Appendix 9

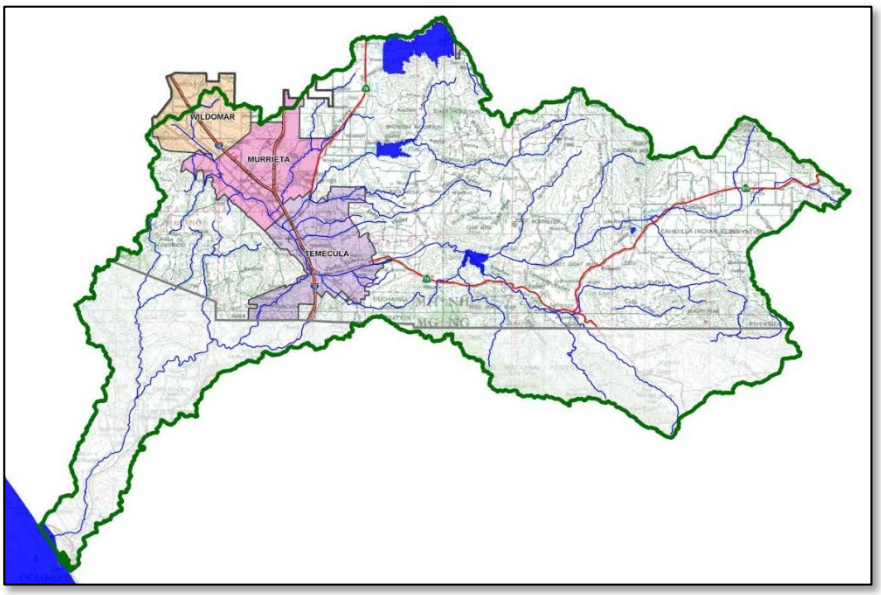
Project-Specific Water Quality Management Plan

Project Specific Water Quality Management Plan (WQMP)

A Template for preparing Project Specific Water Quality Management Plans (WQMPs) for Priority Development Projects located in the City of Wildomar.

Attention: This submittal package only applies to "Priority Development Projects" and does not apply to "Other Development Projects". Proceed only if the Applicabilty Checklist completed for your project categorizes project activities as a "Priority Development Project."

Project Title:	Cherry Outpost	**Prepared for:**	J & T Investments, 139 Radio Road, Corona, CA 92879
Development No:	N/A	**Prepared by:**	Tait & Associates, 701 N. Parkcenter Drive, Santa Ana, CA 92705
City Project No:	PA No. 23-0118	**WQMP Type:**	☒ **Preliminary (entitlement submittal)** ☐ **Final**



