1977/08/16 13:30:00	1977/08/18 01:00:00	72	0.24	12.52%	0.36
127	1985/11/11 02:30:00	1985/11/12 13:00:00	70	0.24	12.62%	0.35
128	1986/03/15 19:30:00	1986/03/17 17:30:00	93	0.24	12.72%	0.35
129	1995/02/13 09:30:00	1995/02/15 18:00:00	114	0.24	12.82%	0.35
130	1996/12/09 14:30:00	1996/12/12 01:30:00	119	0.24	12.92%	0.35
131	2001/11/24 01:30:00	2001/11/25 07:30:00	61	0.24	13.02%	0.34
132	2003/12/24 22:30:00	2003/12/26 09:00:00	70	0.24	13.12%	0.34
133	1964/11/17 12:30:00	1964/11/18 08:30:00	41	0.23	13.22%	0.34

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
134	1973/11/22 18:30:00	1973/11/23 12:00:00	36	0.23	13.32%	0.34
135	1982/02/09 15:30:00	1982/02/11 05:00:00	76	0.23	13.42%	0.33
136	1982/11/29 14:30:00	1982/12/01 05:00:00	78	0.23	13.52%	0.33
137	1983/02/07 01:30:00	1983/02/08 19:30:00	85	0.23	13.62%	0.33
138	1987/01/06 16:30:00	1987/01/07 21:00:00	58	0.23	13.72%	0.33
139	1992/03/02 00:30:00	1992/03/03 22:00:00	92	0.23	13.82%	0.32
140	1992/12/29 11:30:00	1992/12/30 08:00:00	42	0.23	13.92%	0.32
141	1993/11/14 05:30:00	1993/11/15 06:00:00	50	0.23	14.02%	0.32
142	1997/01/25 14:30:00	1997/01/27 12:30:00	93	0.23	14.12%	0.32
143	1998/02/22 01:30:00	1998/02/25 18:30:00	179	0.23	14.21%	0.32
144	2004/12/28 05:30:00	2004/12/30 16:30:00	119	0.23	14.31%	0.31
145	2006/02/27 18:30:00	2006/02/28 18:30:00	49	0.23	14.41%	0.31
146	1972/11/16 07:30:00	1972/11/17 16:30:00	67	0.22	14.51%	0.31
147	1976/09/09 18:30:00	1976/09/11 06:30:00	73	0.22	14.61%	0.31
148	1979/10/19 21:30:00	1979/10/21 15:00:00	84	0.22	14.71%	0.3
149	1985/12/02 11:30:00	1985/12/03 17:30:00	61	0.22	14.81%	0.3
150	1988/11/25 04:30:00	1988/11/26 16:00:00	72	0.22	14.91%	0.3
151	1989/03/25 08:30:00	1989/03/26 15:00:00	62	0.22	15.01%	0.3
152	1993/02/18 12:30:00	1993/02/21 00:00:00	120	0.22	15.11%	0.3
153	1997/01/12 12:30:00	1997/01/14 04:00:00	80	0.22	15.21%	0.29
154	1998/02/16 03:30:00	1998/02/18 07:00:00	104	0.22	15.31%	0.29
155	2008/02/03 05:30:00	2008/02/04 07:30:00	53	0.22	15.41%	0.29
156	1965/12/12 05:30:00	1965/12/13 14:30:00	67	0.21	15.51%	0.29
157	1967/03/13 10:30:00	1967/03/14 08:00:00	44	0.21	15.61%	0.29
158	1975/04/08 01:30:00	1975/04/09 20:00:00	86	0.21	15.71%	0.29
159	1976/04/14 10:30:00	1976/04/14 22:00:00	24	0.21	15.81%	0.28
160	1978/11/13 20:30:00	1978/11/14 16:30:00	41	0.21	15.90%	0.28
161	1980/03/10 13:30:00	1980/03/11 06:00:00	34	0.21	16.00%	0.28
162	1986/02/07 18:30:00	1986/02/09 01:00:00	62	0.21	16.10%	0.28
163	1990/01/16 05:30:00	1990/01/17 17:00:00	72	0.21	16.20%	0.28
164	2004/03/01 23:30:00	2004/03/03 12:30:00	75	0.21	16.30%	0.27
165	1968/04/01 18:30:00	1968/04/02 16:00:00	44	0.2	16.40%	0.27
166	1972/11/11 00:30:00	1972/11/11 18:00:00	36	0.2	16.50%	0.27
167	1975/12/11 22:30:00	1975/12/13 00:00:00	52	0.2	16.60%	0.27
168	1976/04/12 17:30:00	1976/04/13 12:30:00	39	0.2	16.70%	0.27
169	1978/09/05 16:30:00	1978/09/06 05:00:00	26	0.2	16.80%	0.27
170	1981/11/28 05:30:00	1981/11/29 15:00:00	68	0.2	16.90%	0.27
171	1987/12/04 20:30:00	1987/12/05 07:30:00	23	0.2	17.00%	0.26
172	1990/01/13 02:30:00	1990/01/15 16:30:00	125	0.2	17.10%	0.26
173	1994/03/24 20:30:00	1994/03/26 02:00:00	60	0.2	17.20%	0.26
174	1995/03/23 08:30:00	1995/03/24 08:30:00	49	0.2	17.30%	0.26
175	1964/12/27 06:30:00	1964/12/29 11:00:00	106	0.19	17.40%	0.26
176	1979/03/17 04:30:00	1979/03/17 17:30:00	27	0.19	17.50%	0.26
177	1979/03/27 02:30:00	1979/03/28 16:30:00	77	0.19	17.59%	0.25
178	1981/02/25 04:30:00	1981/02/26 09:00:00	58	0.19	17.69%	0.25
179	1983/11/20 08:30:00	1983/11/21 16:00:00	64	0.19	17.79%	0.25
180	1988/12/21 00:30:00	1988/12/21 15:30:00	31	0.19	17.89%	0.25

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
181	1994/03/19 01:30:00	1994/03/20 14:30:00	75	0.19	17.99%	0.25
182	2002/12/20 01:30:00	2002/12/22 01:00:00	96	0.19	18.09%	0.25
183	2006/03/10 12:30:00	2006/03/11 19:00:00	62	0.19	18.19%	0.25
184	1971/05/07 17:30:00	1971/05/08 08:00:00	30	0.18	18.29%	0.25
185	1971/12/27 12:30:00	1971/12/28 22:00:00	68	0.18	18.39%	0.24
186	1973/01/18 19:30:00	1973/01/19 10:30:00	31	0.18	18.49%	0.24
187	1973/03/11 10:30:00	1973/03/12 10:00:00	48	0.18	18.59%	0.24
188	1973/03/20 07:30:00	1973/03/21 10:00:00	54	0.18	18.69%	0.24
189	1975/03/10 09:30:00	1975/03/11 20:00:00	70	0.18	18.79%	0.24
190	1979/02/21 00:30:00	1979/02/22 04:30:00	57	0.18	18.89%	0.24
191	1981/12/30 06:30:00	1981/12/31 15:00:00	66	0.18	18.99%	0.24
192	1983/03/17 03:30:00	1983/03/19 05:00:00	100	0.18	19.09%	0.23
193	1986/12/06 02:30:00	1986/12/07 12:00:00	68	0.18	19.18%	0.23
194	1994/02/20 11:30:00	1994/02/21 02:30:00	31	0.18	19.28%	0.23
195	1995/01/10 15:30:00	1995/01/13 00:30:00	115	0.18	19.38%	0.23
196	1995/12/20 16:30:00	1995/12/21 02:30:00	21	0.18	19.48%	0.23
197	1998/03/25 01:30:00	1998/03/30 04:00:00	246	0.18	19.58%	0.23
198	2005/04/28 06:30:00	2005/04/29 05:00:00	46	0.18	19.68%	0.23
199	2008/02/14 10:30:00	2008/02/15 00:30:00	29	0.18	19.78%	0.23
200	1965/02/05 23:30:00	1965/02/07 06:00:00	62	0.17	19.88%	0.23
201	1965/03/31 13:30:00	1965/04/02 08:30:00	87	0.17	19.98%	0.22
202	1974/10/28 04:30:00	1974/10/29 20:00:00	80	0.17	20.08%	0.22
203	1978/01/30 06:30:00	1978/01/31 08:00:00	52	0.17	20.18%	0.22
204	1979/01/30 23:30:00	1979/02/02 22:00:00	142	0.17	20.28%	0.22
205	1983/02/24 08:30:00	1983/02/25 08:00:00	48	0.17	20.38%	0.22
206	1983/12/03 14:30:00	1983/12/04 06:30:00	33	0.17	20.48%	0.22
207	1990/02/17 09:30:00	1990/02/19 11:00:00	100	0.17	20.58%	0.22
208	1993/01/31 00:30:00	1993/01/31 12:00:00	24	0.17	20.68%	0.22
209	2000/04/17 15:30:00	2000/04/18 12:30:00	43	0.17	20.78%	0.22
210	2002/12/16 01:30:00	2002/12/17 21:00:00	88	0.17	20.87%	0.21
211	1965/12/14 13:30:00	1965/12/16 16:00:00	102	0.16	20.97%	0.21
212	1966/02/06 09:30:00	1966/02/08 06:00:00	90	0.16	21.07%	0.21
213	1969/02/18 08:30:00	1969/02/20 08:30:00	97	0.16	21.17%	0.21
214	1971/05/28 00:30:00	1971/05/29 06:00:00	60	0.16	21.27%	0.21
215	1971/12/22 04:30:00	1971/12/23 08:00:00	56	0.16	21.37%	0.21
216	1974/04/02 00:30:00	1974/04/02 17:00:00	34	0.16	21.47%	0.21
217	1978/03/30 13:30:00	1978/04/01 03:00:00	76	0.16	21.57%	0.21
218	1980/12/04 12:30:00	1980/12/05 06:00:00	36	0.16	21.67%	0.21
219	1982/01/20 02:30:00	1982/01/21 20:00:00	84	0.16	21.77%	0.21
220	1987/10/22 15:30:00	1987/10/23 09:00:00	36	0.16	21.87%	0.21
221	1993/02/23 18:30:00	1993/02/24 12:30:00	37	0.16	21.97%	0.2
222	1997/04/04 09:30:00	1997/04/04 15:30:00	13	0.16	22.07%	0.2
223	1998/05/12 01:30:00	1998/05/13 20:00:00	86	0.16	22.17%	0.2
224	2004/02/02 22:30:00	2004/02/04 10:00:00	72	0.16	22.27%	0.2
225	2005/02/11 00:30:00	2005/02/13 10:00:00	116	0.16	22.37%	0.2
226	2005/03/22 18:30:00	2005/03/23 07:30:00	27	0.16	22.47%	0.2
227	2006/03/28 19:30:00	2006/03/29 11:30:00	33	0.16	22.56%	0.2

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
228	1969/03/12 20:30:00	1969/03/14 01:00:00	58	0.15	22.66%	0.2
229	1969/03/21 12:30:00	1969/03/22 04:30:00	33	0.15	22.76%	0.2
230	1970/10/03 13:30:00	1970/10/03 22:30:00	19	0.15	22.86%	0.2
231	1973/02/27 22:30:00	1973/02/28 14:00:00	32	0.15	22.96%	0.2
232	1973/03/21 22:30:00	1973/03/22 10:00:00	24	0.15	23.06%	0.19
233	1976/10/22 19:30:00	1976/10/23 00:30:00	11	0.15	23.16%	0.19
234	1977/03/24 10:30:00	1977/03/25 17:30:00	63	0.15	23.26%	0.19
235	1978/11/10 17:30:00	1978/11/12 08:00:00	78	0.15	23.36%	0.19
236	1978/11/21 17:30:00	1978/11/22 04:30:00	23	0.15	23.46%	0.19
237	1980/03/25 21:30:00	1980/03/26 09:00:00	24	0.15	23.56%	0.19
238	1981/01/29 16:30:00	1981/01/31 00:00:00	64	0.15	23.66%	0.19
239	1982/03/26 20:30:00	1982/03/27 13:00:00	34	0.15	23.76%	0.19
240	1982/11/09 12:30:00	1982/11/11 08:30:00	89	0.15	23.86%	0.19
241	1983/03/20 19:30:00	1983/03/21 09:30:00	29	0.15	23.96%	0.19
242	1983/04/29 01:30:00	1983/04/30 13:30:00	73	0.15	24.06%	0.19
243	1988/01/05 12:30:00	1988/01/06 01:00:00	26	0.15	24.16%	0.19
244	1988/02/02 02:30:00	1988/02/03 00:30:00	45	0.15	24.25%	0.18
245	1988/04/14 17:30:00	1988/04/15 09:30:00	33	0.15	24.35%	0.18
246	1994/02/03 19:30:00	1994/02/05 08:30:00	75	0.15	24.45%	0.18
247	1994/03/06 04:30:00	1994/03/07 17:30:00	75	0.15	24.55%	0.18
248	1996/03/12 16:30:00	1996/03/14 11:30:00	87	0.15	24.65%	0.18
249	2006/05/22 03:30:00	2006/05/22 15:00:00	24	0.15	24.75%	0.18
250	1967/04/21 11:30:00	1967/04/22 11:30:00	49	0.14	24.85%	0.18
251	1970/03/11 09:30:00	1970/03/12 09:00:00	48	0.14	24.95%	0.18
252	1971/01/02 03:30:00	1971/01/02 23:00:00	40	0.14	25.05%	0.18
253	1973/11/17 05:30:00	1973/11/18 18:00:00	74	0.14	25.15%	0.18
254	1974/01/01 03:30:00	1974/01/02 02:00:00	46	0.14	25.25%	0.18
255	1975/04/05 20:30:00	1975/04/07 01:30:00	59	0.14	25.35%	0.18
256	1978/04/07 00:30:00	1978/04/08 14:00:00	76	0.14	25.45%	0.18
257	1979/11/07 18:30:00	1979/11/08 08:00:00	28	0.14	25.55%	0.18
258	1982/01/28 16:30:00	1982/01/29 06:00:00	28	0.14	25.65%	0.17
259	1983/10/07 06:30:00	1983/10/07 17:30:00	23	0.14	25.75%	0.17
260	1986/01/30 00:30:00	1986/02/01 02:30:00	101	0.14	25.84%	0.17
261	1986/10/09 17:30:00	1986/10/10 16:00:00	46	0.14	25.94%	0.17
262	1993/03/28 01:30:00	1993/03/28 11:30:00	21	0.14	26.04%	0.17
263	1994/12/24 04:30:00	1994/12/25 12:00:00	64	0.14	26.14%	0.17
264	1995/03/21 08:30:00	1995/03/21 22:00:00	28	0.14	26.24%	0.17
265	1996/01/21 17:30:00	1996/01/22 15:30:00	45	0.14	26.34%	0.17
266	1996/02/25 08:30:00	1996/02/26 15:00:00	62	0.14	26.44%	0.17
267	2000/02/21 01:30:00	2000/02/23 04:30:00	103	0.14	26.54%	0.17
268	2002/11/29 01:30:00	2002/11/30 18:30:00	83	0.14	26.64%	0.17
269	2008/01/23 18:30:00	2008/01/24 12:30:00	37	0.14	26.74%	0.17
270	1969/11/06 17:30:00	1969/11/07 09:30:00	33	0.13	26.84%	0.17
271	1970/03/06 18:30:00	1970/03/07 07:30:00	27	0.13	26.94%	0.17
272	1972/12/08 06:30:00	1972/12/09 07:00:00	50	0.13	27.04%	0.17
273	1973/03/06 02:30:00	1973/03/07 08:30:00	61	0.13	27.14%	0.17
274	1975/02/03 08:30:00	1975/02/03 23:00:00	30	0.13	27.24%	0.16

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
275	1975/02/09 05:30:00	1975/02/10 10:00:00	58	0.13	27.34%	0.16
276	1975/03/05 13:30:00	1975/03/06 21:00:00	64	0.13	27.44%	0.16
277	1977/03/16 11:30:00	1977/03/17 07:00:00	40	0.13	27.53%	0.16
278	1977/12/25 10:30:00	1977/12/27 11:00:00	98	0.13	27.63%	0.16
279	1979/01/15 13:30:00	1979/01/16 04:30:00	31	0.13	27.73%	0.16
280	1979/02/14 02:30:00	1979/02/14 12:00:00	20	0.13	27.83%	0.16
281	1979/03/18 13:30:00	1979/03/19 12:00:00	46	0.13	27.93%	0.16
282	1980/01/18 03:30:00	1980/01/19 07:30:00	57	0.13	28.03%	0.16
283	1981/03/05 05:30:00	1981/03/05 21:30:00	33	0.13	28.13%	0.16
284	1982/04/02 10:30:00	1982/04/03 13:00:00	54	0.13	28.23%	0.16
285	1982/12/09 18:30:00	1982/12/10 03:30:00	19	0.13	28.33%	0.16
286	1983/11/11 21:30:00	1983/11/13 09:00:00	72	0.13	28.43%	0.16
287	1985/02/01 14:30:00	1985/02/02 21:00:00	62	0.13	28.53%	0.16
288	1985/12/10 12:30:00	1985/12/11 13:00:00	50	0.13	28.63%	0.16
289	1992/12/17 21:30:00	1992/12/18 09:30:00	25	0.13	28.73%	0.16
290	1994/04/27 23:30:00	1994/04/28 08:30:00	19	0.13	28.83%	0.16
291	1996/10/30 12:30:00	1996/10/31 00:00:00	24	0.13	28.93%	0.16
292	1998/04/11 01:30:00	1998/04/12 21:30:00	89	0.13	29.03%	0.15
293	2001/01/26 10:30:00	2001/01/27 08:30:00	45	0.13	29.13%	0.15
294	2004/12/04 13:30:00	2004/12/06 00:00:00	70	0.13	29.22%	0.15
295	2005/03/04 14:30:00	2005/03/05 10:00:00	40	0.13	29.32%	0.15
296	2007/02/19 00:30:00	2007/02/19 22:30:00	45	0.13	29.42%	0.15
297	2007/12/07 03:30:00	2007/12/09 00:30:00	91	0.13	29.52%	0.15
298	1964/11/10 15:30:00	1964/11/11 01:30:00	21	0.12	29.62%	0.15
299	1965/04/02 22:30:00	1965/04/05 16:00:00	132	0.12	29.72%	0.15
300	1965/04/07 03:30:00	1965/04/07 14:00:00	22	0.12	29.82%	0.15
301	1968/12/25 17:30:00	1968/12/26 15:00:00	44	0.12	29.92%	0.15
302	1972/05/19 03:30:00	1972/05/20 17:30:00	77	0.12	30.02%	0.15
303	1975/11/27 16:30:00	1975/11/29 03:00:00	70	0.12	30.12%	0.15
304	1976/11/27 03:30:00	1976/11/27 13:00:00	20	0.12	30.22%	0.15
305	1977/01/03 11:30:00	1977/01/04 07:00:00	40	0.12	30.32%	0.15
306	1978/01/10 16:30:00	1978/01/11 03:00:00	22	0.12	30.42%	0.15
307	1978/11/23 06:30:00	1978/11/23 19:30:00	27	0.12	30.52%	0.15
308	1983/04/20 00:30:00	1983/04/21 13:30:00	75	0.12	30.62%	0.15
309	1984/12/07 22:30:00	1984/12/08 06:00:00	16	0.12	30.72%	0.15
310	1985/02/09 04:30:00	1985/02/09 21:00:00	34	0.12	30.82%	0.15
311	1985/09/18 07:30:00	1985/09/18 19:00:00	24	0.12	30.91%	0.15
312	1990/06/09 06:30:00	1990/06/10 14:00:00	64	0.12	31.01%	0.14
313	1991/01/09 08:30:00	1991/01/09 22:30:00	29	0.12	31.11%	0.14
314	1991/10/26 19:30:00	1991/10/27 07:00:00	24	0.12	31.21%	0.14
315	1992/03/20 15:30:00	1992/03/21 14:00:00	46	0.12	31.31%	0.14
316	1992/03/26 15:30:00	1992/03/27 02:30:00	23	0.12	31.41%	0.14
317	1995/04/16 05:30:00	1995/04/17 03:30:00	45	0.12	31.51%	0.14
318	2004/02/18 15:30:00	2004/02/19 00:30:00	19	0.12	31.61%	0.14
319	2004/12/31 13:30:00	2005/01/01 00:00:00	22	0.12	31.71%	0.14
320	2006/12/09 21:30:00	2006/12/10 11:00:00	28	0.12	31.81%	0.14
321	2007/04/20 13:30:00	2007/04/20 22:30:00	19	0.12	31.91%	0.14

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
322	1965/03/11 06:30:00	1965/03/11 20:00:00	28	0.11	32.01%	0.14
323	1965/11/24 18:30:00	1965/11/25 19:00:00	50	0.11	32.11%	0.14
324	1967/04/04 15:30:00	1967/04/05 00:30:00	19	0.11	32.21%	0.14
325	1969/03/10 01:30:00	1969/03/10 16:30:00	31	0.11	32.31%	0.14
326	1970/11/25 22:30:00	1970/11/26 16:00:00	36	0.11	32.41%	0.14
327	1971/10/16 03:30:00	1971/10/17 15:30:00	73	0.11	32.50%	0.14
328	1977/01/06 18:30:00	1977/01/07 12:00:00	36	0.11	32.60%	0.14
329	1977/12/18 00:30:00	1977/12/18 14:30:00	29	0.11	32.70%	0.14
330	1982/01/10 17:30:00	1982/01/11 03:00:00	20	0.11	32.80%	0.14
331	1983/03/22 11:30:00	1983/03/22 21:00:00	20	0.11	32.90%	0.14
332	1986/03/13 16:30:00	1986/03/14 07:30:00	31	0.11	33.00%	0.14
333	1986/04/06 04:30:00	1986/04/06 23:30:00	39	0.11	33.10%	0.14
334	1990/01/30 23:30:00	1990/01/31 09:00:00	20	0.11	33.20%	0.14
335	1992/03/22 07:30:00	1992/03/23 16:30:00	67	0.11	33.30%	0.13
336	1992/12/27 15:30:00	1992/12/28 10:00:00	38	0.11	33.40%	0.13
337	1995/12/23 09:30:00	1995/12/23 17:30:00	17	0.11	33.50%	0.13
338	2001/12/21 01:30:00	2001/12/22 05:00:00	56	0.11	33.60%	0.13
339	2002/03/17 19:30:00	2002/03/18 08:00:00	26	0.11	33.70%	0.13
340	2004/04/01 21:30:00	2004/04/02 20:00:00	46	0.11	33.80%	0.13
341	2004/11/21 04:30:00	2004/11/21 15:00:00	22	0.11	33.90%	0.13
342	2005/10/17 13:30:00	2005/10/18 16:00:00	54	0.11	34.00%	0.13
343	1964/10/15 08:30:00	1964/10/15 19:00:00	22	0.1	34.10%	0.13
344	1964/11/09 11:30:00	1964/11/09 22:30:00	23	0.1	34.19%	0.13
345	1968/02/13 08:30:00	1968/02/14 06:00:00	44	0.1	34.29%	0.13
346	1969/11/09 23:30:00	1969/11/10 08:30:00	19	0.1	34.39%	0.13
347	1970/02/10 00:30:00	1970/02/11 11:00:00	70	0.1	34.49%	0.13
348	1971/02/16 15:30:00	1971/02/17 15:00:00	48	0.1	34.59%	0.13
349	1971/04/14 10:30:00	1971/04/14 20:00:00	20	0.1	34.69%	0.13
350	1972/12/07 03:30:00	1972/12/07 14:30:00	23	0.1	34.79%	0.13
351	1973/01/04 00:30:00	1973/01/04 22:30:00	45	0.1	34.89%	0.13
352	1973/03/13 11:30:00	1973/03/14 02:30:00	31	0.1	34.99%	0.13
353	1974/12/28 05:30:00	1974/12/29 15:00:00	68	0.1	35.09%	0.13
354	1976/04/15 14:30:00	1976/04/16 02:00:00	24	0.1	35.19%	0.13
355	1978/03/22 03:30:00	1978/03/23 17:30:00	77	0.1	35.29%	0.13
356	1981/01/28 05:30:00	1981/01/28 19:00:00	28	0.1	35.39%	0.13
357	1981/03/26 21:30:00	1981/03/27 06:00:00	18	0.1	35.49%	0.13
358	1981/11/26 17:30:00	1981/11/27 08:30:00	31	0.1	35.59%	0.13
359	1982/11/19 01:30:00	1982/11/19 18:30:00	35	0.1	35.69%	0.13
360	1983/02/02 11:30:00	1983/02/03 01:00:00	28	0.1	35.79%	0.13
361	1983/10/01 03:30:00	1983/10/01 23:30:00	41	0.1	35.88%	0.13
362	1983/12/09 17:30:00	1983/12/10 02:30:00	19	0.1	35.98%	0.12
363	1985/03/27 07:30:00	1985/03/28 14:00:00	62	0.1	36.08%	0.12
364	1987/02/23 12:30:00	1987/02/26 07:00:00	134	0.1	36.18%	0.12
365	1987/10/30 23:30:00	1987/11/01 03:30:00	57	0.1	36.28%	0.12
366	1991/12/27 23:30:00	1991/12/28 09:00:00	20	0.1	36.38%	0.12
367	1992/02/09 22:30:00	1992/02/10 07:30:00	19	0.1	36.48%	0.12
368	1994/11/10 10:30:00	1994/11/10 17:00:00	14	0.1	36.58%	0.12

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
369	1997/01/15 17:30:00	1997/01/16 02:00:00	18	0.1	36.68%	0.12
370	1998/01/29 01:30:00	1998/01/30 05:00:00	56	0.1	36.78%	0.12
371	2000/02/17 01:30:00	2000/02/18 04:30:00	55	0.1	36.88%	0.12
372	2000/10/29 19:30:00	2000/10/30 07:30:00	25	0.1	36.98%	0.12
373	2005/10/16 15:30:00	2005/10/17 00:30:00	19	0.1	37.08%	0.12
374	1964/09/24 13:30:00	1964/09/24 16:30:00	7	0.09	37.18%	0.12
375	1964/11/12 02:30:00	1964/11/12 10:30:00	17	0.09	37.28%	0.12
376	1966/10/03 23:30:00	1966/10/04 19:00:00	40	0.09	37.38%	0.12
377	1966/10/10 11:30:00	1966/10/10 19:30:00	17	0.09	37.48%	0.12
378	1967/04/01 11:30:00	1967/04/02 10:30:00	47	0.09	37.57%	0.12
379	1967/08/31 01:30:00	1967/08/31 13:00:00	24	0.09	37.67%	0.12
380	1967/12/16 12:30:00	1967/12/17 07:30:00	39	0.09	37.77%	0.12
381	1968/12/20 08:30:00	1968/12/20 17:00:00	18	0.09	37.87%	0.12
382	1969/01/18 21:30:00	1969/01/19 05:30:00	17	0.09	37.97%	0.12
383	1969/01/28 00:30:00	1969/01/29 02:00:00	52	0.09	38.07%	0.12
384	1970/01/16 15:30:00	1970/01/17 01:30:00	21	0.09	38.17%	0.12
385	1970/04/30 08:30:00	1970/04/30 11:30:00	7	0.09	38.27%	0.12
386	1971/01/12 18:30:00	1971/01/13 04:30:00	21	0.09	38.37%	0.12
387	1971/03/13 05:30:00	1971/03/13 21:30:00	33	0.09	38.47%	0.12
388	1971/12/31 03:30:00	1971/12/31 11:30:00	17	0.09	38.57%	0.12
389	1972/04/30 03:30:00	1972/04/30 14:00:00	22	0.09	38.67%	0.12
390	1972/10/19 02:30:00	1972/10/19 06:00:00	8	0.09	38.77%	0.12
391	1972/10/19 21:30:00	1972/10/20 20:00:00	46	0.09	38.87%	0.12
392	1973/02/06 00:30:00	1973/02/06 08:30:00	17	0.09	38.97%	0.12
393	1973/03/03 23:30:00	1973/03/04 06:00:00	14	0.09	39.07%	0.12
394	1973/04/30 04:30:00	1973/04/30 14:30:00	21	0.09	39.17%	0.11
395	1973/12/01 14:30:00	1973/12/01 21:00:00	14	0.09	39.26%	0.11
396	1976/04/11 18:30:00	1976/04/11 21:30:00	7	0.09	39.36%	0.11
397	1979/01/09 07:30:00	1979/01/09 18:30:00	23	0.09	39.46%	0.11
398	1980/03/21 18:30:00	1980/03/22 05:00:00	22	0.09	39.56%	0.11
399	1982/01/05 03:30:00	1982/01/05 19:00:00	32	0.09	39.66%	0.11
400	1982/03/28 17:30:00	1982/03/29 00:30:00	15	0.09	39.76%	0.11
401	1983/04/17 21:30:00	1983/04/18 10:30:00	27	0.09	39.86%	0.11
402	1983/05/01 06:30:00	1983/05/01 15:00:00	18	0.09	39.96%	0.11
403	1983/08/16 14:30:00	1983/08/16 21:00:00	14	0.09	40.06%	0.11
404	1985/10/07 13:30:00	1985/10/07 17:00:00	8	0.09	40.16%	0.11
405	1985/10/09 11:30:00	1985/10/09 23:30:00	25	0.09	40.26%	0.11
406	1991/03/13 16:30:00	1991/03/14 08:00:00	32	0.09	40.36%	0.11
407	1993/03/25 23:30:00	1993/03/27 02:00:00	54	0.09	40.46%	0.11
408	1993/11/22 21:30:00	1993/11/23 10:00:00	26	0.09	40.56%	0.11
409	1994/01/24 23:30:00	1994/01/26 11:30:00	73	0.09	40.66%	0.11
410	1994/01/27 04:30:00	1994/01/27 17:30:00	27	0.09	40.76%	0.11
411	1994/04/25 14:30:00	1994/04/27 03:30:00	75	0.09	40.85%	0.11
412	1996/02/27 20:30:00	1996/02/28 05:00:00	18	0.09	40.95%	0.11
413	1997/01/05 08:30:00	1997/01/05 20:00:00	24	0.09	41.05%	0.11
414	1997/01/23 02:30:00	1997/01/24 07:30:00	59	0.09	41.15%	0.11
415	1997/12/06 01:30:00	1997/12/08 05:00:00	104	0.09	41.25%	0.11

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
416	2000/02/13 01:30:00	2000/02/14 20:30:00	87	0.09	41.35%	0.11
417	2001/05/29 14:30:00	2001/05/29 17:30:00	7	0.09	41.45%	0.11
418	2001/12/09 01:30:00	2001/12/10 05:00:00	56	0.09	41.55%	0.11
419	2006/03/21 01:30:00	2006/03/21 10:00:00	18	0.09	41.65%	0.11
420	2006/12/16 19:30:00	2006/12/17 12:30:00	35	0.09	41.75%	0.11
421	2007/02/12 21:30:00	2007/02/14 03:30:00	61	0.09	41.85%	0.11
422	1965/01/24 05:30:00	1965/01/24 15:00:00	20	0.08	41.95%	0.11
423	1965/12/21 22:30:00	1965/12/23 02:30:00	57	0.08	42.05%	0.11
424	1967/11/30 15:30:00	1967/12/01 02:00:00	22	0.08	42.15%	0.11
425	1968/01/27 06:30:00	1968/01/28 12:00:00	60	0.08	42.25%	0.11
426	1972/01/09 08:30:00	1972/01/10 05:00:00	42	0.08	42.35%	0.11
427	1973/01/09 09:30:00	1973/01/10 06:00:00	42	0.08	42.45%	0.11
428	1973/02/03 12:30:00	1973/02/04 03:00:00	30	0.08	42.54%	0.11
429	1973/03/05 02:30:00	1973/03/05 10:00:00	16	0.08	42.64%	0.11
430	1974/03/03 10:30:00	1974/03/03 18:00:00	16	0.08	42.74%	0.11
431	1975/03/22 07:30:00	1975/03/22 16:00:00	18	0.08	42.84%	0.1
432	1975/03/31 20:30:00	1975/04/01 10:00:00	28	0.08	42.94%	0.1
433	1977/01/28 16:30:00	1977/01/29 00:00:00	16	0.08	43.04%	0.1
434	1983/03/06 02:30:00	1983/03/06 17:00:00	30	0.08	43.14%	0.1
435	1987/10/28 18:30:00	1987/10/29 04:00:00	20	0.08	43.24%	0.1
436	1987/12/19 13:30:00	1987/12/19 22:30:00	19	0.08	43.34%	0.1
437	1989/02/04 03:30:00	1989/02/04 19:30:00	33	0.08	43.44%	0.1
438	1990/01/02 00:30:00	1990/01/02 16:00:00	32	0.08	43.54%	0.1
439	1990/11/26 01:30:00	1990/11/26 12:00:00	22	0.08	43.64%	0.1
440	1995/01/15 02:30:00	1995/01/17 13:30:00	119	0.08	43.74%	0.1
441	1995/01/21 01:30:00	1995/01/21 10:30:00	19	0.08	43.84%	0.1
442	1997/02/27 10:30:00	1997/02/28 06:00:00	40	0.08	43.94%	0.1
443	1998/03/31 01:30:00	1998/04/02 03:30:00	101	0.08	44.04%	0.1
444	2001/04/20 23:30:00	2001/04/21 16:30:00	35	0.08	44.14%	0.1
445	2003/11/12 02:30:00	2003/11/12 16:00:00	28	0.08	44.23%	0.1
446	2004/01/28 04:30:00	2004/01/28 11:30:00	15	0.08	44.33%	0.1
447	2005/01/28 14:30:00	2005/01/29 09:30:00	39	0.08	44.43%	0.1
448	2007/02/22 20:30:00	2007/02/23 09:30:00	27	0.08	44.53%	0.1
449	2007/12/20 21:30:00	2007/12/21 08:30:00	23	0.08	44.63%	0.1
450	2008/01/26 20:30:00	2008/01/28 17:00:00	90	0.08	44.73%	0.1
451	2008/02/24 06:30:00	2008/02/24 16:00:00	20	0.08	44.83%	0.1
452	1967/03/31 09:30:00	1967/03/31 18:00:00	18	0.07	44.93%	0.1
453	1967/04/18 18:30:00	1967/04/20 01:00:00	62	0.07	45.03%	0.1
454	1967/12/13 09:30:00	1967/12/13 18:00:00	18	0.07	45.13%	0.1
455	1968/03/18 12:30:00	1968/03/18 19:30:00	15	0.07	45.23%	0.1
456	1971/04/15 21:30:00	1971/04/16 13:00:00	32	0.07	45.33%	0.1
457	1971/12/03 23:30:00	1971/12/04 06:30:00	15	0.07	45.43%	0.1
458	1971/12/07 00:30:00	1971/12/07 07:30:00	15	0.07	45.53%	0.1
459	1974/03/02 09:30:00	1974/03/02 17:30:00	17	0.07	45.63%	0.1
460	1975/01/30 17:30:00	1975/01/31 02:00:00	18	0.07	45.73%	0.1
461	1975/02/04 11:30:00	1975/02/04 20:00:00	18	0.07	45.83%	0.1
462	1977/12/23 02:30:00	1977/12/23 11:00:00	18	0.07	45.92%	0.1

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
463	1978/04/15 19:30:00	1978/04/16 04:30:00	19	0.07	46.02%	0.1
464	1979/03/20 01:30:00	1979/03/21 10:30:00	67	0.07	46.12%	0.1
465	1979/11/08 21:30:00	1979/11/09 06:00:00	18	0.07	46.22%	0.1
466	1980/12/07 10:30:00	1980/12/07 17:30:00	15	0.07	46.32%	0.1
467	1983/01/19 03:30:00	1983/01/19 13:00:00	20	0.07	46.42%	0.1
468	1983/01/24 17:30:00	1983/01/25 00:30:00	15	0.07	46.52%	0.1
469	1984/04/06 05:30:00	1984/04/06 17:00:00	24	0.07	46.62%	0.1
470	1984/12/14 13:30:00	1984/12/14 19:30:00	13	0.07	46.72%	0.1
471	1985/03/02 12:30:00	1985/03/03 06:30:00	37	0.07	46.82%	0.1
472	1987/04/03 03:30:00	1987/04/04 05:00:00	52	0.07	46.92%	0.1
473	1987/11/02 02:30:00	1987/11/02 09:30:00	15	0.07	47.02%	0.1
474	1988/02/29 21:30:00	1988/03/02 07:00:00	68	0.07	47.12%	0.1
475	1989/01/05 16:30:00	1989/01/06 06:00:00	28	0.07	47.22%	0.1
476	1989/10/21 22:30:00	1989/10/22 10:00:00	24	0.07	47.32%	0.1
477	1990/02/04 10:30:00	1990/02/04 17:30:00	15	0.07	47.42%	0.09
478	1990/12/19 12:30:00	1990/12/20 11:30:00	47	0.07	47.51%	0.09
479	1991/01/03 11:30:00	1991/01/04 17:00:00	60	0.07	47.61%	0.09
480	1993/12/11 15:30:00	1993/12/12 07:30:00	33	0.07	47.71%	0.09
481	1993/12/14 16:30:00	1993/12/15 13:30:00	43	0.07	47.81%	0.09
482	1994/04/09 04:30:00	1994/04/09 20:00:00	32	0.07	47.91%	0.09
483	1995/06/15 20:30:00	1995/06/17 16:30:00	89	0.07	48.01%	0.09
484	1996/03/04 16:30:00	1996/03/05 08:00:00	32	0.07	48.11%	0.09
485	1996/04/17 23:30:00	1996/04/18 11:30:00	25	0.07	48.21%	0.09
486	2000/11/10 03:30:00	2000/11/11 11:00:00	64	0.07	48.31%	0.09
487	2003/05/03 01:30:00	2003/05/04 03:30:00	53	0.07	48.41%	0.09
488	2004/11/29 11:30:00	2004/11/29 17:00:00	12	0.07	48.51%	0.09
489	2006/03/12 20:30:00	2006/03/13 03:00:00	14	0.07	48.61%	0.09
490	2006/03/17 19:30:00	2006/03/19 04:30:00	67	0.07	48.71%	0.09
491	2006/04/14 12:30:00	2006/04/15 12:30:00	49	0.07	48.81%	0.09
492	2006/10/13 19:30:00	2006/10/14 15:00:00	40	0.07	48.91%	0.09
493	2007/02/28 04:30:00	2007/02/28 10:30:00	13	0.07	49.01%	0.09
494	2008/02/20 08:30:00	2008/02/20 18:30:00	21	0.07	49.11%	0.09
495	1965/03/15 01:30:00	1965/03/15 08:30:00	15	0.06	49.20%	0.09
496	1968/11/15 05:30:00	1968/11/16 00:00:00	38	0.06	49.30%	0.09
497	1975/03/14 01:30:00	1975/03/14 16:00:00	30	0.06	49.40%	0.09
498	1982/12/07 22:30:00	1982/12/08 23:00:00	50	0.06	49.50%	0.09
499	1985/02/20 19:30:00	1985/02/21 02:00:00	14	0.06	49.60%	0.09
500	1988/11/14 04:30:00	1988/11/14 15:00:00	22	0.06	49.70%	0.09
501	1988/12/18 05:30:00	1988/12/19 08:30:00	55	0.06	49.80%	0.09
502	1990/03/11 00:30:00	1990/03/11 07:00:00	14	0.06	49.90%	0.09
503	1990/04/04 08:30:00	1990/04/04 16:30:00	17	0.06	50.00%	0.09
504	1990/11/19 21:30:00	1990/11/20 10:30:00	27	0.06	50.10%	0.09
505	1991/03/15 03:30:00	1991/03/16 01:30:00	45	0.06	50.20%	0.09
506	1991/12/17 10:30:00	1991/12/18 09:30:00	47	0.06	50.30%	0.09
507	1992/01/02 22:30:00	1992/01/04 10:30:00	73	0.06	50.40%	0.09
508	1993/01/02 01:30:00	1993/01/03 05:00:00	56	0.06	50.50%	0.09
509	1996/12/05 21:30:00	1996/12/06 15:30:00	37	0.06	50.60%	0.09

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
510	1998/02/19 01:30:00	1998/02/20 22:30:00	91	0.06	50.70%	0.09
511	2004/04/17 12:30:00	2004/04/17 17:30:00	11	0.06	50.80%	0.09
512	2005/12/31 15:30:00	2006/01/01 02:30:00	23	0.06	50.89%	0.09
513	2007/04/22 22:30:00	2007/04/23 06:30:00	17	0.06	50.99%	0.09
514	2007/12/18 23:30:00	2007/12/19 12:30:00	27	0.06	51.09%	0.09
515	1967/03/03 23:30:00	1967/03/04 14:30:00	31	0.05	51.19%	0.09
516	1968/07/09 20:30:00	1968/07/10 00:00:00	8	0.05	51.29%	0.09
517	1969/02/05 02:30:00	1969/02/05 13:00:00	22	0.05	51.39%	0.09
518	1969/02/15 17:30:00	1969/02/16 02:00:00	18	0.05	51.49%	0.09
519	1969/02/28 21:30:00	1969/03/01 07:00:00	20	0.05	51.59%	0.09
520	1969/04/05 19:30:00	1969/04/06 01:30:00	13	0.05	51.69%	0.09
521	1970/01/11 13:30:00	1970/01/12 09:00:00	40	0.05	51.79%	0.09
522	1970/12/09 04:30:00	1970/12/09 16:00:00	24	0.05	51.89%	0.09
523	1971/02/19 16:30:00	1971/02/20 11:30:00	39	0.05	51.99%	0.09
524	1971/04/23 06:30:00	1971/04/23 13:30:00	15	0.05	52.09%	0.09
525	1972/02/05 07:30:00	1972/02/06 12:30:00	59	0.05	52.19%	0.09
526	1973/03/27 02:30:00	1973/03/27 20:00:00	36	0.05	52.29%	0.09
527	1974/01/20 16:30:00	1974/01/21 03:00:00	22	0.05	52.39%	0.09
528	1974/03/27 08:30:00	1974/03/27 14:00:00	12	0.05	52.49%	0.09
529	1977/02/22 00:30:00	1977/02/22 06:30:00	13	0.05	52.58%	0.09
530	1977/02/23 11:30:00	1977/02/24 05:30:00	37	0.05	52.68%	0.09
531	1977/05/12 18:30:00	1977/05/13 04:30:00	21	0.05	52.78%	0.09
532	1977/12/28 06:30:00	1977/12/29 20:00:00	76	0.05	52.88%	0.09
533	1979/02/23 02:30:00	1979/02/23 13:00:00	22	0.05	52.98%	0.08
534	1980/04/22 14:30:00	1980/04/23 07:30:00	35	0.05	53.08%	0.08
535	1980/04/28 16:30:00	1980/04/29 04:30:00	25	0.05	53.18%	0.08
536	1980/05/10 10:30:00	1980/05/10 16:00:00	12	0.05	53.28%	0.08
537	1981/10/11 05:30:00	1981/10/11 10:00:00	10	0.05	53.38%	0.08
538	1982/03/02 18:30:00	1982/03/03 04:30:00	21	0.05	53.48%	0.08
539	1982/03/31 01:30:00	1982/03/31 14:00:00	26	0.05	53.58%	0.08
540	1982/09/26 00:30:00	1982/09/26 21:30:00	43	0.05	53.68%	0.08
541	1982/12/29 18:30:00	1982/12/30 15:00:00	42	0.05	53.78%	0.08
542	1983/01/22 23:30:00	1983/01/23 09:00:00	20	0.05	53.88%	0.08
543	1983/02/05 16:30:00	1983/02/06 06:00:00	28	0.05	53.98%	0.08
544	1983/04/12 03:30:00	1983/04/13 04:00:00	50	0.05	54.08%	0.08
545	1984/03/24 12:30:00	1984/03/24 16:00:00	8	0.05	54.17%	0.08
546	1984/12/16 03:30:00	1984/12/16 09:00:00	12	0.05	54.27%	0.08
547	1984/12/18 13:30:00	1984/12/19 04:00:00	30	0.05	54.37%	0.08
548	1986/01/02 14:30:00	1986/01/02 20:30:00	13	0.05	54.47%	0.08
549	1986/07/19 11:30:00	1986/07/19 19:00:00	16	0.05	54.57%	0.08
550	1986/12/20 05:30:00	1986/12/20 17:30:00	25	0.05	54.67%	0.08
551	1987/10/12 17:30:00	1987/10/12 22:30:00	11	0.05	54.77%	0.08
552	1988/12/15 06:30:00	1988/12/16 22:30:00	81	0.05	54.87%	0.08
553	1990/05/28 03:30:00	1990/05/28 16:00:00	26	0.05	54.97%	0.08
554	1992/03/31 15:30:00	1992/03/31 20:30:00	11	0.05	55.07%	0.08
555	1993/11/30 03:30:00	1993/11/30 10:30:00	15	0.05	55.17%	0.08
556	1994/11/16 07:30:00	1994/11/16 14:00:00	14	0.05	55.27%	0.08