Original Date Prepared: 1/15/2024

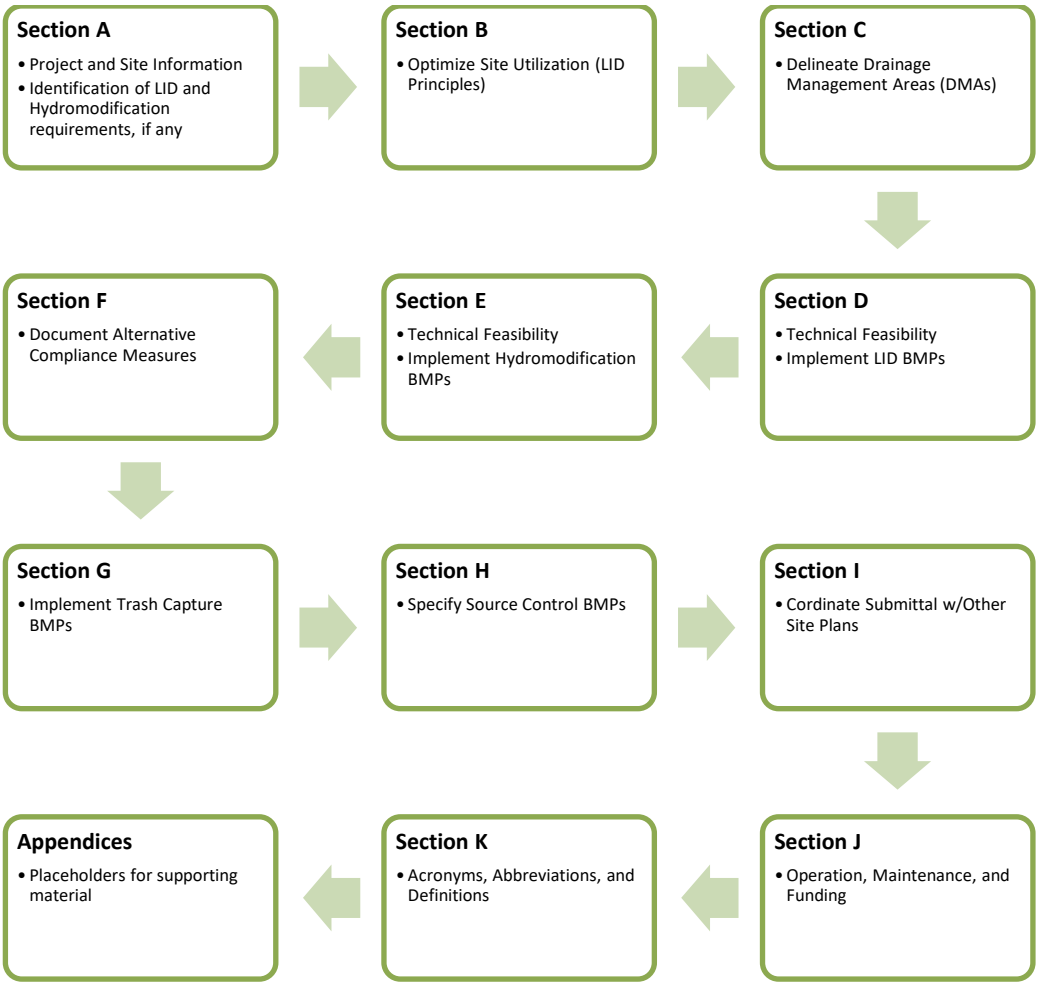
Revision Summary (post WQMP acceptance):

MARK	**BY**	**DATE**	**REVISIONS**	**APPRV.**	**DATE**
ENGINEER				**CITY**	

Prepared for Compliance with Regional Board Order No. **R9-2013-0001** *as amended by Order No.* **R9-2015-0001** *and Order No.* **R9-2015-0100**

A Brief Introduction

The Regional Municipal Separate Stormwater Sewer System (MS4) Permit[1] requires that a Project-Specific WQMP be prepared for all development projects within the Santa Margarita Region (SMR) that meet the 'Priority Development Project' categories and thresholds listed in the SMR Water Quality Management Plan (WQPM). This Project-Specific WQMP Template for Development Projects in the **Santa Margarita Region** has been prepared to help document compliance and prepare a WQMP submittal. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



[1] Order No. R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100, NPDES No. CAS0109266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the MS4s Draining the Watersheds within the San Diego Region, California Regional Water Quality Control Board, May 8, 2013.

OWNER'S CERTIFICATION

This Project-Specific WQMP has been prepared for J & T Investments by Tait & Associates for the Cherry Outpost project.

This WQMP is intended to comply with the requirements of the City of Wildomar for Wildomar Municipal Code Ch. 13.12 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of storm water Best Management Practices until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Wildomar Water Quality Ordinance (Wildomar Municipal Code Ch. 13.12).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Karine Kofdarali	
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control Best Management Practices (BMPs) in this plan meet the requirements of Regional Water Quality Control Board Order No. **R9-2013-0001** as amended by Order Nos. **R9-2015-0001 and R9-2015-0100**."

Preparer's Signature	Date
Kaveh Haghighi	R.C.E.
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

Use the table below to compile and summarize basic site information that will be important for completing subsequent steps. Subsections A.1 through A.4 provide additional detail on documentation of additional project and site information.

PROJECT INFORMATION		
Type of PDP:	New Development	
Type of Project:	Commercial	
Planning Area:	N/A	
Community Name:	Cherry Outpost	
Development Name:	Cherry Outpost	
PROJECT LOCATION		
Latitude & Longitude (DMS):	33°37'39.7"N 117°16'17.8"W	
Project Watershed and Sub-Watershed:	Santa Ana River	
24-Hour 85th Percentile Storm Depth (inches):	0.685	
Is project subject to Hydromodification requirements?	☐ Y ☒ N (Select based on Section A.3)	
APN(s):	366290008	
Map Book and Page No.:	M.B.10/58-75	
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)		Commercial
Proposed or Potential SIC Code(s)		N/A
Existing Impervious Area of Project Footprint (SF)		10,119
Total area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement		193,468
Total Project Area (ac)		5.95
Does the project consist of offsite road improvements?		☐ Y ☒ N
Does the project propose to construct unpaved roads?		☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?		☐ Y ☒ N
Is the project exempt from Hydromodification Performance Standards?		☐ Y ☒ N
Does the project propose the use of Alternative Compliance to satisfy BMP requirements? (note, alternative compliance is not allowed for coarse sediment performance standards)		☐ Y ☒ N
Has preparation of Project-Specific WQMP included coordination with other site plans?		☐ Y ☒ N
EXISTING SITE CHARACTERISTICS		
Is the project located within any Multi-Species Habitat Conservation Plan area (MSHCP Criteria Cell?)		☐ Y ☒ N If "Y" insert Cell Number
Are there any natural hydrologic features on the project site?		☐ Y ☒ N
Is a Geotechnical Report attached?		☐ Y ☒ N
If no Geotech. Report, list the Natural Resources Conservation Service (NRCS) soils type(s) present on the site (A, B, C and/or D)		A/C

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the Project vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Vicinity and location maps
- Parcel Boundary and Project Footprint
- Existing and Proposed Topography
- Drainage Management Areas (DMAs)
- Proposed Structural Best Management Practices (BMPs)
- Drainage Paths
- Drainage infrastructure, inlets, overflows
- Source Control BMPs
- Site Design BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Pervious Surfaces (i.e. Landscaping)
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Copermittee plan reviewer must be able to easily analyze your Project utilizing this template and its associated site plans and maps. Complete the checklists in Appendix 1 to verify that all exhibits and components are included.

A.2 Identify Receiving Waters

Using Table A-1 below, list in order of upstream to downstream, the Receiving Waters that the Project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated Beneficial Uses, and proximity, if any, to a RARE Beneficial Use. Include a map of the Receiving Waters in Appendix 1. This map should identify the path of the storm water discharged from the site all the way to the Pacific Ocean. Use the most recent 303(d) list available from the State Water Resources Control Board Website. *(http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/)*

Table A-1 Identification of Receiving Waters

Receiving Waters	USEPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Elsinore, Lake	DDT (Pesticide), Nutrients, Organic Enrichment(Nutrients), PCB's(Toxic Organics), Toxicity	COMM, RARE, REC1, REC2, WARM, WILD	Classified as RARE water body
Temescal Creek Reach 5	Not Listed	AGR, GWR, RARE, REC1, REC2, WARM, WILD	Classified as RARE water body
Temescal Creek Reach 4	Not Listed	AGR, GWR, RARE, REC1, REC2, WARM, WILD	Classified as RARE water body
Lee Lake	Not Listed	AGR, COMM, GWR, IND, REC1, REC2, WARM, WILD	Not Classified as RARE water body
Temescal Creek Reach 2	Not Listed	AGR, GWR, IND, RARE, REC1, REC2, WARM, WILD	Classified as RARE water body
Temescal Creek Reach 1B	Nost Listed	REC1, REC2, WARM, WILD	Not Classified as RARE water body
Temescal Creek Reach 1A	Not Listed	REC1, REC2, WARM, WILD	Not Classified as RARE water body
Prado Basin Management Zone	PH	RARE, REC1, REC2, WARM, WILD	Classified as RARE water body