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
557	1994/11/18 02:30:00	1994/11/18 09:30:00	15	0.05	55.37%	0.08
558	1996/02/21 01:30:00	1996/02/22 05:30:00	57	0.05	55.47%	0.08
559	1996/12/22 14:30:00	1996/12/22 23:30:00	19	0.05	55.57%	0.08
560	1997/02/10 18:30:00	1997/02/11 05:00:00	22	0.05	55.67%	0.08
561	1997/12/21 07:30:00	1997/12/22 01:00:00	36	0.05	55.77%	0.08
562	1998/01/19 03:30:00	1998/01/20 03:00:00	48	0.05	55.86%	0.08
563	1998/04/14 07:30:00	1998/04/16 01:30:00	85	0.05	55.96%	0.08
564	2000/10/21 17:30:00	2000/10/21 21:00:00	8	0.05	56.06%	0.08
565	2001/11/29 08:30:00	2001/11/30 00:30:00	33	0.05	56.16%	0.08
566	2001/12/03 04:30:00	2001/12/04 02:00:00	44	0.05	56.26%	0.08
567	2002/03/07 10:30:00	2002/03/08 04:30:00	37	0.05	56.36%	0.08
568	2005/09/20 01:30:00	2005/09/20 05:30:00	9	0.05	56.46%	0.08
569	1965/01/07 09:30:00	1965/01/07 18:30:00	19	0.04	56.56%	0.08
570	1965/12/31 08:30:00	1966/01/01 12:00:00	56	0.04	56.66%	0.08
571	1966/02/10 14:30:00	1966/02/10 19:30:00	11	0.04	56.76%	0.08
572	1966/10/05 13:30:00	1966/10/05 18:00:00	10	0.04	56.86%	0.08
573	1967/06/13 11:30:00	1967/06/13 18:00:00	14	0.04	56.96%	0.08
574	1967/09/29 20:30:00	1967/09/30 03:30:00	15	0.04	57.06%	0.08
575	1967/11/23 08:30:00	1967/11/23 13:30:00	11	0.04	57.16%	0.08
576	1968/05/12 04:30:00	1968/05/12 10:00:00	12	0.04	57.26%	0.08
577	1969/01/17 10:30:00	1969/01/17 16:00:00	12	0.04	57.36%	0.08
578	1969/03/11 08:30:00	1969/03/11 13:00:00	10	0.04	57.46%	0.08
579	1969/06/11 08:30:00	1969/06/11 14:00:00	12	0.04	57.55%	0.08
580	1969/12/08 18:30:00	1969/12/09 05:00:00	22	0.04	57.65%	0.08
581	1970/01/15 01:30:00	1970/01/15 07:00:00	12	0.04	57.75%	0.08
582	1970/01/18 13:30:00	1970/01/18 19:00:00	12	0.04	57.85%	0.08
583	1970/12/02 14:30:00	1970/12/02 20:00:00	12	0.04	57.95%	0.08
584	1971/05/06 05:30:00	1971/05/06 15:00:00	20	0.04	58.05%	0.08
585	1971/10/24 10:30:00	1971/10/24 15:00:00	10	0.04	58.15%	0.08
586	1971/10/25 12:30:00	1971/10/25 17:00:00	10	0.04	58.25%	0.08
587	1972/04/13 02:30:00	1972/04/13 10:30:00	17	0.04	58.35%	0.08
588	1973/01/30 12:30:00	1973/01/30 18:00:00	12	0.04	58.45%	0.08
589	1973/02/07 14:30:00	1973/02/07 19:30:00	11	0.04	58.55%	0.08
590	1973/03/28 20:30:00	1973/03/29 01:00:00	10	0.04	58.65%	0.08
591	1973/11/24 18:30:00	1973/11/24 23:30:00	11	0.04	58.75%	0.08
592	1973/12/20 13:30:00	1973/12/20 19:00:00	12	0.04	58.85%	0.08
593	1973/12/22 02:30:00	1973/12/22 08:00:00	12	0.04	58.95%	0.08
594	1974/01/09 15:30:00	1974/01/09 21:00:00	12	0.04	59.05%	0.08
595	1974/11/03 15:30:00	1974/11/03 20:30:00	11	0.04	59.15%	0.08
596	1975/02/05 08:30:00	1975/02/05 13:30:00	11	0.04	59.24%	0.08
597	1975/03/23 13:30:00	1975/03/23 18:00:00	10	0.04	59.34%	0.08
598	1975/03/25 09:30:00	1975/03/26 02:30:00	35	0.04	59.44%	0.08
599	1975/04/17 02:30:00	1975/04/17 12:30:00	21	0.04	59.54%	0.08
600	1975/04/18 12:30:00	1975/04/18 17:00:00	10	0.04	59.64%	0.08
601	1976/10/23 13:30:00	1976/10/23 18:00:00	10	0.04	59.74%	0.08
602	1977/05/24 05:30:00	1977/05/24 11:00:00	12	0.04	59.84%	0.08
603	1978/01/12 15:30:00	1978/01/12 21:00:00	12	0.04	59.94%	0.08

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
604	1978/09/07 11:30:00	1978/09/07 16:00:00	10	0.04	60.04%	0.08
605	1979/03/29 08:30:00	1979/03/29 13:00:00	10	0.04	60.14%	0.07
606	1980/01/07 13:30:00	1980/01/08 06:00:00	34	0.04	60.24%	0.07
607	1980/01/15 09:30:00	1980/01/15 15:00:00	12	0.04	60.34%	0.07
608	1980/03/18 07:30:00	1980/03/18 23:30:00	33	0.04	60.44%	0.07
609	1980/04/24 11:30:00	1980/04/24 16:00:00	10	0.04	60.54%	0.07
610	1980/04/29 19:30:00	1980/04/30 00:00:00	10	0.04	60.64%	0.07
611	1980/12/11 13:30:00	1980/12/11 19:00:00	12	0.04	60.74%	0.07
612	1981/03/04 06:30:00	1981/03/04 11:00:00	10	0.04	60.83%	0.07
613	1981/04/02 05:30:00	1981/04/03 01:00:00	40	0.04	60.93%	0.07
614	1981/04/18 12:30:00	1981/04/19 13:30:00	51	0.04	61.03%	0.07
615	1982/02/08 02:30:00	1982/02/08 07:30:00	11	0.04	61.13%	0.07
616	1982/04/01 13:30:00	1982/04/01 18:00:00	10	0.04	61.23%	0.07
617	1983/04/10 22:30:00	1983/04/11 06:30:00	17	0.04	61.33%	0.07
618	1983/08/18 08:30:00	1983/08/18 20:00:00	24	0.04	61.43%	0.07
619	1984/01/16 15:30:00	1984/01/17 01:30:00	21	0.04	61.53%	0.07
620	1984/12/19 17:30:00	1984/12/19 23:00:00	12	0.04	61.63%	0.07
621	1985/02/03 15:30:00	1985/02/03 20:30:00	11	0.04	61.73%	0.07
622	1985/08/10 13:30:00	1985/08/10 16:00:00	6	0.04	61.83%	0.07
623	1986/09/18 10:30:00	1986/09/18 13:30:00	7	0.04	61.93%	0.07
624	1988/12/22 23:30:00	1988/12/23 05:30:00	13	0.04	62.03%	0.07
625	1989/01/04 07:30:00	1989/01/04 16:30:00	19	0.04	62.13%	0.07
626	1989/01/07 15:30:00	1989/01/07 21:30:00	13	0.04	62.23%	0.07
627	1991/03/11 01:30:00	1991/03/11 11:00:00	20	0.04	62.33%	0.07
628	1991/12/19 05:30:00	1991/12/19 12:30:00	15	0.04	62.43%	0.07
629	1992/03/07 10:30:00	1992/03/08 07:00:00	42	0.04	62.52%	0.07
630	1992/10/30 16:30:00	1992/10/30 23:00:00	14	0.04	62.62%	0.07
631	1992/12/03 22:30:00	1992/12/04 23:30:00	51	0.04	62.72%	0.07
632	1993/02/26 14:30:00	1993/02/27 15:00:00	50	0.04	62.82%	0.07
633	1993/06/05 12:30:00	1993/06/05 21:00:00	18	0.04	62.92%	0.07
634	1995/03/03 04:30:00	1995/03/04 04:00:00	48	0.04	63.02%	0.07
635	1996/01/16 18:30:00	1996/01/17 04:30:00	21	0.04	63.12%	0.07
636	1996/12/27 15:30:00	1996/12/28 12:30:00	43	0.04	63.22%	0.07
637	1997/01/02 00:30:00	1997/01/02 06:00:00	12	0.04	63.32%	0.07
638	1998/01/03 15:30:00	1998/01/05 01:00:00	68	0.04	63.42%	0.07
639	1998/01/13 10:30:00	1998/01/13 23:00:00	26	0.04	63.52%	0.07
640	1998/03/06 03:30:00	1998/03/07 02:00:00	46	0.04	63.62%	0.07
641	1998/05/04 15:30:00	1998/05/06 02:00:00	70	0.04	63.72%	0.07
642	2001/01/08 15:30:00	2001/01/09 07:30:00	33	0.04	63.82%	0.07
643	2001/12/14 10:30:00	2001/12/14 23:00:00	26	0.04	63.92%	0.07
644	2003/11/16 00:30:00	2003/11/16 07:00:00	14	0.04	64.02%	0.07
645	2006/02/19 01:30:00	2006/02/19 09:00:00	16	0.04	64.12%	0.07
646	2006/03/07 20:30:00	2006/03/08 10:30:00	29	0.04	64.21%	0.07
647	2006/11/27 09:30:00	2006/11/28 03:00:00	36	0.04	64.31%	0.07
648	2006/12/27 06:30:00	2006/12/27 15:30:00	19	0.04	64.41%	0.07
649	1966/02/25 02:30:00	1966/02/25 06:30:00	9	0.03	64.51%	0.07
650	1966/03/02 09:30:00	1966/03/02 14:00:00	10	0.03	64.61%	0.07

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
651	1966/03/13 14:30:00	1966/03/13 18:00:00	8	0.03	64.71%	0.07
652	1966/03/24 18:30:00	1966/03/24 22:00:00	8	0.03	64.81%	0.07
653	1966/05/10 04:30:00	1966/05/10 07:00:00	6	0.03	64.91%	0.07
654	1966/09/29 23:30:00	1966/09/30 13:30:00	29	0.03	65.01%	0.07
655	1966/10/18 11:30:00	1966/10/18 14:30:00	7	0.03	65.11%	0.07
656	1967/01/31 03:30:00	1967/01/31 09:00:00	12	0.03	65.21%	0.07
657	1967/03/11 08:30:00	1967/03/11 13:00:00	10	0.03	65.31%	0.07
658	1967/03/29 05:30:00	1967/03/29 09:00:00	8	0.03	65.41%	0.07
659	1967/04/24 10:30:00	1967/04/24 15:00:00	10	0.03	65.51%	0.07
660	1967/04/28 18:30:00	1967/04/28 22:30:00	9	0.03	65.61%	0.07
661	1967/06/09 06:30:00	1967/06/09 09:00:00	6	0.03	65.71%	0.07
662	1967/07/26 20:30:00	1967/07/26 23:00:00	6	0.03	65.81%	0.07
663	1967/09/02 20:30:00	1967/09/03 00:30:00	9	0.03	65.90%	0.07
664	1967/11/28 09:30:00	1967/11/28 14:30:00	11	0.03	66.00%	0.07
665	1967/12/08 00:30:00	1967/12/08 06:00:00	12	0.03	66.10%	0.07
666	1968/01/10 04:30:00	1968/01/10 09:00:00	10	0.03	66.20%	0.07
667	1968/02/10 03:30:00	1968/02/10 07:30:00	9	0.03	66.30%	0.07
668	1968/03/13 21:30:00	1968/03/14 02:00:00	10	0.03	66.40%	0.07
669	1968/03/17 01:30:00	1968/03/17 06:00:00	10	0.03	66.50%	0.07
670	1968/06/07 06:30:00	1968/06/07 09:00:00	6	0.03	66.60%	0.07
671	1968/09/13 10:30:00	1968/09/13 13:30:00	7	0.03	66.70%	0.07
672	1968/10/30 09:30:00	1968/10/30 12:30:00	7	0.03	66.80%	0.07
673	1968/12/01 10:30:00	1968/12/01 15:00:00	10	0.03	66.90%	0.07
674	1968/12/19 13:30:00	1968/12/19 18:00:00	10	0.03	67.00%	0.07
675	1969/04/03 01:30:00	1969/04/03 04:30:00	7	0.03	67.10%	0.07
676	1969/06/17 08:30:00	1969/06/17 11:00:00	6	0.03	67.20%	0.07
677	1969/08/10 04:30:00	1969/08/10 07:00:00	6	0.03	67.30%	0.07
678	1969/09/06 23:30:00	1969/09/07 02:30:00	7	0.03	67.40%	0.07
679	1969/11/15 20:30:00	1969/11/16 01:30:00	11	0.03	67.50%	0.07
680	1969/12/26 09:30:00	1969/12/26 14:00:00	10	0.03	67.59%	0.07
681	1970/01/10 00:30:00	1970/01/10 05:00:00	10	0.03	67.69%	0.07
682	1971/05/03 08:30:00	1971/05/03 11:00:00	6	0.03	67.79%	0.07
683	1971/06/02 11:30:00	1971/06/02 14:00:00	6	0.03	67.89%	0.07
684	1971/06/05 13:30:00	1971/06/05 17:30:00	9	0.03	67.99%	0.07
685	1971/10/22 12:30:00	1971/10/22 17:00:00	10	0.03	68.09%	0.07
686	1971/10/30 09:30:00	1971/10/30 14:00:00	10	0.03	68.19%	0.07
687	1971/11/13 12:30:00	1971/11/13 16:30:00	9	0.03	68.29%	0.07
688	1971/11/15 15:30:00	1971/11/15 20:30:00	11	0.03	68.39%	0.07
689	1971/11/29 05:30:00	1971/11/29 09:30:00	9	0.03	68.49%	0.07
690	1971/12/02 23:30:00	1971/12/03 05:00:00	12	0.03	68.59%	0.07
691	1972/04/21 08:30:00	1972/04/21 11:30:00	7	0.03	68.69%	0.07
692	1972/06/07 03:30:00	1972/06/07 06:00:00	6	0.03	68.79%	0.07
693	1972/06/10 01:30:00	1972/06/10 04:00:00	6	0.03	68.89%	0.07
694	1972/06/22 12:30:00	1972/06/22 15:00:00	6	0.03	68.99%	0.07
695	1972/09/06 04:30:00	1972/09/06 07:30:00	7	0.03	69.09%	0.07
696	1972/09/06 20:30:00	1972/09/06 23:30:00	7	0.03	69.18%	0.07
697	1972/10/11 14:30:00	1972/10/11 17:30:00	7	0.03	69.28%	0.07

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
698	1972/10/17 08:30:00	1972/10/17 11:30:00	7	0.03	69.38%	0.06
699	1972/11/08 00:30:00	1972/11/08 04:30:00	9	0.03	69.48%	0.06
700	1973/01/25 20:30:00	1973/01/26 02:00:00	12	0.03	69.58%	0.06
701	1973/02/21 08:30:00	1973/02/21 13:30:00	11	0.03	69.68%	0.06
702	1973/04/21 09:30:00	1973/04/21 12:30:00	7	0.03	69.78%	0.06
703	1973/05/23 14:30:00	1973/05/23 17:00:00	6	0.03	69.88%	0.06
704	1973/05/28 09:30:00	1973/05/28 12:00:00	6	0.03	69.98%	0.06
705	1973/05/31 08:30:00	1973/05/31 11:00:00	6	0.03	70.08%	0.06
706	1973/12/16 14:30:00	1973/12/16 19:00:00	10	0.03	70.18%	0.06
707	1974/02/18 15:30:00	1974/02/18 19:30:00	9	0.03	70.28%	0.06
708	1974/02/19 18:30:00	1974/02/19 22:30:00	9	0.03	70.38%	0.06
709	1974/03/06 18:30:00	1974/03/06 23:00:00	10	0.03	70.48%	0.06
710	1974/06/08 11:30:00	1974/06/08 14:00:00	6	0.03	70.58%	0.06
711	1974/11/01 22:30:00	1974/11/02 03:30:00	11	0.03	70.68%	0.06
712	1975/02/14 04:30:00	1975/02/14 09:30:00	11	0.03	70.78%	0.06
713	1975/04/23 14:30:00	1975/04/23 17:30:00	7	0.03	70.87%	0.06
714	1975/05/20 01:30:00	1975/05/20 04:00:00	6	0.03	70.97%	0.06
715	1975/06/07 13:30:00	1975/06/07 16:00:00	6	0.03	71.07%	0.06
716	1975/10/28 21:30:00	1975/10/29 00:30:00	7	0.03	71.17%	0.06
717	1975/12/19 23:30:00	1975/12/20 05:00:00	12	0.03	71.27%	0.06
718	1976/04/04 08:30:00	1976/04/05 02:30:00	37	0.03	71.37%	0.06
719	1976/09/03 16:30:00	1976/09/03 19:30:00	7	0.03	71.47%	0.06
720	1976/09/14 10:30:00	1976/09/14 14:30:00	9	0.03	71.57%	0.06
721	1977/01/21 14:30:00	1977/01/21 20:00:00	12	0.03	71.67%	0.06
722	1977/04/02 00:30:00	1977/04/02 03:30:00	7	0.03	71.77%	0.06
723	1977/05/05 20:30:00	1977/05/05 23:00:00	6	0.03	71.87%	0.06
724	1977/08/12 10:30:00	1977/08/12 13:00:00	6	0.03	71.97%	0.06
725	1977/10/06 02:30:00	1977/10/06 05:30:00	7	0.03	72.07%	0.06
726	1977/11/06 01:30:00	1977/11/06 05:30:00	9	0.03	72.17%	0.06
727	1978/01/26 09:30:00	1978/01/26 15:00:00	12	0.03	72.27%	0.06
728	1978/04/02 16:30:00	1978/04/02 21:00:00	10	0.03	72.37%	0.06
729	1978/04/26 08:30:00	1978/04/26 11:30:00	7	0.03	72.47%	0.06
730	1978/05/01 10:30:00	1978/05/01 13:00:00	6	0.03	72.56%	0.06
731	1978/09/19 12:30:00	1978/09/19 15:30:00	7	0.03	72.66%	0.06
732	1979/01/29 08:30:00	1979/01/29 14:00:00	12	0.03	72.76%	0.06
733	1979/03/13 09:30:00	1979/03/13 13:00:00	8	0.03	72.86%	0.06
734	1979/03/15 21:30:00	1979/03/16 02:00:00	10	0.03	72.96%	0.06
735	1979/05/19 14:30:00	1979/05/19 17:00:00	6	0.03	73.06%	0.06
736	1979/08/13 14:30:00	1979/08/13 17:00:00	6	0.03	73.16%	0.06
737	1979/11/04 06:30:00	1979/11/04 10:30:00	9	0.03	73.26%	0.06
738	1979/11/05 13:30:00	1979/11/05 18:30:00	11	0.03	73.36%	0.06
739	1979/12/22 09:30:00	1979/12/22 14:00:00	10	0.03	73.46%	0.06
740	1980/04/21 03:30:00	1980/04/21 06:30:00	7	0.03	73.56%	0.06
741	1980/05/01 22:30:00	1980/05/02 03:00:00	10	0.03	73.66%	0.06
742	1980/10/26 09:30:00	1980/10/26 12:30:00	7	0.03	73.76%	0.06
743	1981/01/11 16:30:00	1981/01/11 21:00:00	10	0.03	73.86%	0.06
744	1981/03/14 01:30:00	1981/03/14 05:00:00	8	0.03	73.96%	0.06

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
745	1981/05/16 10:30:00	1981/05/16 13:00:00	6	0.03	74.06%	0.06
746	1981/05/27 00:30:00	1981/05/27 03:00:00	6	0.03	74.16%	0.06
747	1981/10/01 01:30:00	1981/10/01 04:30:00	7	0.03	74.25%	0.06
748	1981/10/28 22:30:00	1981/10/29 01:30:00	7	0.03	74.35%	0.06
749	1981/12/21 03:30:00	1981/12/21 08:00:00	10	0.03	74.45%	0.06
750	1982/02/05 13:30:00	1982/02/05 18:30:00	11	0.03	74.55%	0.06
751	1982/02/16 08:30:00	1982/02/16 13:30:00	11	0.03	74.65%	0.06
752	1982/03/12 13:30:00	1982/03/12 17:00:00	8	0.03	74.75%	0.06
753	1982/04/05 14:30:00	1982/04/05 19:00:00	10	0.03	74.85%	0.06
754	1982/05/11 07:30:00	1982/05/11 10:00:00	6	0.03	74.95%	0.06
755	1982/05/26 12:30:00	1982/05/26 15:00:00	6	0.03	75.05%	0.06
756	1982/09/16 12:30:00	1982/09/16 15:30:00	7	0.03	75.15%	0.06
757	1982/09/22 12:30:00	1982/09/22 15:30:00	7	0.03	75.25%	0.06
758	1982/10/26 09:30:00	1982/10/26 12:30:00	7	0.03	75.35%	0.06
759	1982/10/31 14:30:00	1982/10/31 17:30:00	7	0.03	75.45%	0.06
760	1983/03/15 09:30:00	1983/03/15 13:00:00	8	0.03	75.55%	0.06
761	1983/08/07 08:30:00	1983/08/07 11:00:00	6	0.03	75.65%	0.06
762	1983/11/18 01:30:00	1983/11/18 06:30:00	11	0.03	75.75%	0.06
763	1985/01/09 12:30:00	1985/01/09 17:00:00	10	0.03	75.84%	0.06
764	1985/03/12 10:30:00	1985/03/12 14:00:00	8	0.03	75.94%	0.06
765	1985/04/21 13:30:00	1985/04/22 04:30:00	31	0.03	76.04%	0.06
766	1986/08/18 05:30:00	1986/08/18 08:00:00	6	0.03	76.14%	0.06
767	1987/11/14 01:30:00	1987/11/14 07:30:00	13	0.03	76.24%	0.06
768	1987/11/20 15:30:00	1987/11/20 20:30:00	11	0.03	76.34%	0.06
769	1987/12/29 14:30:00	1987/12/30 09:30:00	39	0.03	76.44%	0.06
770	1989/02/02 09:30:00	1989/02/02 17:30:00	17	0.03	76.54%	0.06
771	1990/03/12 11:30:00	1990/03/12 23:00:00	24	0.03	76.64%	0.06
772	1990/03/28 17:30:00	1990/03/28 21:00:00	8	0.03	76.74%	0.06
773	1990/04/05 07:30:00	1990/04/05 15:30:00	17	0.03	76.84%	0.06
774	1990/08/05 23:30:00	1990/08/06 02:00:00	6	0.03	76.94%	0.06
775	1990/08/09 15:30:00	1990/08/09 18:00:00	6	0.03	77.04%	0.06
776	1991/07/31 10:30:00	1991/07/31 13:00:00	6	0.03	77.14%	0.06
777	1991/09/20 16:30:00	1991/09/20 20:30:00	9	0.03	77.24%	0.06
778	1991/12/09 22:30:00	1991/12/10 11:30:00	27	0.03	77.34%	0.06
779	1992/10/23 03:30:00	1992/10/23 09:30:00	13	0.03	77.44%	0.06
780	1992/12/11 16:30:00	1992/12/12 01:30:00	19	0.03	77.53%	0.06
781	1993/11/11 04:30:00	1993/11/12 21:00:00	82	0.03	77.63%	0.06
782	1995/01/27 11:30:00	1995/01/27 16:30:00	11	0.03	77.73%	0.06
783	1995/05/14 20:30:00	1995/05/15 04:00:00	16	0.03	77.83%	0.06
784	1995/12/13 03:30:00	1995/12/14 11:30:00	65	0.03	77.93%	0.06
785	1996/01/25 10:30:00	1996/01/25 23:30:00	27	0.03	78.03%	0.06
786	2002/01/28 02:30:00	2002/01/29 13:30:00	71	0.03	78.13%	0.06
787	2002/04/24 10:30:00	2002/04/24 16:00:00	12	0.03	78.23%	0.06
788	2003/12/07 20:30:00	2003/12/08 04:30:00	17	0.03	78.33%	0.06
789	2004/01/02 18:30:00	2004/01/03 05:30:00	23	0.03	78.43%	0.06
790	2006/02/17 22:30:00	2006/02/18 07:00:00	18	0.03	78.53%	0.06
791	2007/05/23 00:30:00	2007/05/23 04:00:00	8	0.03	78.63%	0.06

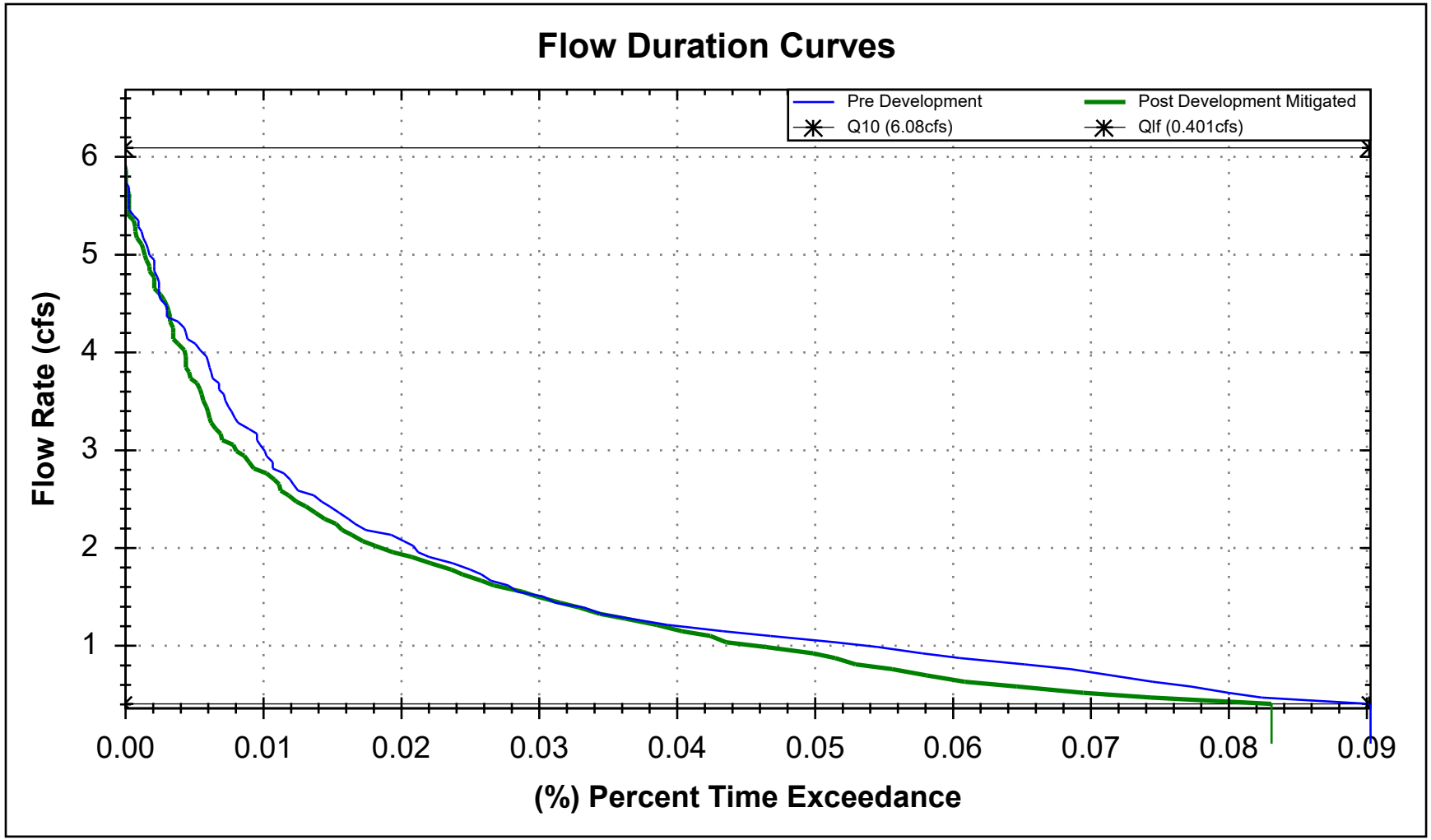
Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
792	2008/01/21 07:30:00	2008/01/21 14:00:00	14	0.03	78.73%	0.06
793	1965/03/13 05:30:00	1965/03/13 13:00:00	16	0.02	78.83%	0.06
794	1966/01/19 15:30:00	1966/01/20 04:30:00	27	0.02	78.93%	0.06
795	1984/11/13 09:30:00	1984/11/13 13:00:00	8	0.02	79.03%	0.06
796	1985/05/30 14:30:00	1985/05/30 18:00:00	8	0.02	79.13%	0.06
797	1985/10/21 23:30:00	1985/10/22 03:30:00	9	0.02	79.22%	0.06
798	1987/02/13 18:30:00	1987/02/14 04:00:00	20	0.02	79.32%	0.06
799	1987/05/20 07:30:00	1987/05/20 10:00:00	6	0.02	79.42%	0.06
800	1987/07/17 23:30:00	1987/07/18 02:00:00	6	0.02	79.52%	0.06
801	1987/10/07 08:30:00	1987/10/07 11:30:00	7	0.02	79.62%	0.06
802	1987/11/17 20:30:00	1987/11/18 04:00:00	16	0.02	79.72%	0.06
803	1989/03/02 18:30:00	1989/03/03 03:30:00	19	0.02	79.82%	0.06
804	1989/09/17 03:30:00	1989/09/17 18:00:00	30	0.02	79.92%	0.06
805	1989/11/26 07:30:00	1989/11/26 21:00:00	28	0.02	80.02%	0.06
806	1992/05/22 16:30:00	1992/05/22 21:00:00	10	0.02	80.12%	0.06
807	1992/10/21 15:30:00	1992/10/21 18:30:00	7	0.02	80.22%	0.06
808	1993/12/19 03:30:00	1993/12/19 12:30:00	19	0.02	80.32%	0.06
809	1994/04/24 03:30:00	1994/04/24 07:00:00	8	0.02	80.42%	0.06
810	1995/05/06 01:30:00	1995/05/06 12:00:00	22	0.02	80.52%	0.06
811	1996/11/29 01:30:00	1996/11/29 06:30:00	11	0.02	80.62%	0.06
812	1997/04/03 16:30:00	1997/04/03 19:30:00	7	0.02	80.72%	0.06
813	1998/03/15 10:30:00	1998/03/15 21:00:00	22	0.02	80.82%	0.06
814	2000/01/01 08:30:00	2000/01/01 23:30:00	31	0.02	80.91%	0.06
815	2000/02/11 08:30:00	2000/02/11 22:00:00	28	0.02	81.01%	0.06
816	2000/11/22 20:30:00	2000/11/23 00:00:00	8	0.02	81.11%	0.06
817	2001/01/28 02:30:00	2001/01/28 10:30:00	17	0.02	81.21%	0.06
818	2001/11/13 10:30:00	2001/11/13 21:30:00	23	0.02	81.31%	0.06
819	2002/03/16 05:30:00	2002/03/16 10:30:00	11	0.02	81.41%	0.06
820	2003/04/17 10:30:00	2003/04/17 21:30:00	23	0.02	81.51%	0.06
821	2005/01/26 21:30:00	2005/01/27 04:30:00	15	0.02	81.61%	0.06
822	2005/03/19 23:30:00	2005/03/20 09:00:00	20	0.02	81.71%	0.06
823	2007/02/11 11:30:00	2007/02/11 17:00:00	12	0.02	81.81%	0.06
824	2007/03/21 03:30:00	2007/03/21 12:30:00	19	0.02	81.91%	0.06
825	2007/10/13 02:30:00	2007/10/13 09:30:00	15	0.02	82.01%	0.06
826	2008/05/22 14:30:00	2008/05/22 17:00:00	6	0.02	82.11%	0.05
827	1965/03/07 00:30:00	1965/03/07 11:30:00	23	0.01	82.21%	0.05
828	1965/03/24 08:30:00	1965/03/24 19:30:00	23	0.01	82.31%	0.05
829	1985/06/02 21:30:00	1985/06/03 03:30:00	13	0.01	82.41%	0.05
830	1985/09/04 10:30:00	1985/09/04 14:00:00	8	0.01	82.50%	0.05
831	1986/07/22 13:30:00	1986/07/22 17:30:00	9	0.01	82.60%	0.05
832	1988/05/29 03:30:00	1988/05/29 09:00:00	12	0.01	82.70%	0.05
833	1988/11/23 21:30:00	1988/11/24 04:00:00	14	0.01	82.80%	0.05
834	1989/09/19 09:30:00	1989/09/19 13:00:00	8	0.01	82.90%	0.05
835	1991/12/11 05:30:00	1991/12/11 11:30:00	13	0.01	83.00%	0.05
836	1992/08/13 15:30:00	1992/08/13 19:00:00	8	0.01	83.10%	0.05
837	1992/10/28 22:30:00	1992/10/29 05:30:00	15	0.01	83.20%	0.05
838	1994/12/17 14:30:00	1994/12/17 19:30:00	11	0.01	83.30%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
839	1994/12/22 06:30:00	1994/12/23 00:30:00	37	0.01	83.40%	0.05
840	1995/04/07 09:30:00	1995/04/07 13:00:00	8	0.01	83.50%	0.05
841	1995/11/01 02:30:00	1995/11/01 11:00:00	18	0.01	83.60%	0.05
842	1998/01/15 14:30:00	1998/01/15 21:30:00	15	0.01	83.70%	0.05
843	1998/04/28 10:30:00	1998/04/28 20:30:00	21	0.01	83.80%	0.05
844	2000/01/25 11:30:00	2000/01/25 21:30:00	21	0.01	83.90%	0.05
845	2000/05/25 22:30:00	2000/05/26 02:00:00	8	0.01	84.00%	0.05
846	2000/10/10 07:30:00	2000/10/10 12:30:00	11	0.01	84.10%	0.05
847	2003/11/03 17:30:00	2003/11/04 02:00:00	18	0.01	84.19%	0.05
848	2004/01/19 07:30:00	2004/01/19 13:30:00	13	0.01	84.29%	0.05
849	2005/03/18 16:30:00	2005/03/19 09:30:00	35	0.01	84.39%	0.05
850	2006/03/25 23:30:00	2006/03/26 05:30:00	13	0.01	84.49%	0.05
851	2006/07/28 23:30:00	2006/07/29 06:30:00	15	0.01	84.59%	0.05
852	2006/12/11 00:30:00	2006/12/11 05:00:00	10	0.01	84.69%	0.05
853	2007/01/04 21:30:00	2007/01/05 05:30:00	17	0.01	84.79%	0.05
854	1964/11/26 11:30:00	1964/11/26 19:30:00	17	0	84.89%	0.05
855	1965/05/23 01:30:00	1965/05/23 16:00:00	30	0	84.99%	0.05
856	1965/05/24 06:30:00	1965/05/24 10:30:00	9	0	85.09%	0.05
857	1965/06/25 05:30:00	1965/06/25 09:00:00	8	0	85.19%	0.05
858	1965/09/05 17:30:00	1965/09/05 19:00:00	4	0	85.29%	0.05
859	1983/12/22 10:30:00	1983/12/22 14:30:00	9	0	85.39%	0.05
860	1984/10/17 07:30:00	1984/10/17 10:30:00	7	0	85.49%	0.05
861	1984/11/22 15:30:00	1984/11/22 19:00:00	8	0	85.59%	0.05
862	1984/11/24 15:30:00	1984/11/24 19:00:00	8	0	85.69%	0.05
863	1984/12/12 22:30:00	1984/12/13 02:30:00	9	0	85.79%	0.05
864	1985/07/18 15:30:00	1985/07/18 17:30:00	5	0	85.88%	0.05
865	1985/11/27 08:30:00	1985/11/27 13:00:00	10	0	85.98%	0.05
866	1985/12/09 15:30:00	1985/12/09 19:30:00	9	0	86.08%	0.05
867	1986/02/13 08:30:00	1986/02/13 12:00:00	8	0	86.18%	0.05
868	1986/02/18 21:30:00	1986/02/19 01:00:00	8	0	86.28%	0.05
869	1986/02/19 13:30:00	1986/02/19 17:00:00	8	0	86.38%	0.05
870	1986/05/22 09:30:00	1986/05/22 12:00:00	6	0	86.48%	0.05
871	1986/10/08 15:30:00	1986/10/08 18:30:00	7	0	86.58%	0.05
872	1986/10/11 06:30:00	1986/10/11 10:30:00	9	0	86.68%	0.05
873	1986/12/30 15:30:00	1986/12/30 19:30:00	9	0	86.78%	0.05
874	1987/02/01 00:30:00	1987/02/01 04:00:00	8	0	86.88%	0.05
875	1987/02/15 14:30:00	1987/02/15 18:00:00	8	0	86.98%	0.05
876	1987/03/06 11:30:00	1987/03/06 14:30:00	7	0	87.08%	0.05
877	1987/03/15 00:30:00	1987/03/15 03:30:00	7	0	87.18%	0.05
878	1987/03/21 15:30:00	1987/03/21 23:30:00	17	0	87.28%	0.05
879	1987/03/23 20:30:00	1987/03/23 23:30:00	7	0	87.38%	0.05
880	1987/05/01 00:30:00	1987/05/01 03:00:00	6	0	87.48%	0.05
881	1987/08/14 08:30:00	1987/08/14 10:30:00	5	0	87.57%	0.05
882	1987/09/01 00:30:00	1987/09/01 03:00:00	6	0	87.67%	0.05
883	1987/09/13 04:30:00	1987/09/13 07:00:00	6	0	87.77%	0.05
884	1987/10/24 07:30:00	1987/10/24 10:30:00	7	0	87.87%	0.05
885	1987/12/07 04:30:00	1987/12/07 08:30:00	9	0	87.97%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
886	1988/02/01 00:30:00	1988/02/01 04:00:00	8	0	88.07%	0.05
887	1988/04/16 04:30:00	1988/04/16 07:00:00	6	0	88.17%	0.05
888	1988/04/23 13:30:00	1988/04/23 16:00:00	6	0	88.27%	0.05
889	1988/05/05 21:30:00	1988/05/06 00:00:00	6	0	88.37%	0.05
890	1988/05/31 15:30:00	1988/05/31 18:00:00	6	0	88.47%	0.05
891	1988/12/27 23:30:00	1988/12/28 04:00:00	10	0	88.57%	0.05
892	1989/01/28 13:30:00	1989/01/28 17:30:00	9	0	88.67%	0.05
893	1989/03/08 19:30:00	1989/03/08 22:30:00	7	0	88.77%	0.05
894	1989/04/12 05:30:00	1989/04/12 08:00:00	6	0	88.87%	0.05
895	1989/04/26 02:30:00	1989/04/26 05:00:00	6	0	88.97%	0.05
896	1989/05/15 11:30:00	1989/05/15 14:00:00	6	0	89.07%	0.05
897	1989/10/25 19:30:00	1989/10/25 22:30:00	7	0	89.17%	0.05
898	1990/03/05 15:30:00	1990/03/05 18:30:00	7	0	89.26%	0.05
899	1990/04/16 20:30:00	1990/04/17 14:00:00	36	0	89.36%	0.05
900	1990/04/18 18:30:00	1990/04/18 21:00:00	6	0	89.46%	0.05
901	1990/04/19 18:30:00	1990/04/19 21:00:00	6	0	89.56%	0.05
902	1990/04/24 23:30:00	1990/04/25 02:00:00	6	0	89.66%	0.05
903	1990/05/29 04:30:00	1990/05/29 07:00:00	6	0	89.76%	0.05
904	1990/07/13 11:30:00	1990/07/13 13:30:00	5	0	89.86%	0.05
905	1990/12/15 21:30:00	1990/12/16 01:30:00	9	0	89.96%	0.05
906	1991/04/21 02:30:00	1991/04/21 05:00:00	6	0	90.06%	0.05
907	1991/11/29 18:30:00	1991/11/29 22:00:00	8	0	90.16%	0.05
908	1991/12/08 16:30:00	1991/12/08 20:30:00	9	0	90.26%	0.05
909	1992/03/06 17:30:00	1992/03/06 20:30:00	7	0	90.36%	0.05
910	1992/03/29 10:30:00	1992/03/29 13:30:00	7	0	90.46%	0.05
911	1992/04/01 12:30:00	1992/04/01 15:00:00	6	0	90.56%	0.05
912	1992/05/05 21:30:00	1992/05/06 00:00:00	6	0	90.66%	0.05
913	1992/11/20 15:30:00	1992/11/20 19:00:00	8	0	90.76%	0.05
914	1992/11/22 22:30:00	1992/11/23 02:00:00	8	0	90.85%	0.05
915	1993/02/22 05:30:00	1993/02/22 10:00:00	10	0	90.95%	0.05
916	1993/10/16 05:30:00	1993/10/16 08:30:00	7	0	91.05%	0.05
917	1994/02/11 06:30:00	1994/02/11 10:00:00	8	0	91.15%	0.05
918	1994/05/08 08:30:00	1994/05/08 11:00:00	6	0	91.25%	0.05
919	1994/05/15 01:30:00	1994/05/15 04:00:00	6	0	91.35%	0.05
920	1994/11/26 10:30:00	1994/11/26 14:00:00	8	0	91.45%	0.05
921	1994/12/13 05:30:00	1994/12/13 09:30:00	9	0	91.55%	0.05
922	1995/05/13 06:30:00	1995/05/13 14:00:00	16	0	91.65%	0.05
923	1995/05/23 12:30:00	1995/05/23 15:00:00	6	0	91.75%	0.05
924	1995/07/16 07:30:00	1995/07/16 09:30:00	5	0	91.85%	0.05
925	1995/10/01 00:30:00	1995/10/01 03:30:00	7	0	91.95%	0.05
926	1996/01/28 07:30:00	1996/01/28 11:30:00	9	0	92.05%	0.05
927	1996/05/24 14:30:00	1996/05/24 17:00:00	6	0	92.15%	0.05
928	1996/07/10 13:30:00	1996/07/10 15:30:00	5	0	92.25%	0.05
929	1996/07/19 09:30:00	1996/07/19 11:30:00	5	0	92.35%	0.05
930	1996/10/25 21:30:00	1996/10/26 00:30:00	7	0	92.45%	0.05
931	1997/02/17 17:30:00	1997/02/17 21:00:00	8	0	92.54%	0.05
932	1997/02/18 12:30:00	1997/02/18 16:00:00	8	0	92.64%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
933	1997/04/08 09:30:00	1997/04/08 12:00:00	6	0	92.74%	0.05
934	1997/05/24 06:30:00	1997/05/24 09:00:00	6	0	92.84%	0.05
935	1997/12/18 14:30:00	1997/12/18 21:00:00	14	0	92.94%	0.05
936	1997/12/22 16:30:00	1997/12/22 19:00:00	6	0	93.04%	0.05
937	1998/01/02 15:30:00	1998/01/02 20:00:00	10	0	93.14%	0.05
938	1998/01/16 15:30:00	1998/01/16 21:00:00	12	0	93.24%	0.05
939	1998/03/01 16:30:00	1998/03/01 18:30:00	5	0	93.34%	0.05
940	1998/04/02 16:30:00	1998/04/02 18:00:00	4	0	93.44%	0.05
941	1998/04/06 16:30:00	1998/04/06 18:00:00	4	0	93.54%	0.05
942	1998/04/07 14:30:00	1998/04/07 19:30:00	11	0	93.64%	0.05
943	1998/04/19 14:30:00	1998/04/19 19:30:00	11	0	93.74%	0.05
944	1998/05/06 15:30:00	1998/05/06 18:30:00	7	0	93.84%	0.05
945	1998/05/26 16:30:00	1998/05/26 18:00:00	4	0	93.94%	0.05
946	1998/06/12 16:30:00	1998/06/12 17:30:00	3	0	94.04%	0.05
947	2000/01/02 14:30:00	2000/01/02 20:30:00	13	0	94.14%	0.05
948	2000/01/17 16:30:00	2000/01/17 19:00:00	6	0	94.23%	0.05
949	2000/02/28 14:30:00	2000/02/28 20:00:00	12	0	94.33%	0.05
950	2000/04/14 21:30:00	2000/04/15 00:00:00	6	0	94.43%	0.05
951	2000/04/21 18:30:00	2000/04/22 07:00:00	26	0	94.53%	0.05
952	2000/09/23 01:30:00	2000/09/23 04:00:00	6	0	94.63%	0.05
953	2000/10/06 12:30:00	2000/10/06 15:30:00	7	0	94.73%	0.05
954	2000/10/11 08:30:00	2000/10/11 11:30:00	7	0	94.83%	0.05
955	2000/10/26 08:30:00	2000/10/26 11:30:00	7	0	94.93%	0.05
956	2000/10/27 01:30:00	2000/10/27 04:30:00	7	0	95.03%	0.05
957	2001/01/15 20:30:00	2001/01/16 00:30:00	9	0	95.13%	0.05
958	2001/08/20 14:30:00	2001/08/20 19:00:00	10	0	95.23%	0.05
959	2001/08/21 16:30:00	2001/08/21 18:00:00	4	0	95.33%	0.05
960	2001/11/04 15:30:00	2001/11/04 19:30:00	9	0	95.43%	0.05
961	2001/11/12 16:30:00	2001/11/12 18:30:00	5	0	95.53%	0.05
962	2001/12/15 16:30:00	2001/12/15 19:00:00	6	0	95.63%	0.05
963	2001/12/30 15:30:00	2001/12/30 20:00:00	10	0	95.73%	0.05
964	2002/01/03 16:30:00	2002/01/03 19:00:00	6	0	95.83%	0.05
965	2002/02/17 16:30:00	2002/02/17 18:30:00	5	0	95.92%	0.05
966	2002/02/18 15:30:00	2002/02/18 19:30:00	9	0	96.02%	0.05
967	2002/03/24 01:30:00	2002/03/24 06:30:00	11	0	96.12%	0.05
968	2002/04/15 08:30:00	2002/04/15 11:00:00	6	0	96.22%	0.05
969	2002/04/26 08:30:00	2002/04/26 11:00:00	6	0	96.32%	0.05
970	2002/05/20 22:30:00	2002/05/21 00:30:00	5	0	96.42%	0.05
971	2002/09/06 15:30:00	2002/09/06 18:30:00	7	0	96.52%	0.05
972	2002/12/29 15:30:00	2002/12/29 20:00:00	10	0	96.62%	0.05
973	2003/03/04 15:30:00	2003/03/04 19:00:00	8	0	96.72%	0.05
974	2003/03/17 16:30:00	2003/03/17 18:30:00	5	0	96.82%	0.05
975	2003/04/05 16:30:00	2003/04/05 18:00:00	4	0	96.92%	0.05
976	2003/05/07 16:30:00	2003/05/07 18:00:00	4	0	97.02%	0.05
977	2003/06/10 16:30:00	2003/06/10 17:30:00	3	0	97.12%	0.05
978	2003/06/11 16:30:00	2003/06/11 17:30:00	3	0	97.22%	0.05
979	2003/06/20 16:30:00	2003/06/20 17:30:00	3	0	97.32%	0.05