Santa Ana River Reach 2	Not Listed	AGR, GWR, RARE, REC1, REC2, SPWN, WARM, WILD	Classified as RARE water body
Santa Ana River Reach 1	Not Listed	REC1, REC2, WARM, WILD	Not Classified as RARE water body
Tidal Prism of Santa Ana River	Not Listed	COMM, EST, MAR, RARE, REC1, REC2, WILD	Classified as RARE water body
San Gabriel River to Poppy Street (Nearshore Zone)	Not Listed	COMM, IND, MAR, NAV, RARE, REC1, REC2, SHELL, SPWN, WILD	Classified as RARE water body

A.3 Drainage System Susceptibility to Hydromodification

Using Table A-2 below, list in order of the point of discharge at the project site down to Lake Elsinore, each drainage system or receiving water that the project site is tributary to. Continue to fill each row with the material of the drainage system, and any exemption (if applicable). Based on the results, summarize the applicable hydromodification performance standards that will be documented in Section E. Exempted categories of receiving waters include:

- Existing storm drains that discharge directly to water storage reservoirs, lakes, or enclosed embayments, or
- 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.
- Other water bodies identified in an approved Watershed Management Area Analysis (WMAA) (See Exhibit G to the WQMP)

Include a map exhibiting each drainage system and the associated susceptibility in Appendix 1.

Table A-2 Identification of Susceptibility to Hydromodification

Drainage System	Drainage System Material	Hydromodification Exemption	Hydromodification Exempt
Caltrans Culvert for 0.1 miles	60" Corrugated Metal Pipe	NONE	☐ Y ☒ N
RCFCD Facility for 0.35 miles	60-72" Reinforced Concrete Pipe	NONE	☐ Y ☒ N
City of Wildomar Facility for 0.38 miles	72" Reinforced Concrete Pipe	NONE	☐ Y ☒ N
RCFCD for 0.13 miles	Variable Size Reinforced Concrete Pipe	NONE	☐ Y ☒ N
Open Channel for 2.86 miles	Earthen Channel	NONE	☐ Y ☒ N
Summary of Performance Standards			

Drainage System	Drainage System Material	Hydromodification Exemption	Hydromodification Exempt

☐ **Hydromodification Exempt** – Select if "Y" is selected in the Hydromodification Exempt column above, project is exempt from hydromodification requirements.

☒ **Not Exempt**-Select if "N" is selected in any row of the Hydromodification Exempt column above. Project is subject to hydrologic control requirements and may be subject to sediment supply requirements.

A.4 Additional Permits/Approvals required for the Project:

Table A-3 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Consistency Approval (e.g., Joint Project Review (JPR), Determination of Biological Equivalent or Superior Preservation (DBESP))	☐ Y	☒ N
Other *(please list in the space below as required)* City of Wildomar Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Copermittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for LID Bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your Low Impact Development (LID) design and explain your design decisions to others.

Apply the following LID Principles to the layout of the Priority Development Project (PDP) to the extent they are applicable and feasible. Putting thought upfront about how best to organize the various elements of a site can help to significantly reduce the PDP's potential impact on the environment and reduce the number and size of Structural LID BMPs that must be implemented. Integrate opportunities to accommodate the following LID Principles within the preliminary PDP site layout to maximize implementation of LID Principles.

Site Optimization

Complete checklist below to determine applicable Site Design BMPs for your site.

Project- Specific WQMP Site Design BMP Checklist

The following questions below are based upon Section 3.2 of the SMR WQMP will help you determine how to best optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

SITE DESIGN REQUIREMENTS

Answer the following questions below by indicating "Yes," "No," or "N/A" (Not Applicable). Justify all "No" and "N/A" answers by inserting a narrative at the end of the section. The narrative should include identification and justification of any constraints that would prevent the use of those categories of LID BMPs. Upon identifying Site Design BMP opportunities, include these on your WQMP Site plan in Appendix 1.