Rank	Start Date	End Date	Duration (hr)	Peak (cfs)	Frequency (%)	Return Period (Yr)
980	2003/07/30 06:30:00	2003/07/30 08:30:00	5	0	97.42%	0.05
981	2003/11/01 04:30:00	2003/11/01 08:00:00	8	0	97.51%	0.05
982	2003/12/11 16:30:00	2003/12/11 20:30:00	9	0	97.61%	0.05
983	2004/01/25 02:30:00	2004/01/25 06:30:00	9	0	97.71%	0.05
984	2004/01/31 06:30:00	2004/01/31 10:30:00	9	0	97.81%	0.05
985	2004/03/26 09:30:00	2004/03/26 12:30:00	7	0	97.91%	0.05
986	2004/11/12 11:30:00	2004/11/12 15:00:00	8	0	98.01%	0.05
987	2004/12/08 06:30:00	2004/12/08 10:30:00	9	0	98.11%	0.05
988	2005/01/26 01:30:00	2005/01/26 05:30:00	9	0	98.21%	0.05
989	2005/02/07 07:30:00	2005/02/07 11:00:00	8	0	98.31%	0.05
990	2005/03/24 14:30:00	2005/03/24 17:30:00	7	0	98.41%	0.05
991	2005/05/06 01:30:00	2005/05/06 04:00:00	6	0	98.51%	0.05
992	2005/07/23 04:30:00	2005/07/23 06:30:00	5	0	98.61%	0.05
993	2005/12/03 01:30:00	2005/12/03 05:30:00	9	0	98.71%	0.05
994	2006/03/03 16:30:00	2006/03/03 19:30:00	7	0	98.81%	0.05
995	2006/03/07 00:30:00	2006/03/07 03:30:00	7	0	98.91%	0.05
996	2006/03/20 03:30:00	2006/03/20 06:30:00	7	0	99.01%	0.05
997	2006/03/28 01:30:00	2006/03/28 04:30:00	7	0	99.11%	0.05
998	2006/04/23 05:30:00	2006/04/23 08:00:00	6	0	99.20%	0.05
999	2006/07/30 07:30:00	2006/07/30 09:30:00	5	0	99.30%	0.05
1000	2006/07/31 06:30:00	2006/07/31 08:30:00	5	0	99.40%	0.05
1001	2006/12/22 07:30:00	2006/12/22 11:30:00	9	0	99.50%	0.05
1002	2007/02/26 23:30:00	2007/02/27 03:00:00	8	0	99.60%	0.05
1003	2007/03/27 04:30:00	2007/03/27 18:30:00	29	0	99.70%	0.05
1004	2007/09/22 10:30:00	2007/09/22 13:00:00	6	0	99.80%	0.05
1005	2007/10/17 08:30:00	2007/10/17 11:30:00	7	0	99.90%	0.05
--End of Data----------						


Flow Duration Curves
Pre Development
Post Development Mitigated
Q10 (6.08cfs)
Qlf (0.401cfs)
Flow Rate (cfs)
6
5
4
3
2
1
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
(%) Percent Time Exceedance

Compare Post-Development Curve to Pre-Development Curve
Flow Control Upper Limit: 6.08 (cfs)
Flow Control Lower Limit: 0.401 (cfs)

post-development SWMM file: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 p
post-development time stamp: 5/17/2022 7:10:53 PM
Compared to:
pre-development SWMM file: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gravel-eric3-this one\21054 pr
pre-development time stamp: 5/17/2022 7:11:54 PM

Post PT #	Flow Rate (cfs)	Post Dev % Exceed	Pre Dev % Exceed	%Ex post < %Ex pre	%Ex post > %Ex pre	%Ex post > 110% %Ex pre	Pass/Fail
0	0.40	0.08	0.09	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
1	0.46	0.07	0.08	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
2	0.52	0.07	0.08	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
3	0.57	0.06	0.08	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
4	0.63	0.06	0.07	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
5	0.69	0.06	0.07	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
6	0.75	0.06	0.07	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
7	0.80	0.05	0.07	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
8	0.86	0.05	0.06	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
9	0.92	0.05	0.06	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
10	0.97	0.05	0.05	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
11	1.03	0.04	0.05	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
12	1.09	0.04	0.05	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
13	1.15	0.04	0.04	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
14	1.20	0.04	0.04	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
15	1.26	0.04	0.04	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
16	1.32	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
17	1.38	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
18	1.43	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
19	1.49	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
20	1.55	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
21	1.61	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
22	1.66	0.03	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
23	1.72	0.02	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
24	1.78	0.02	0.03	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
25	1.84	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
26	1.89	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
27	1.95	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
28	2.01	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
29	2.06	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration

Post PT #	Flow Rate (cfs)	Post Dev % Exceed	Pre Dev % Exceed	%Ex post < %Ex pre	%Ex post > %Ex pre	%Ex post > 110% %Ex pre	Pass/Fail
30	2.12	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
31	2.18	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
32	2.24	0.02	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
33	2.29	0.01	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
34	2.35	0.01	0.02	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
35	2.41	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
36	2.47	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
37	2.52	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
38	2.58	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
39	2.64	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
40	2.70	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
41	2.75	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
42	2.81	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
43	2.87	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
44	2.92	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
45	2.98	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
46	3.04	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
47	3.10	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
48	3.15	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
49	3.21	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
50	3.27	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
51	3.33	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
52	3.38	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
53	3.44	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
54	3.50	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
55	3.56	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
56	3.61	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
57	3.67	0.01	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
58	3.73	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
59	3.79	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
60	3.84	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
61	3.90	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
62	3.96	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
63	4.01	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
64	4.07	0.00	0.01	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
65	4.13	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
66	4.19	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
67	4.24	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
68	4.30	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
69	4.36	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration

Post PT #	Flow Rate (cfs)	Post Dev % Exceed	Pre Dev % Exceed	%Ex post < %Ex pre	%Ex post > %Ex pre	%Ex post > 110% %Ex pre	Pass/Fail
70	4.42	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
71	4.47	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
72	4.53	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
73	4.59	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
74	4.65	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
75	4.70	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
76	4.76	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
77	4.82	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
78	4.88	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
79	4.93	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
80	4.99	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
81	5.05	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
82	5.10	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
83	5.16	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
84	5.22	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
85	5.28	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
86	5.33	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
87	5.39	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
88	5.45	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
89	5.51	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
90	5.56	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
91	5.62	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
92	5.68	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
93	5.74	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
94	5.79	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
95	5.85	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
96	5.91	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
97	5.97	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
98	6.02	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration
99	6.08	0.00	0.00	TRUE	FALSE	FALSE	Pass: Post Duration <= Pre Duration

Duration Table Summary at Project Discharge Point

file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gr
time stamp: 5/17/2022 7:11:54 PM

DISCHARGE		Number of periods when discharge was equal to or greater than DISCHARGE column but less than that shown on the next line		
Bin Number	Discharge Rate (cfs)	Number of Periods	Total Periods Exceeding	Percent Time Exceeded
1	0.40	60	691	0.090
2	0.46	18	631	0.082
3	0.52	21	613	0.080
4	0.57	21	592	0.077
5	0.63	23	571	0.075
6	0.69	23	548	0.072
7	0.75	25	525	0.069
8	0.80	36	500	0.065
9	0.86	21	464	0.061
10	0.92	25	443	0.058
11	0.97	24	418	0.055
12	1.03	36	394	0.051
13	1.09	26	358	0.047
14	1.15	31	332	0.043
15	1.20	21	301	0.039
16	1.26	15	280	0.037
17	1.32	10	265	0.035
18	1.38	16	255	0.033
19	1.43	7	239	0.031
20	1.49	14	232	0.030
21	1.55	5	218	0.028
22	1.61	10	213	0.028
23	1.66	5	203	0.027
24	1.72	6	198	0.026
25	1.78	10	192	0.025
26	1.84	13	182	0.024
27	1.89	6	169	0.022
28	1.95	3	163	0.021
29	2.01	5	160	0.021
30	2.06	7	155	0.020
31	2.12	14	148	0.019
32	2.18	6	134	0.018
33	2.24	4	128	0.017
34	2.29	5	124	0.016
35	2.35	5	119	0.016
36	2.41	5	114	0.015
37	2.47	4	109	0.014
38	2.52	9	105	0.014
39	2.58	2	96	0.013
40	2.64	2	94	0.012
41	2.70	4	92	0.012
42	2.75	6	88	0.011
43	2.81	0	82	0.011
44	2.87	3	82	0.011
45	2.93	1	79	0.010
46	2.98	3	78	0.010
47	3.04	2	75	0.010
48	3.10	0	73	0.010
49	3.15	4	73	0.010
50	3.21	6	69	0.009
51	3.27	2	63	0.008

Bin Number	Discharge Rate (cfs)	Number of Periods	Total Periods Exceeding	Percent Time Exceeded
52	3.33	2	61	0.008
53	3.38	1	59	0.008
54	3.44	2	58	0.008
55	3.50	1	56	0.007
56	3.56	3	55	0.007
57	3.61	0	52	0.007
58	3.67	3	52	0.007
59	3.73	1	49	0.006
60	3.79	1	48	0.006
61	3.84	1	47	0.006
62	3.90	1	46	0.006
63	3.96	3	45	0.006
64	4.01	3	42	0.005
65	4.07	4	39	0.005
66	4.13	1	35	0.005
67	4.19	1	34	0.004
68	4.24	3	33	0.004
69	4.30	7	30	0.004
70	4.36	0	23	0.003
71	4.42	0	23	0.003
72	4.47	3	23	0.003
73	4.53	1	20	0.003
74	4.59	0	19	0.002
75	4.65	0	19	0.002
76	4.70	1	19	0.002
77	4.76	2	18	0.002
78	4.82	0	16	0.002
79	4.88	0	16	0.002
80	4.93	2	16	0.002
81	4.99	1	14	0.002
82	5.05	1	13	0.002
83	5.10	2	12	0.002
84	5.16	1	10	0.001
85	5.22	1	9	0.001
86	5.28	0	8	0.001
87	5.33	3	8	0.001
88	5.39	3	5	0.001
89	5.45	0	2	0.000
90	5.51	0	2	0.000
91	5.56	0	2	0.000
92	5.62	0	2	0.000
93	5.68	1	2	0.000
94	5.74	0	1	0.000
95	5.79	0	1	0.000
96	5.85	0	1	0.000
97	5.91	1	1	0.000
98	5.97	0	0	0.000
99	6.02	0	0	0.000
100	6.08	0	0	0.000
---------End of Data----------				

Duration Table Summary at Project Discharge Point

file name: V:\21\21054\Engineering\TM\TM 01\Storm\SWMM\SWMM Working Folder\adjusted n pervious 2 w bmp b storage\current - 60" gr
time stamp: 5/17/2022 7:10:53 PM

DISCHARGE		Number of periods when discharge was equal to or greater than DISCHARGE column but less than that shown on the next line		
Bin Number	Discharge Rate (cfs)	Number of Periods	Total Periods Exceeding	Percent Time Exceeded
1	0.40	66	636	0.083
2	0.46	38	570	0.074
3	0.52	37	532	0.069
4	0.57	29	495	0.065
5	0.63	21	466	0.061
6	0.69	19	445	0.058
7	0.75	20	426	0.056
8	0.80	12	406	0.053
9	0.86	12	394	0.051
10	0.92	26	382	0.050
11	0.97	22	356	0.047
12	1.03	9	334	0.044
13	1.09	16	325	0.042
14	1.15	14	309	0.040
15	1.20	17	295	0.039
16	1.26	14	278	0.036
17	1.32	12	264	0.034
18	1.38	10	252	0.033
19	1.43	13	242	0.032
20	1.49	8	229	0.030
21	1.55	16	221	0.029
22	1.61	7	205	0.027
23	1.66	11	198	0.026
24	1.72	6	187	0.024
25	1.78	11	181	0.024
26	1.84	11	170	0.022
27	1.89	10	159	0.021
28	1.95	10	149	0.019
29	2.01	7	139	0.018
30	2.06	6	132	0.017
31	2.12	5	126	0.016
32	2.18	4	121	0.016
33	2.24	6	117	0.015
34	2.29	5	111	0.015
35	2.35	5	106	0.014
36	2.41	6	101	0.013
37	2.47	4	95	0.012
38	2.52	4	91	0.012
39	2.58	1	87	0.011
40	2.64	3	86	0.011
41	2.70	4	83	0.011
42	2.75	7	79	0.010
43	2.81	3	72	0.009
44	2.87	3	69	0.009
45	2.93	4	66	0.009
46	2.98	2	62	0.008
47	3.04	6	60	0.008
48	3.10	1	54	0.007
49	3.15	2	53	0.007
50	3.21	3	51	0.007
51	3.27	1	48	0.006

Bin Number	Discharge Rate (cfs)	Number of Periods	Total Periods Exceeding	Percent Time Exceeded
52	3.33	1	47	0.006
53	3.38	1	46	0.006
54	3.44	1	45	0.006
55	3.50	1	44	0.006
56	3.56	1	43	0.006
57	3.61	2	42	0.005
58	3.67	3	40	0.005
59	3.73	1	37	0.005
60	3.79	2	36	0.005
61	3.84	0	34	0.004
62	3.90	0	34	0.004
63	3.96	1	34	0.004
64	4.01	3	33	0.004
65	4.07	3	30	0.004
66	4.13	0	27	0.004
67	4.19	0	27	0.004
68	4.24	2	27	0.004
69	4.30	0	25	0.003
70	4.36	1	25	0.003
71	4.42	1	24	0.003
72	4.47	1	23	0.003
73	4.53	2	22	0.003
74	4.59	4	20	0.003
75	4.65	0	16	0.002
76	4.70	0	16	0.002
77	4.76	2	16	0.002
78	4.82	0	14	0.002
79	4.88	2	14	0.002
80	4.93	1	12	0.002
81	4.99	1	11	0.001
82	5.05	1	10	0.001
83	5.10	2	9	0.001
84	5.16	1	7	0.001
85	5.22	0	6	0.001
86	5.28	1	6	0.001
87	5.33	3	5	0.001
88	5.39	0	2	0.000
89	5.45	0	2	0.000
90	5.51	0	2	0.000
91	5.56	0	2	0.000
92	5.62	1	2	0.000
93	5.68	0	1	0.000
94	5.74	0	1	0.000
95	5.79	0	1	0.000
96	5.85	1	1	0.000
97	5.91	0	0	0.000
98	5.97	0	0	0.000
99	6.02	0	0	0.000
100	6.08	0	0	0.000
---------End of Data----------				

END OF STATISTICS ANALYSIS

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 Thresholds and Actions (Required)	☑ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☑ Not Applicable

BF-1
Biofiltration

BMP MAINTENANCE FACT SHEET
FOR
STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by 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.

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, **routine maintenance is key to preventing this scenario**.

BF-1
Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION		
The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district. Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	• Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	• Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	• Inspect annually. • Maintenance when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Overgrown vegetation	Mow or trim as appropriate.	• Inspect monthly. • Maintenance when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	• Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection.

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page)		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	• Inspect monthly. • Maintenance when needed.
Erosion due to concentrated storm water runoff flow	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.	• Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. 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.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water. If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Underdrain clogged	Clear blockage.	• Inspect if standing water is observed for longer than 24-96 hours following a storm event. • Maintenance when needed.

References

American Mosquito Control Association.
http://www.mosquito.org/
California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.
https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook
County of San Diego. 2014. Low Impact Development Handbook.
http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html
San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet BF-1.
http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

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BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-A
Permit No.: DSM21-0004	APN(s): 182-131-14-00	
Property / Development Name:	Responsible Party Name and Phone Number:	
Property Address of BMP:	Responsible Party Address:	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

Date:	Inspector:	BMP ID No.: BMP-A
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

Date:	Inspector:	BMP ID No.: BMP-A
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ 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 ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-A
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-A
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-B
Permit No.: DSM21-0004	APN(s): 182-131-14-00	
Property / Development Name:	Responsible Party Name and Phone Number:	
Property Address of BMP:	Responsible Party Address:	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-B
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-B
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ 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 ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-B
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.: BMP-B
Permit No.: DSM21-0004	APN(s): 182-131-14-00	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

If These Sources Will Be on the Project Site …	… Then Your SWQMP Must 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. See stencil template provided in Appendix I-4	☑ 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook. ☑ 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 must 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 must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook. ☑ Provide IPM information to new owners, lessees and operators.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook.
☐ **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. All cleaning for restaurant facility will be done indoors. Indoor kitchen area is connected to grease interceptor.	☐ 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 must consider These Source Control BMPs		
1 **Potential Sources of**	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 must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must 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-Storm Water Discharges" in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks.
☐ **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 must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must 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 must 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 must 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 must 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 must be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility must discharge to the sanitary sewer, or a wastewater reclamation system must 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 must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must 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 must 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 must 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 must 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 must be contained or drained from the vehicle immediately. ☐ No person must 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 must 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[16] must 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 must 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] must not drain onto the fueling area.		☐ The property owner must dry sweep the fueling area routinely. See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks.

[16] The fueling area must 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 must consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on Drawings**	**3** **Permanent Controls—List in**	**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 must be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts must 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 must be equipped with a spill control valve or equivalent device, which must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must 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 Storm Water Quality Handbooks at www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook
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 must 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 must be roofed and/or have secondary containment. ☐ Any drainage sumps onsite must 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 must 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 must be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing must be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser must be collected and discharged to the sanitary sewer and not discharged to a storm drain.

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

☑ **Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

☑ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

☐ I **Final Design level submittal:**

Attachment 3a must identify:

☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)

☐ I How to access the structural BMP(s) to inspect and perform maintenance

☐ I 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 private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the [City Engineer] to obtain the current maintenance agreement forms).

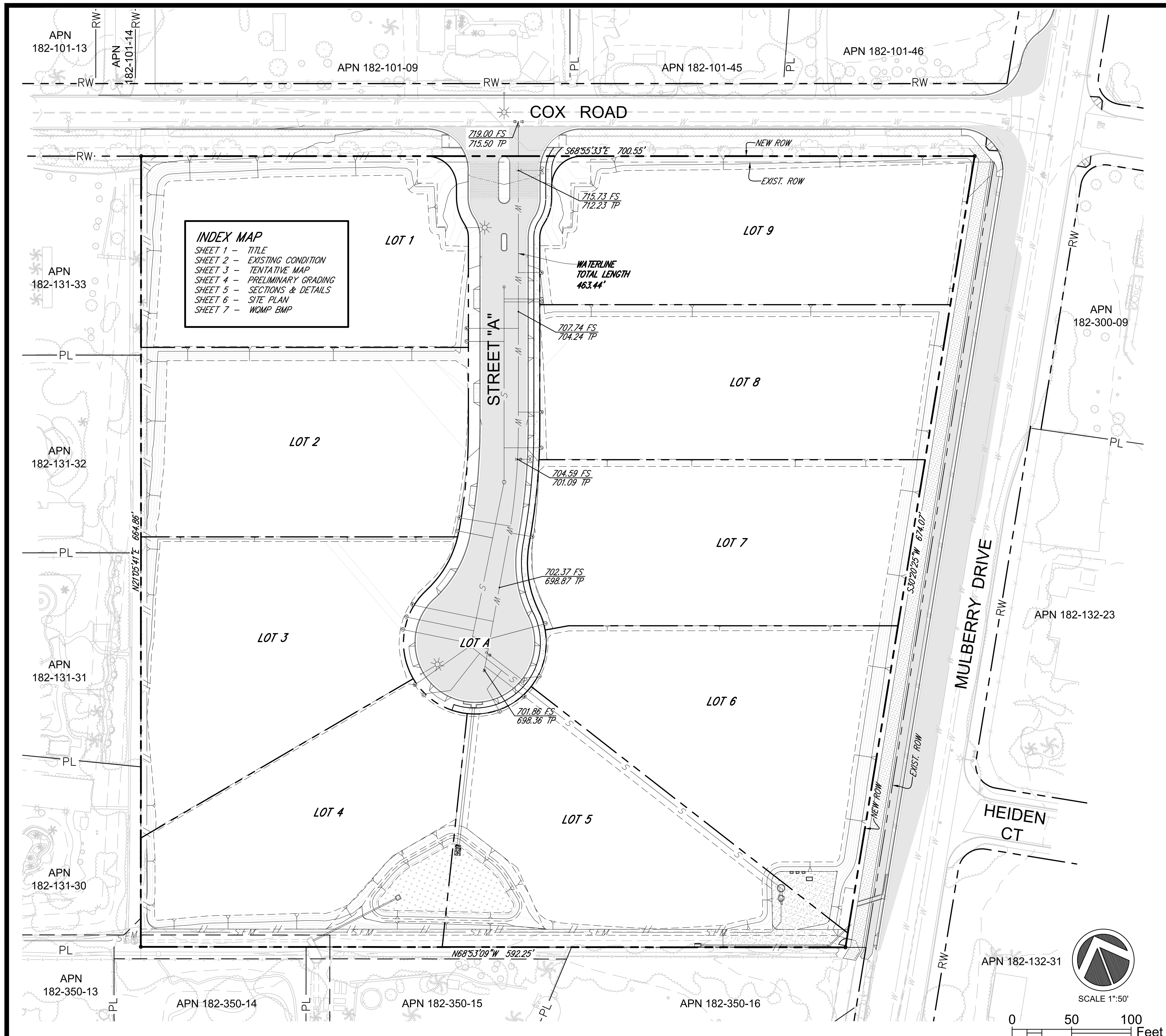
ATTACHMENT 4
Copy of Plan Sheets Showing Permanent Storm Water BMPs

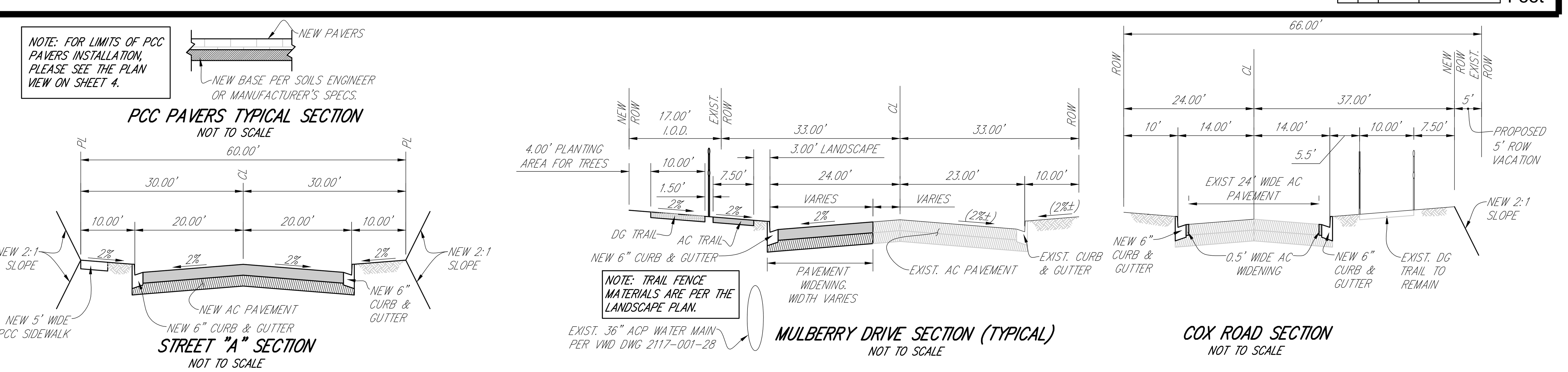
This is the cover sheet for Attachment 4.

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 Form I-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 the City Engineer
- ☑ 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 shall be provided. Photocopies of general brochures are not acceptable.





OWNER'S CERTIFICATE

I (WE) HEREBY CERTIFY THAT I (WE) AM (ARE) THE RECORD OWNER(S) OF THE PROPERTY SHOWN ON THE TENTATIVE SUBDIVISION MAP AND THAT SAID MAP SHOWS MY (OUR) ENTIRE CONTIGUOUS OWNERSHIP (EXCLUDING SUBDIVISION LOTS). I (WE) UNDERSTAND THAT PROPERTY IS CONSIDERED AS CONTIGUOUS EVEN IF IT IS SEPARATED BY ROAD, STREET, UTILITY EASEMENTS OR RAILROAD RIGHT-OF-WAY.

OWNER'S NAME
COX FAMILY TRUST & CAROLE ANN COX WALLACE TRUST

APPLICANT'S NAME
MANNING HOMES
20151 SW BIRCH STREET, SUITE 150
NEWPORT BEACH, CA 92660

OWNER DATE: APPLICANT DATE:

DATE PREPARED
OCTOBER 2021

SURVEYOR OF WORK
EXCEL ENGINEERING
440 STATE PLACE ESCONDIDO, CA 92029 (760) 745-8118

MICHAEL D. LEVIN PLS# 6896

LICENSED LAND SURVEYOR Michael D. Levin No. 6896 STATE OF CALIFORNIA

ENGINEER OF WORK
EXCEL ENGINEERING
440 STATE PLACE ESCONDIDO, CA 92029 (760) 745-8118

ROBERT D. DENTINO RCE# 45629

REGISTERED PROFESSIONAL ENGINEER ROBERT D. DENTINO No. 45629 CIVIL STATE OF CALIFORNIA

ASSESSOR'S PARCEL NO.
182-131-14-00

LAND AREA
10.05 ACRES

ZONING
EXISTING: A-1 AGRICULTURAL
PROPOSE: A-1 AGRICULTURAL

SITE ADDRESS
SW CORNER OF COX ROAD & MULBERRY DR, SAN MARCOS, CA 92069

LOT INFORMATION
EXISTING: 1 LOT
PROPOSED: 9 SINGLE FAMILY RESIDENTIAL LOTS & 1 HOA LOT (PRIVATE STREET – LOT A)

OVERHEAD LINES STATEMENT
OVERHEAD LINES ALONG MULBERRY ARE REQUIRED TO BE UNDERGROUNDED AS PART OF THIS PROJECT. EXISTING INFRASTRUCTURE AFFECTED BY THIS PROJECT ARE TO BE UNDERGROUNDED AS NEEDED.

EARTHWORK STATEMENT
PRISMOIDAL METHOD WAS USEDTO CALCULATE THE EARTHWORK VOLUME SHOWN HERE. SEE TABLE BELOW FOR DETAILS. THE GRADING PROPOSED FOR THIS PROJECT IS AS SHOWN ON SHEETS 4 OF THIS PLAN SET.

CUT = 19,000 CY
FILL = 19,000 CY
IMPORT = 0 CY

EARTHWORK CALCULATION DETAIL

LINE ID	ITEM DESCRIPTION	AREA (SF)	SECTION/LENGTH (FT)	VOL (CY)	ROUNDED
1	RAW CUT			16503.59	16,510.00
2	STREET A	24,852.06	1.08	997.15	1,000.00
3	MULBERRY WIDENING	14,877.86	0.75	413.27	420.00
4	WQ BIO BASIN A (4 FT DEEP)	4,253.24	5.00	787.64	790.00
5	WQ BIO BASIN B (4 FT DEEP)	1,504.46	5.00	278.60	280.00
6	TOTAL CUT			18,980.26	19,000.00
7					
8	RAW FILL			16,815.08	16,820.00
9	SHRINKAGE FROM SOILS ENGINER PG 11, 5% TO 15% (APPLIED TO RAW CUT)	16,503.59	0.15	2,475.54	2,480.00
10	TOTAL FILL			19,290.62	19,300.00
11	IMPORT (EXPECTED TO BE GENERATED FROM FOUNDATIONS & THE USE OF EXISTING ON-SITE MATERIALS)			-310.36	-300.00
12	FOR PERMITTING PURPOSES, SAY EARTHWORK IS BALANCE AT (CY)	19,000.00			

FIRE DISTRICT
CITY OF SAN MARCOS

SCHOOL DISTRICT
SAN MARCOS UNIFIED

SEWER DISTRICT
VALLECITOS WATER DISTRICT

WATER DISTRICT
VALLECITOS WATER DISTRICT

LEGAL ACCESS
COX ROAD & MULBERRY DRIVE

FEMA ZONE
AS SHOWN ON FEMA PANEL 792 OF 2375; MAP 06073C0792G, DATED MAY 16, 2012, THIS PROJECT IS IN ZONE X – "AREA OF MINIMAL FLOOD HAZARD".

WQTR / HYDROLOGY STUDY
STUDY BY EXCEL ENGINEERING & DATED OCTOBER 2021

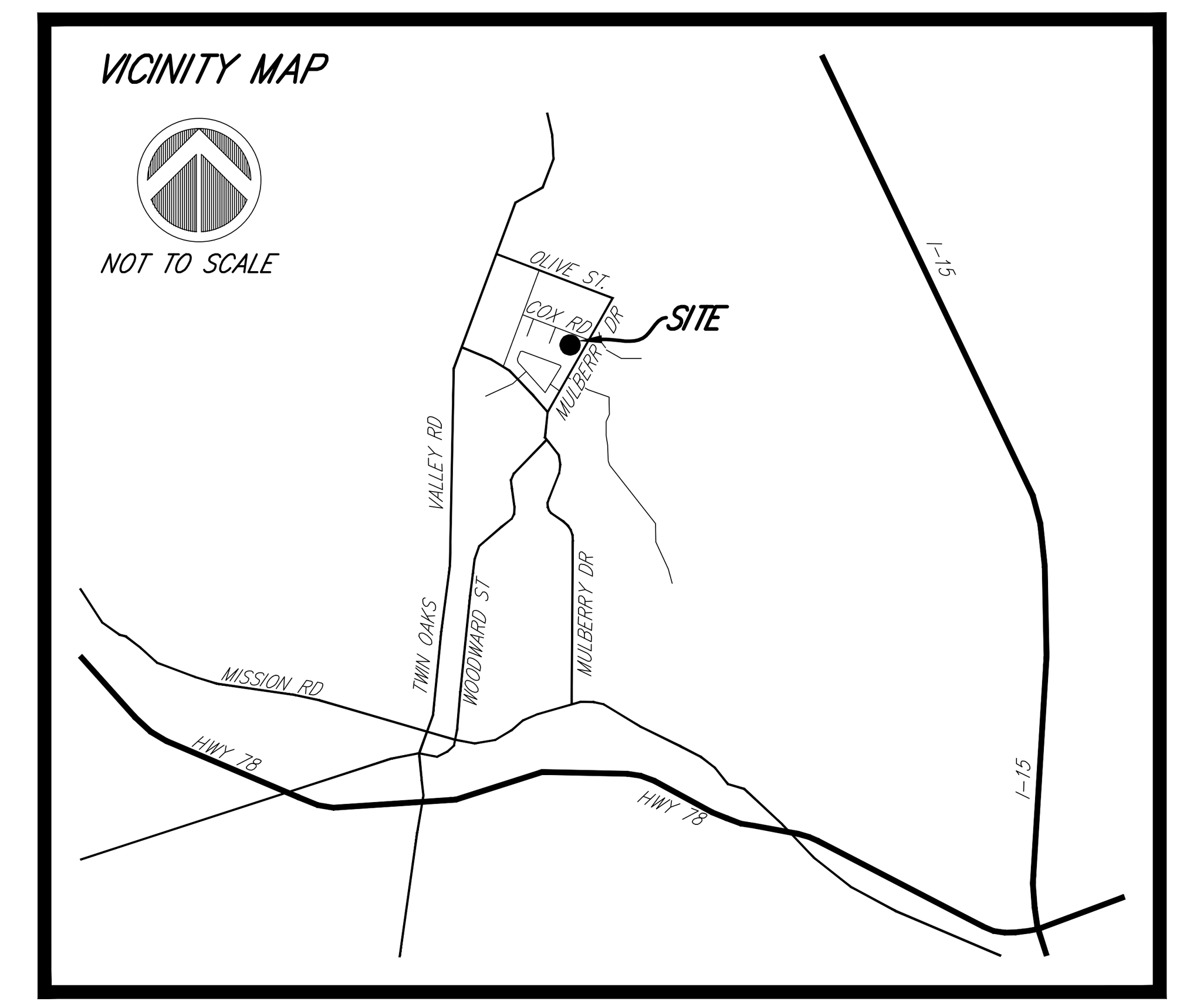
LEGAL DESCRIPTION
LOT 5 AND THE SOUTHEASTERLY 70.05 FEET OF LOT 4, BLOCK 33, OF RANCHO LOS VALLECITOS DE SAN MARCOS, IN THE CITY OF SAN MARCOS, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 806, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, DECEMBER 21, 1895.

PROJECT BENCHMARK
THE BENCHMARK FOR THIS PROJECT IS THE CITY OF SAN MARCOS "CP-007", BEING A 2" BRASS DISK STAMPED "CITY OF SAN MARCOS SURVEY CONTROL NV5 LS6310 2018 CP-007", LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF NORTH TWIN OAKS VALLEY ROAD AND LA CIENEGA ROAD, SET FLUSH WITH BACK OF SIDEWALK PER ROS 23721.

ELEVATION: 677.98 DATUM: NAVD88

BASIS OF BEARINGS
THE BASIS OF BEARINGS FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83), ZONE VI, (EPOCH 2017.50) AS DETERMINED LOCALLY BETWEEN CITY OF SAN MARCOS CONTROL POINTS "CP-007" AND "CP-004", BEING NORTH 37° 31' 48" WEST PER ROS 23721.

SOURCE OF TOPOGRAPHY
THE EXISTING TOPOGRAPHY SHOWN HEREON IS FROM AN AERIAL TOPOGRAPHY FLOWN BY AEROTECH MAPPING, INC (DATE FLOWN: 08/26/2021), AND SUPPLEMENTAL FIELD DATA SURVEYED BY EXCEL ENGINEERING. DATES OF FIELD SURVEY 08/24/2021 & 09/03/2021.



DATE	REMARKS
12/2021	PLANNING SUBMITTAL

EXCEL ENGINEERING
LAND PLANNING • ENGINEERING • GIS • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029

SHEET 1 OF 7 SHEETS
TITLE

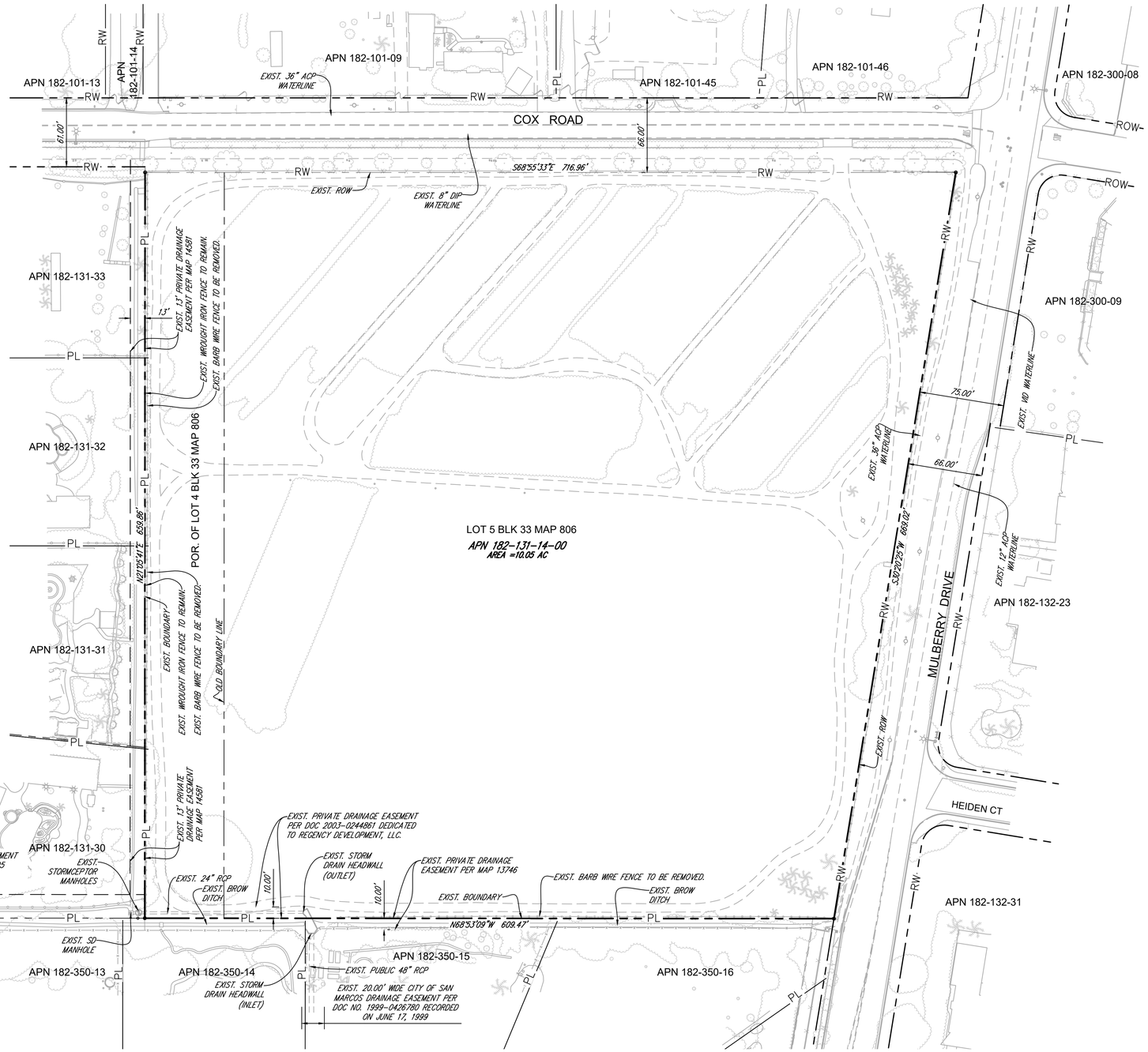
MANNING HOMES
APN 182-131-14-00
COX ROAD / MULBERRY DR, SAN MARCOS CA
TSM21-0004

TSM21-0004

NON-PLOTABLE EASEMENT NOTE

AN EASEMENT FOR PUBLIC UTILITIES & INCIDENTAL PURPOSES GRANTED TO SDG&E & RECORDED IN BOOK 1109, PAGE 335 OF DEEDS EXIST BUT IS NOT PLOTABLE.

THE CITY WILL REQUIRE PRIOR TO GRADING PERMIT ISSUANCE A QUITCLAIM LETTER FROM SDG&E.



SCALE 1":50'

0 50 100 Feet

	DATE	REMARKS
	12/2021	PLANNING SUBMITTAL

EXCEL ENGINEERING
LAND PLANNING • ENGINEERING • CIVIL SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760)745-8118 FX (760)745-8334

SHEET 2 OF 7 SHEETS

EXISTING CONDITION

MANNING HOMES

APN 182-131-14-00

COX ROAD / MULBERRY DR, SAN MARCOS CA

TSM21-0004


TSM21-0004
COX ROAD
MULBERRY DRIVE
HEIDEN CT
STREET "A" (PRIVATE)
APN 182-101-13
APN 182-101-14
APN 182-101-09
APN 182-101-45
APN 182-101-46
APN 182-300-08
APN 182-300-09
APN 182-131-33
APN 182-131-32
APN 182-131-31
APN 182-131-30
APN 182-132-23
APN 182-132-31
APN 182-350-13
APN 182-350-14
APN 182-350-15
APN 182-350-16
LOT 1 GROSS/NET AREA =1.00 AC =43562.25 SF
LOT 2 GROSS/NET AREA =1.00 AC =43569.48 SF
LOT 3 GROSS/NET AREA =1.00 AC =43580.61 SF
LOT 4 GROSS/NET AREA =1.00 AC =43581.72 SF
LOT 5 GROSS/NET AREA =1.00 AC =43673.94 SF
LOT 6 GROSS/NET AREA =1.06 AC =46099.03 SF
LOT 7 GROSS/NET AREA =1.02 AC =44395.74 SF
LOT 8 GROSS/NET AREA =1.00 AC =43586.42 SF
LOT 9 GROSS/NET AREA =1.00 AC =43699.03 SF
LOT A GROSS/NET AREA =0.78 AC
H.O.A.
H.O.A. PRIVATE ROAD & PUBLIC UTILITY EASEMENT. THE PUBLIC UTILITY EASEMENT WILL BE FINALIZED IN THE FINAL MAP.
HATCH DENOTES AREA WHERE PROJECT RELINQUISHED ACCESS RIGHTS (TYP).
5' ROW VACATION
EXIST. 13' PRIVATE DRAINAGE EASEMENT PER MAP 14581
10' HOA PRIVATE SEWER EASEMENT
10' HOA PRIVATE DRAINAGE EASEMENT
HOA WATER QUALITY EASEMENT
HOA PRIVATE SEWER EASEMENT
EXIST. PRIVATE DRAINAGE EASEMENT PER DOC 2003-0244861
EXIST. PRIVATE DRAINAGE EASEMENT PER MAP 14581
PROPOSED 10' PUBLIC DRAINAGE EASEMENT
PROPOSED PUBLIC DRAINAGE EASEMENT
EXIST. 10' SEWER EASEMENT PER DOC 2021-0672595
EXIST. PRIVATE DRAINAGE EASEMENT PER MAP 13746
15' HOA PRIVATE SEWER & DRAINAGE EASEMENT
EXIST. 20.00' WIDE CITY OF SAN MARCOS DRAINAGE EASEMENT PER DOC NO. 1999-0426780 RECORDED ON JUNE 17, 1999
FOR STREET SECTIONS SEE SHEET 5.
NOTE: ALL PRIVATE EASEMENTS & LOT "A" WILL BE GRANTED TO THE HOMEOWNERS' ASSOCIATION (H.O.A.)
SCALE 1":40'
SHEET 3 OF 7 SHEETS
TENTATIVE MAP
DATE 12/2021 REMARKS PLANNING SUBMITTAL
EXCEL ENGINEERING
MANNING HOMES
APN 182-131-14-00
COX ROAD / MULBERRY DR, SAN MARCOS CA
TSM21-0004

TSM21-0004

CONSTRUCTION NOTES

SURFACE IMPROVEMENTS

SI-01	AC PAVEMENT
SI-02	PCC DECORATIVE PAVEMENT
SI-03	6" PCC CURB & GUTTER
SI-04	6" AC BERM
SI-05	PCC RAMP. SEE SHEET 5 FOR DETAILS.
SI-06	DG & AC TRAIL PER CITY STANDARDS
SI-07	5' WIDE PCC SIDEWALK
SI-08	8' WIDE PCC DRIVEWAY FOR MAINTENANCE ACCESS. SEE SHEET 5
SI-09	INSTALL STREET LIGHT PER CITY STANDARD
SI-10	INSTALL SOLAR SPEED FEEDBACK SIGN. LOCATION & SPECS WILL BE FINALIZED ON THE CONSTRUCTION DOCUMENT.

UTILITY IMPROVEMENTS

UT-01	WATERLINE MAIN
UT-02	FIRE HYDRANT
UT-03	6" PVC PRIVATE SEWER MAIN
UT-04	PRIVATE SEWER MANHOLE/CLEANOUT
UT-05	PRIVATE DUPLEX SEWAGE LIFT STATION
UT-06	PRIVATE SEWER FORCE MAIN

STORM DRAIN / WATER QUALITY IMPROVEMENTS

SD-01	STORM DRAIN INLET
SD-02	STORM DRAIN BOX/CLEANOUT
SD-03	STORM DRAIN PIPE
SD-04	WATER QUALITY BASIN. SEE DETAILS ON SHEET 7
SD-05	WATER QUALITY OUTLET CONTROL STRUCTURE. SEE DETAILS ON SHEET 7
SD-06	REVERSE CURB OUTLET
SD-07	RIPRAP

FOR STREET SECTIONS SEE SHEET 1

PLEASE SEE SHEET 5 FOR SECTION PROFILE VIEWS

PLEASE SEE SHEET 5 FOR SEWER FORCE MAIN PROFILE

SCALE 1":40'

0 40 80 Feet

MATCHLINE – SEE BELOW RIGHT FOR CONTINUATION

MATCHLINE – SEE ABOVE LEFT FOR CONTINUATION

PLEASE SEE SHEET 6 FOR TYPICAL LOT DRAINAGE DETAIL

APN 182-101-13
APN 182-101-09
APN 182-101-45
APN 182-101-46
APN 182-300-08
APN 182-300-09
APN 182-131-33
APN 182-131-32
APN 182-131-31
APN 182-131-30
APN 182-350-13
APN 182-350-14
APN 182-350-15
APN 182-350-16
APN 182-132-23
APN 182-132-31

COX ROAD
MULBERRY DRIVE
HEIDEN CT

LOT 1 GROSS/NET AREA =1.00 AC =43562.25 SF PAD = 712.00
LOT 2 GROSS/NET AREA =1.00 AC =43569.48 SF PAD = 706.00
LOT 3 GROSS/NET AREA =1.00 AC =43580.61 SF PAD = 704.00
LOT 4 GROSS/NET AREA =1.00 AC =43581.72 SF PAD = 703.00
LOT 5 GROSS/NET AREA =1.00 AC =43673.94 SF PAD = 703.00
LOT 6 GROSS/NET AREA =1.06 AC =46099.03 SF PAD = 703.00
LOT 7 GROSS/NET AREA =1.02 AC =44395.74 SF PAD = 705.00
LOT 8 GROSS/NET AREA =1.00 AC =43586.42 SF PAD = 708.00
LOT 9 GROSS/NET AREA =1.00 AC =43699.03 SF PAD = 713.00
LOT A GROSS/NET AREA =0.78 AC

NEW ROW
EXIST. ROW
EXIST. CURB OUTLET TO REMAIN
EXIST. DG TRAIL TO REMAIN
REMOVE EXIST. DRIVEWAY & REPLACED WITH LANDSCAPING & MATCH EXISTING TRAIL.
MEET & MATCH EXIST. START WIDENING & NEW CURB & GUTTER
END NEW PCC CURB & GUTTER @ ECR. BEGIN AC BERM.
EXIST. 36" ACP WATERLINE
EXIST. 8" DIP WATERLINE
CONNECTION POINT. CONNECT NEW WATERMAIN TO EXIST 8" WATERMAIN
EXIST. 12" ACP WATERLINE
EXIST. MID WATERLINE
BLDG SETBACK (TYP)
PROPOSED GATED ENTRY
END OF SIDEWALK
10' HOA PRIVATE DRAINAGE EASEMENT
15' HOA PRIVATE SEWER EASEMENT
EXIST. 13' PRIVATE DRAINAGE EASEMENT PER MAP 14581
EXIST. 10' SEWER EASEMENT PER DOC 2021-0672595
EXIST. PRIVATE DRAINAGE EASEMENT PER DOC 2003-0244861
EXIST. PRIVATE DRAINAGE EASEMENT PER MAP 13746
EXIST. PUBLIC 48" RCP
EXIST. 20.00' WIDE CITY OF SAN MARCOS DRAINAGE EASEMENT PER DOC NO. 1999-0426780 RECORDED ON JUNE 17, 1999
NEW 18" STORM DRAIN PIPE
HOA WATER QUALITY EASEMENT
WATER QUALITY BASIN
PROPOSED 10' PUBLIC DRAINAGE EASEMENT
PROPOSED PUBLIC DRAINAGE EASEMENT
NEW 12" STORM DRAIN HEADWALL TO OUTLET INTO NEW BROWDITCH
NEW 12" STORM DRAIN PIPE
NEW PCC BROWDITCH
15' PRIVATE SEWER & DRAINAGE EASEMENT
NEW CURB INLET DESIGNED TO CAPTURE 100 YR RUNOFF W/ REVERSE CURB OUTLET. THIS OUTLETS TO A MWS BMP.
NEW MWS UNIT (MODEL MWS-L-8-24-6'-3"-C-CHC). UNIT IS DESIGN TO HAVE HIGH RUNOFF BYPASS.
EXIST. STORM DRAIN HEADWALL (OUTLET)
EXIST. STORMCEPTOR MANHOLES
EXIST. SD MANHOLE
EXIST. BROW DITCH
EXIST. STORM DRAIN HEADWALL (INLET TO EXIST. PUBLIC 48" RCP)
EXIST. SD CHANNEL/DITCH
SEWER CONNECTION CONNECT NEW 8" PVC MAIN TO EXISTING SEWER MANHOLE
SEWER FORCE MAIN
MEET & MATCH EXIST. START OF WIDENING. END OF NEW AC BERM
MEET & MATCH EXISTING TRAIL IMPROVEMENTS HERE

LEGEND

BOUNDARY LINE
RIGHT OF WAY LINE — RW
PARCEL LOT LINE — PL
PCC CURB
PCC CURB & GUTTER
SEWER LINE — S
WATER LINE — W
FIRE LINE — F
FIRE HYDRANT
BLDG FIRE SERVICE LATERAL — F
WATER SERVICE LATERAL — W
SEWER SERVICE LATERAL — S
STORM DRAIN INLETS / CLEANOUTS
EXIST. TOPO (5 FT) MAJOR CONTOUR
EXIST. TOPO (1 FT) MINOR CONTOUR
PROPOSED TOPO (5 FT) MAJOR CONTOUR — X
PROPOSED TOPO (1 FT) MINOR CONTOUR

DATE	REMARKS
12/2021	PLANNING SUBMITTAL

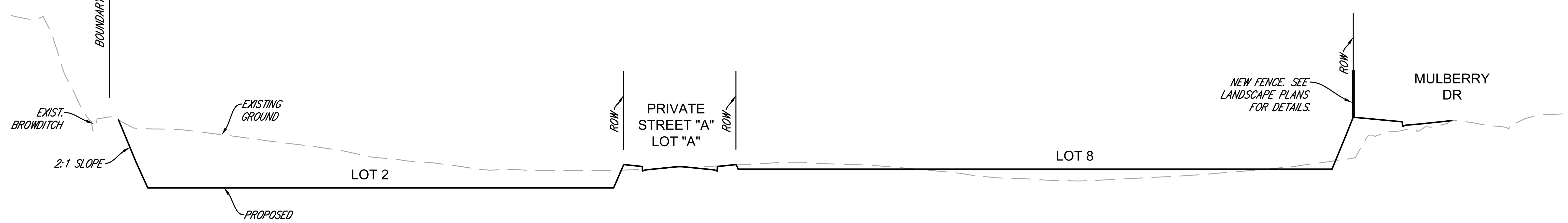
SHEET 4 OF 7 SHEETS
PRELIMINARY GRADING

EXCEL ENGINEERING
LAND PLANNING • ENGINEERING • QSD • SURVEYING
440 STATE PLACE, ESCONDIDO, CA 92029
PH (760)745-8118 FX (760)745-8334

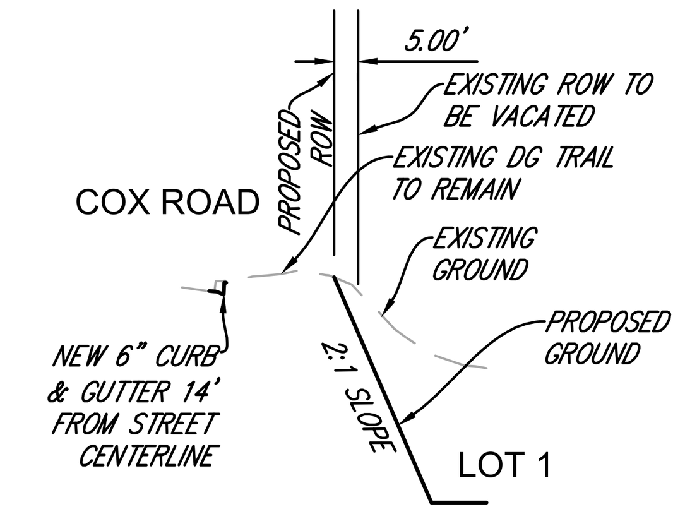
MANNING HOMES
APN 182-131-14-00
COX ROAD / MULBERRY DR, SAN MARCOS CA
TSM21-0004

I:\21\21054\Engineering\TM\TM 03\TM\21054 PRELIM GR.dwg 8/19/2024 11:11 AM ORIGINAL PLOT SIZE: ----

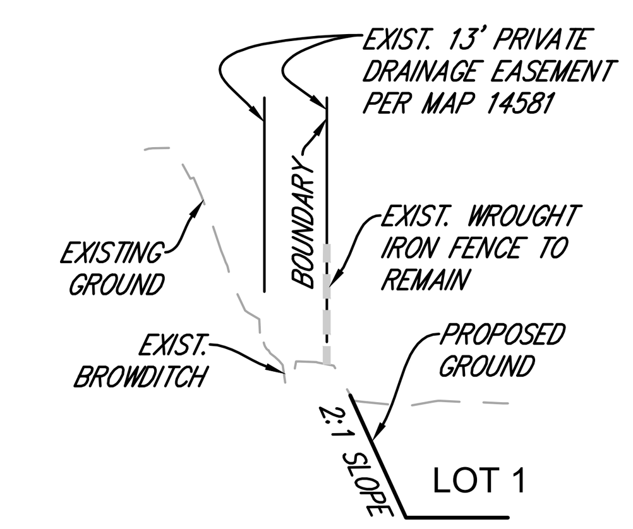
TSM21-0004



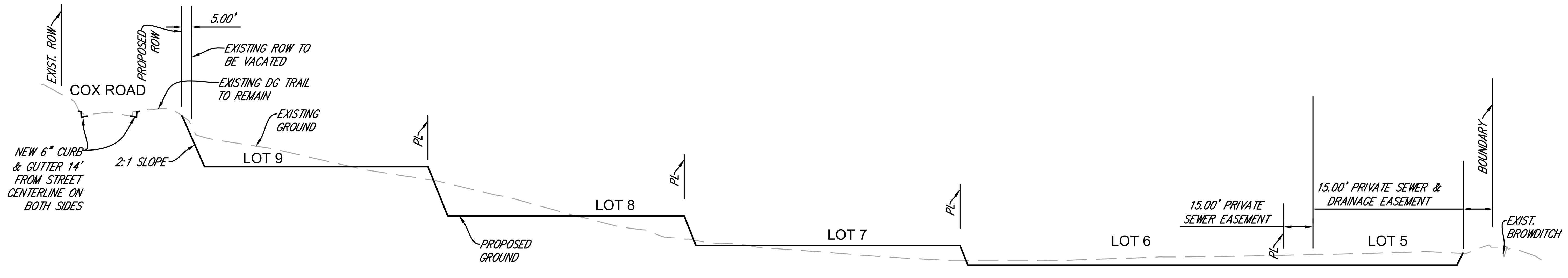
SECTION A-A
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



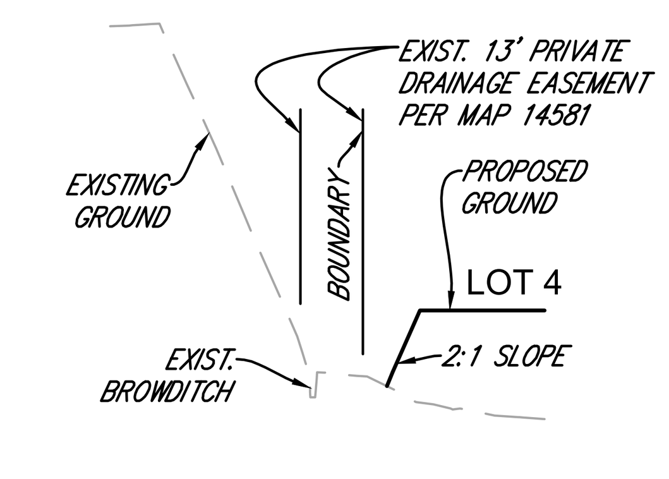
SECTION C-C
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



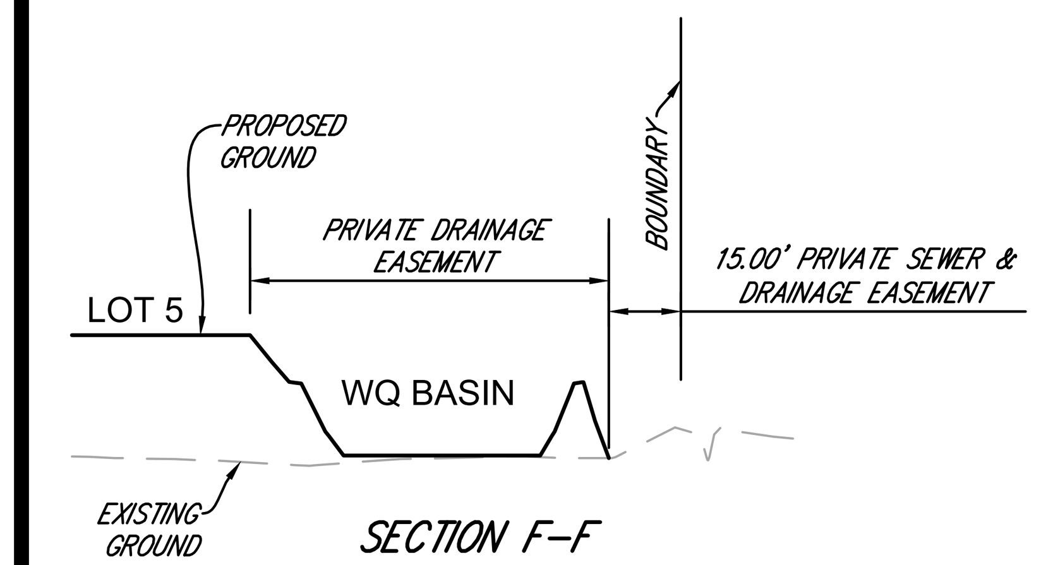
SECTION D-D
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



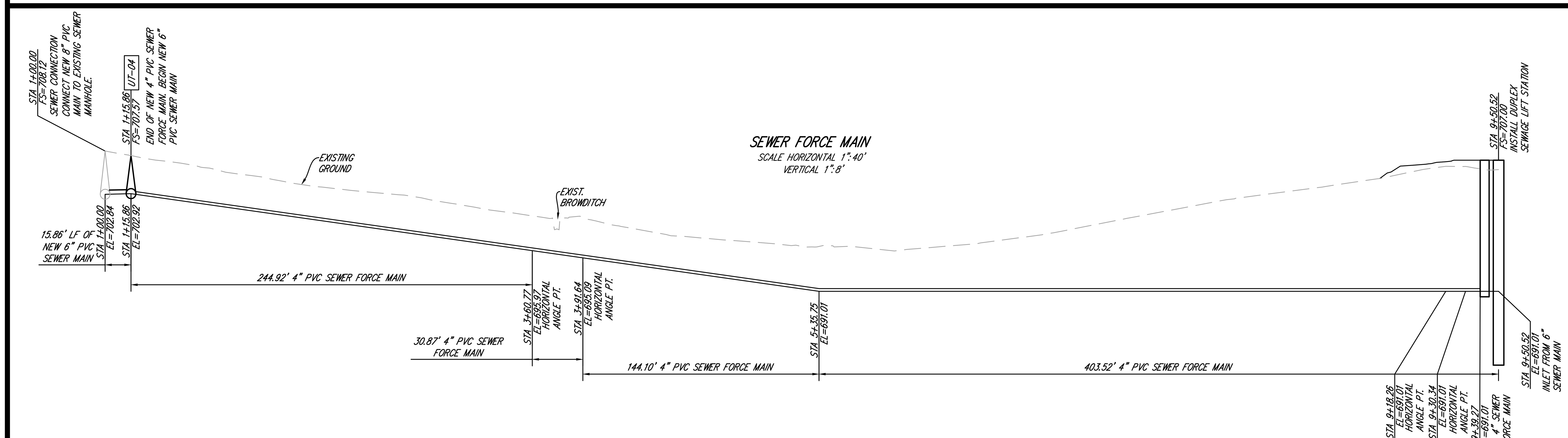
SECTION B-B
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



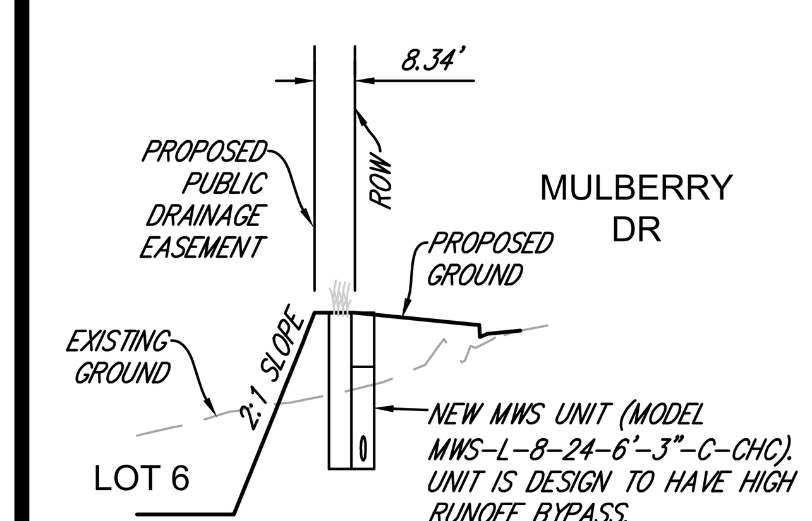
SECTION E-E
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



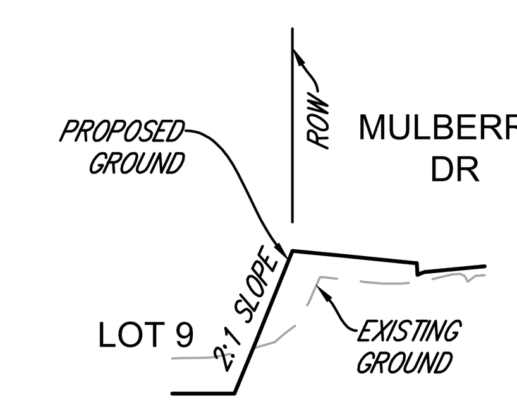
SECTION F-F
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



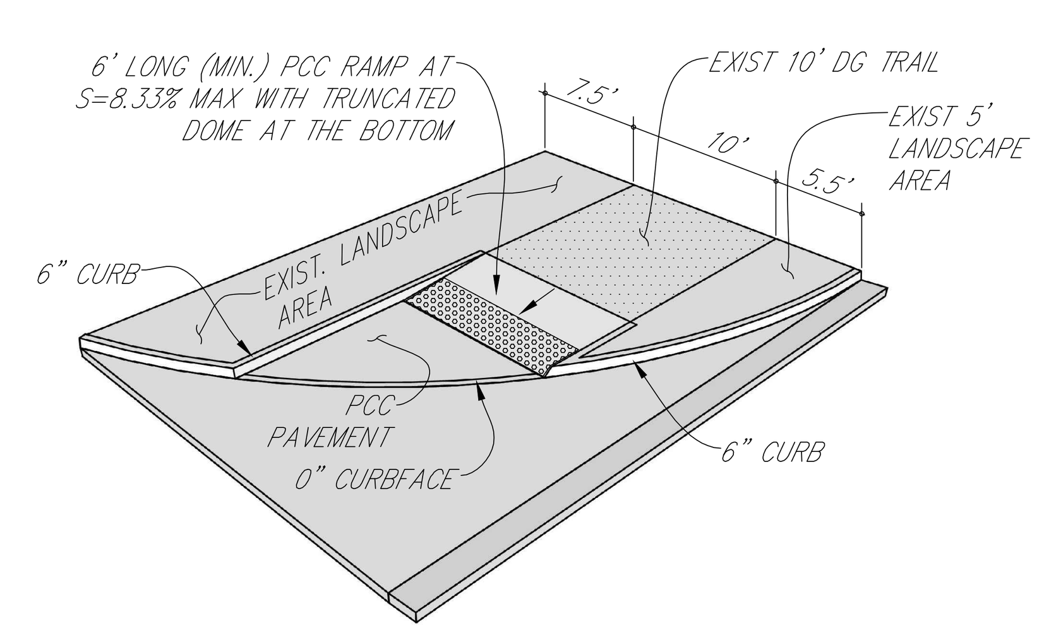
SEWER FORCE MAIN
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



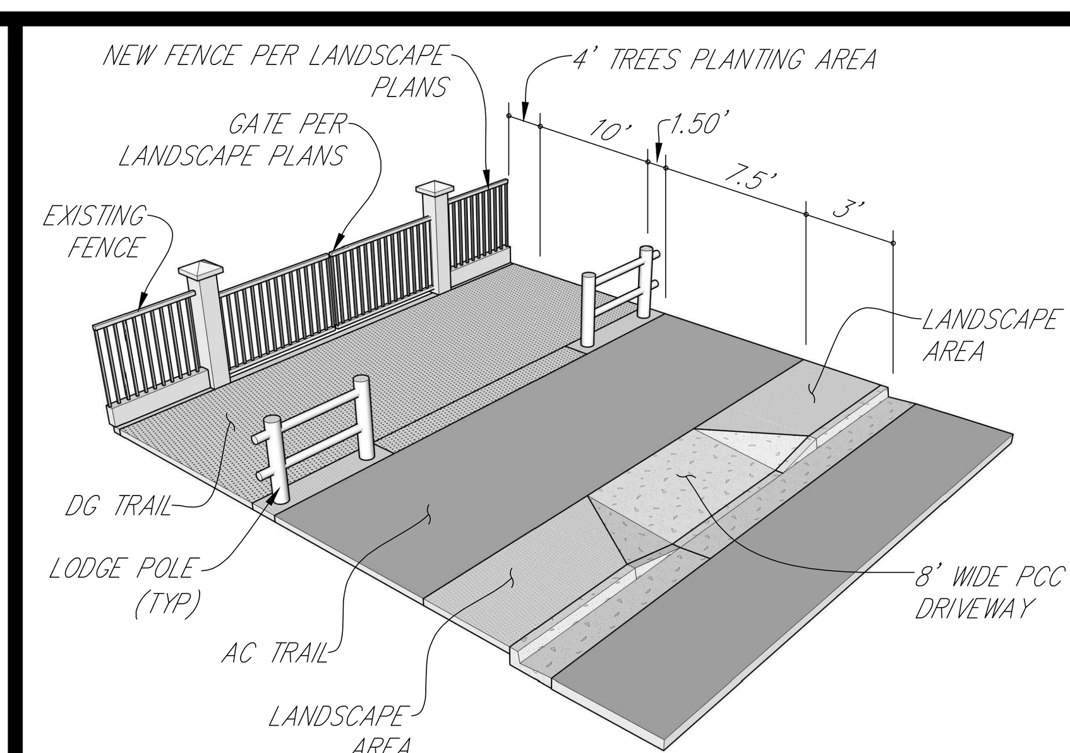
SECTION G-G
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



SECTION H-H
SCALE HORIZONTAL 1"=40'
VERTICAL 1"=8'



RAMP TO DG TRAIL TYPICAL DETAIL
NOT TO SCALE



MAINTENANCE ACCESS DRIVEWAY DETAIL
NOT TO SCALE

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TSM21-0004

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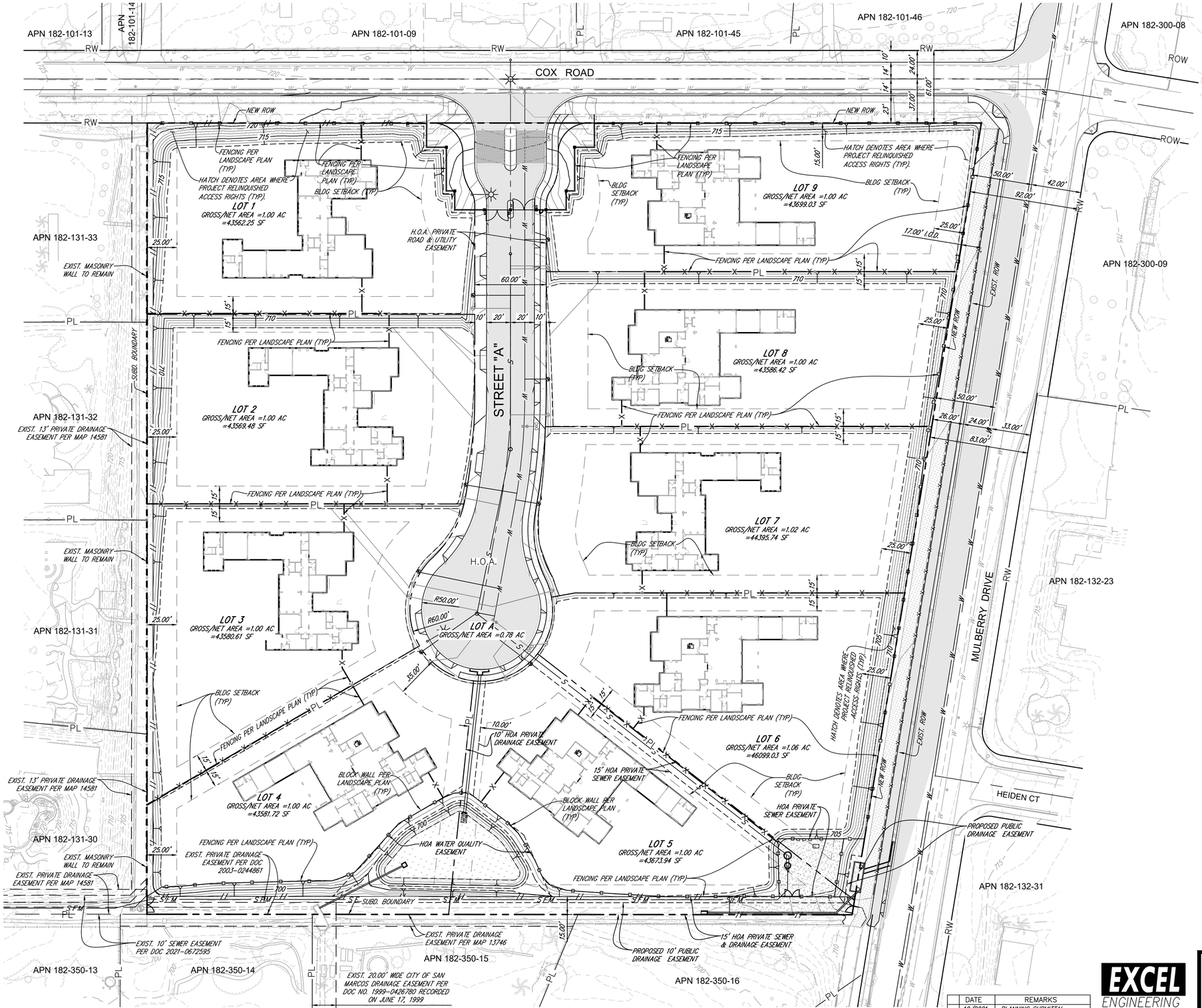

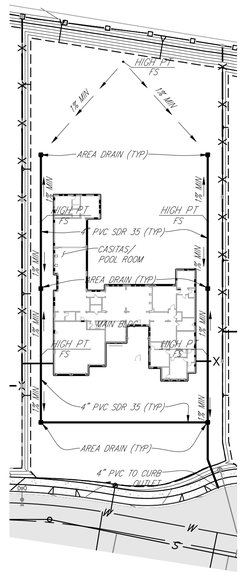

TYPICAL LOT DRAINAGE
NOT TO SCALE

NOTE: THE BUILDING FOOTPRINTS, LOCATION OF LOT DRIVEWAY APRONS SHOWN HERE ARE SUBJECT TO CHANGE. EXACT FOOTPRINTS & LOCATION WILL BE PART OF THE CONSTRUCTION DOCUMENT APPROVAL PROCESS.

NOTE: FENCES, BLOCK WALLS, & GATES ARE PER THE LANDSCAPE PLANS. THEY ARE SHOWN HERE FOR REFERENCE ONLY.

SCALE 1":40'
0 40 80 Feet

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SITE PLAN

MANNING HOMES

APN 182-131-14-00

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TSM21-0004

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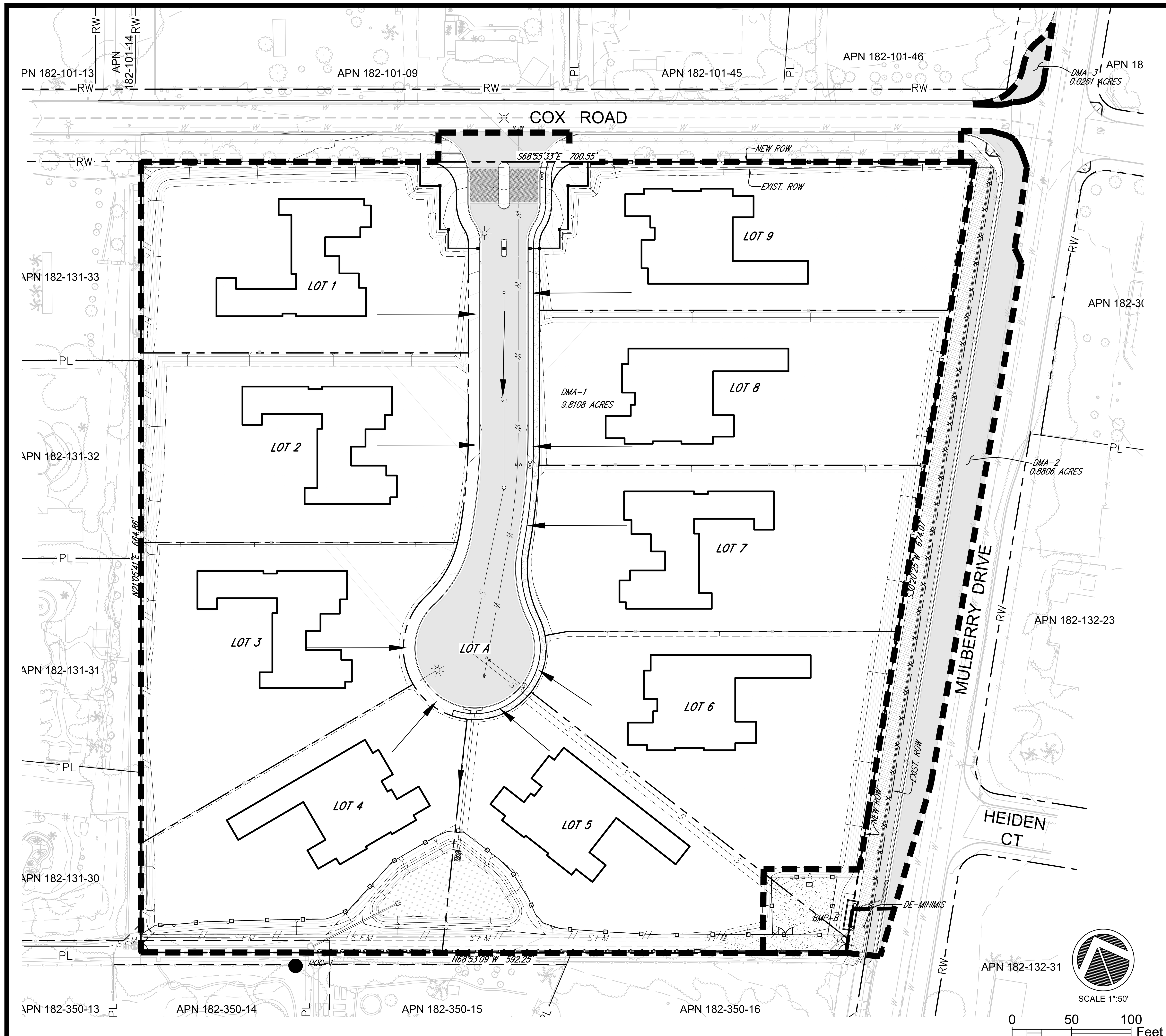
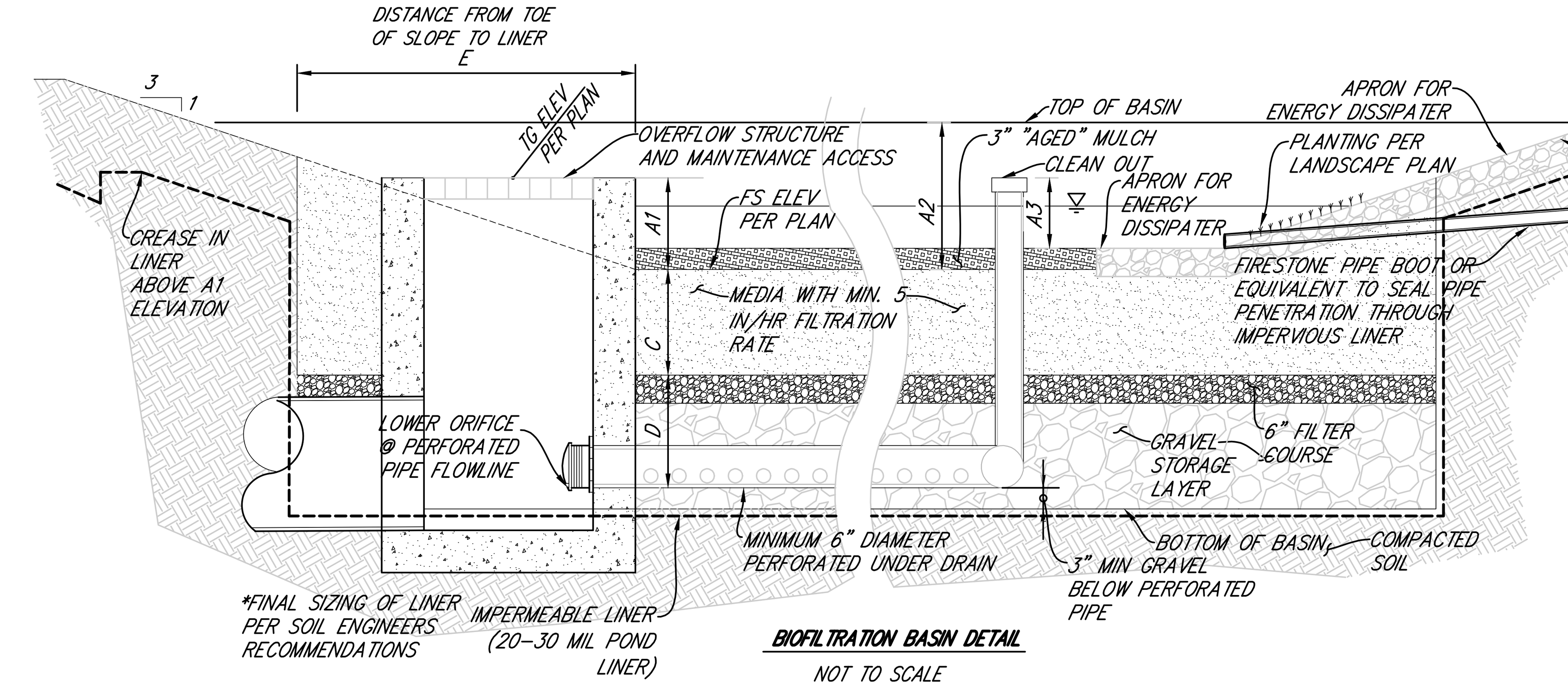
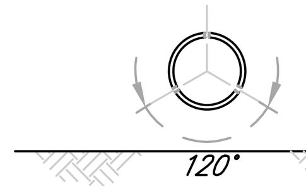




BIOFILTRATION BASIN DETAIL

NOT TO SCALE



6" PVC PIPE PERFORATION LAYOUT DETAIL

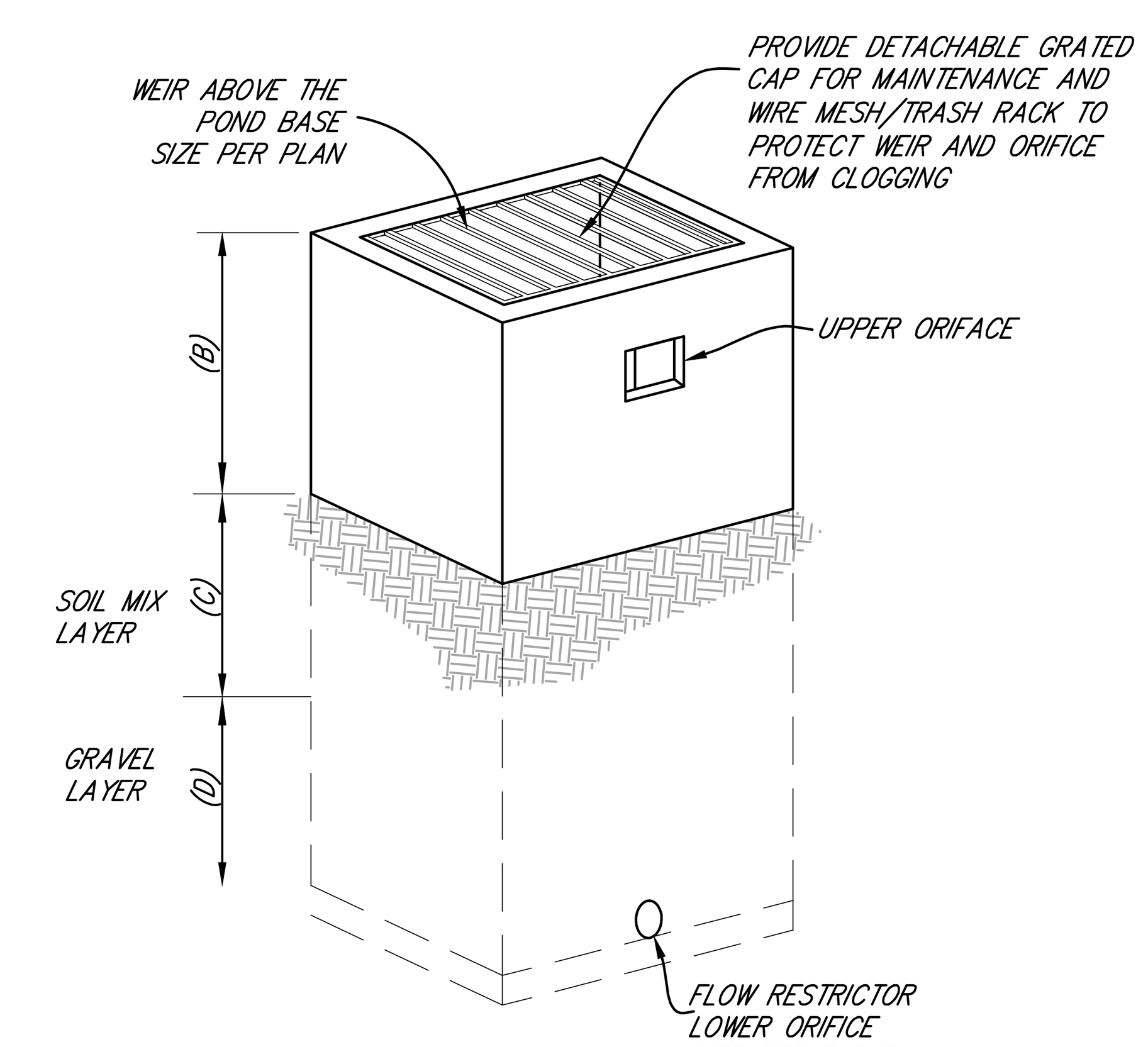
NOT TO SCALE

STRUCTURAL BIO-BASIN SUMMARY TABLE

DMA NAME	DMA TYPE	BMP NAME	TYPE OF BMP	EFFECTIVE AREA (SQFT)	A1 (INCH) WATER QUALITY	A2 (INCH) TOP OF BASIN	A3 (INCH) CLEAN OUT	A4 (INCH) TOP OF RISER	B (INCH) UPPER ORIFICE	C (INCH) MEDIA	D (INCH) GRAVEL	E (INCH) OFFSET	BOX RISER OVERFLOW STRUCTURE SIZE (INCHES)	ORIFICES DIAMETER		IMPERMEABLE LINER ?
														UPPER (INCH)	LOWER (INCH)	
DMA-1	DRAINS TO BMP	BMP-A	BIOFILTRATION	4677	6	36	6	12	3	21	60	47	24X24	3	2	YES
DMA-2+ DMA-3	DRAINS TO BMP	BMP-B	PROPRIETARY BIOFILTRATION (MWS)	FLOW-THROUGH 0.796 CFS	-	-	-	-	-	-	-	-	-	N/A	2.75	-

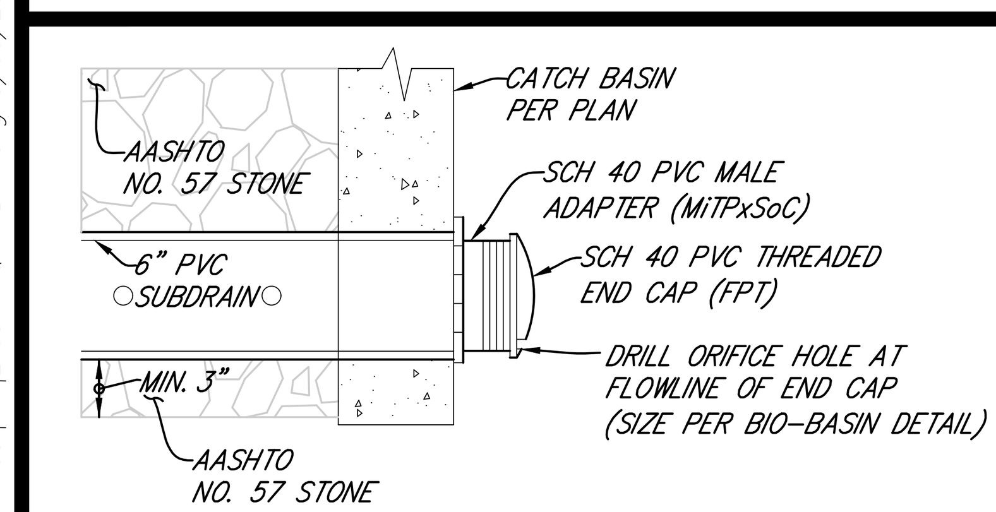
NOTE: FREEBOARD = A2-A1

DMA-ID	IMPERVIOUS (SQFT)	PERVIOUS (SQFT)	TOTAL (SQFT)
DMA-1	93,228.58	334,129.62	427,358.20
DMA-2	19,329.64	17,782.56	37,112.20
DMA-3	1,136.75	0.00	1,136.75
DE-MINIMIS	502.34	733.98	1,236.32



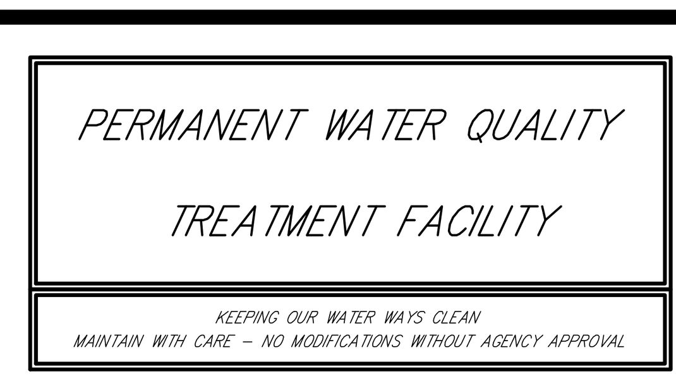
CATCHBASIN DETAIL

NOT TO SCALE



LOWER ORIFICE DETAIL

NOT TO SCALE

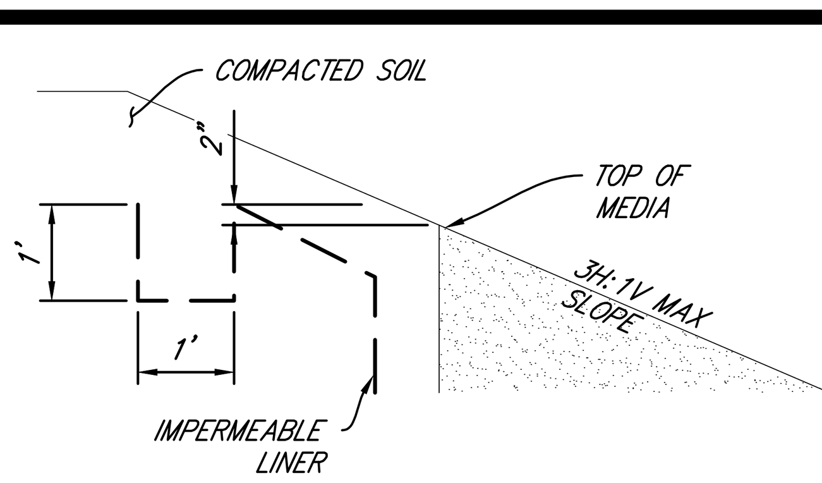


DETAIL
WATER QUALITY SIGN- PLACED AT EACH BIOFILTRATION BASIN

NOTE: ALL BIOFILTRATION AREAS WILL HAVE A SIGN POSTED TO BE VISIBLE AT ALL TIMES.

DETAIL
"NO DUMPING" AT CATCH BASINS

NOTE: ALL CATCH BASINS WITH GRATES SHALL BE STENCILED WITH CITY REQUIRED ITEM PER ABOVE DETAIL (DAS MANUFACTURING #SDO OR EQUIVALENT).



IMPERMEABLE LINER EDGE ANCHOR DETAIL

NOT TO SCALE

LEGEND

- DMA BOUNDARY
- WATER QUALITY EFFECTIVE AREA
- GENERAL DRAINAGE DIRECTION PATH

EXISTING SITE FEATURES:

- THE APPROXIMATE DEPTH TO GROUNDWATER IS GREATER THAN 20 FEET.
- THERE ARE NO NATURAL HYDROLOGIC FEATURES ON THE SITE.
- THE SITE PROPOSES TO CONNECT TO THE EXISTING PUBLIC STORM DRAIN SYSTEM LOCATED IN THE SOUTH EDGE OF THE SITE.
- BASED ON WATERSHED MAPPING OF POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS (CCSYA), THERE ARE NO CCSYA LOCATED WITHIN THE PROJECT BOUNDARY OR TRIBUTARY TO THE RUNOFF BYPASSED AROUND THE SITE.

NOTE:
HOA WILL BE THE FINAL OWNER OF BMP-A, MAINTAIN BMP INTO PERPETUITY, AND FUNDING MECHANISM FOR MAINTENANCE.

HYDROLOGIC SOIL GROUP
THE HYDROLOGICAL SOIL GROUP FOR THIS SITE IS TYPE C.

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PRELIMINARY WQMP BMP

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