☒ Yes ☐ No ☐ N/A

Did you identify and preserve existing drainage patterns?

Integrating existing drainage patterns into the site plan helps to maintain the time of concentration and infiltration rates of runoff, decreasing peak flows, and may also help preserve the contribution of Critical Coarse Sediment (i.e., Bed Sediment Supply) from the PDP to the Receiving Water. Preserve existing drainage patterns by:

- Minimizing unnecessary site grading that would eliminate small depressions, where appropriate add additional "micro" storage throughout the site landscaping.
- Where possible conform the PDP site layout along natural landforms, avoid excessive grading and disturbance of vegetation and soils, preserve or replicate the sites natural drainage features and patterns.
- Set back PDP improvements from creeks, wetlands, riparian habitats and any other natural water bodies.
- Use existing and proposed site drainage patterns as a natural design element, rather than using expensive impervious conveyance systems. Use depressed landscaped areas, vegetated buffers, and bioretention areas as amenities and focal points within the site and landscape design.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.
Existing Site outlet maintained in proposed condition.

☐ Yes ☐ No ☒ N/A

Did you identify and protect existing vegetation?

Identify any areas containing dense native vegetation or well-established trees, and try to avoid disturbing these areas. Soils with thick, undisturbed vegetation have a much higher capacity to store and infiltrate runoff than do disturbed soils. Reestablishment of a mature vegetative community may take decades. Sensitive areas, such as streams and floodplains should also be avoided.

- Define the development envelope and protected areas, identifying areas that are most suitable for development and areas that should be left undisturbed.
- Establish setbacks and buffer zones surrounding sensitive areas.
- Preserve significant trees and other natural vegetation where possible.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Existing site contains no significant vegetation to be preserved in proposed condition.*

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**Did you identify and preserve natural infiltration capacity?** A key component of LID is taking advantage of a site's natural infiltration and storage capacity. A site survey and geotechnical investigation can help define areas with high potential for infiltration and surface storage. • Identify opportunities to locate LID Principles and Structural BMPs in highly pervious areas. Doing so will maximize infiltration and limit the amount of runoff generated. • Concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	
☒ Yes ☐ No ☐ N/A	**Did you minimize impervious area?** Look for opportunities to limit impervious cover through identification of the smallest possible land area that can be practically impacted or disturbed during site development. • Limit overall coverage of paving and roofs. This can be accomplished by designing compact, taller structures, narrower and shorter streets and sidewalks, clustering buildings and sharing driveways, smaller parking lots (fewer stalls, smaller stalls, and more efficient lanes), and indoor or underground parking. • Inventory planned impervious areas on your preliminary site plan. Identify where permeable pavements, or other permeable materials, such as crushed aggregate, turf block, permeable modular blocks, pervious concrete or pervious asphalt could be substituted for impervious concrete or asphalt paving. This will help reduce the amount of Runoff that may need to be addressed through Structural BMPs. • Examine site layout and circulation patterns and identify areas where landscaping can be substituted for pavement, such as for overflow parking. • Consider green roofs. Green roofs are roofing systems that provide a layer of soil/vegetative cover over a waterproofing membrane. A green roof mimics pre-development conditions by filtering, absorbing, and evapotranspiring precipitation to help manage the effects of an otherwise impervious rooftop.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Landscape cover provided at all feasible locations within the commercial development.*	

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**Did you identify and disperse runoff to adjacent pervious areas or small collection areas?** Look for opportunities to direct runoff from impervious areas to adjacent landscaping, other pervious areas, or small collection areas where such runoff may be retained. This is sometimes referred to as reducing Directly Connected Impervious Areas. • Direct roof runoff into landscaped areas such as medians, parking islands, planter boxes, etc., and/or areas of pervious paving. Instead of having landscaped areas raised above the surrounding impervious areas, design them as depressed areas that can receive Runoff from adjacent impervious pavement. For example, a lawn or garden depressed 3"-4" below surrounding walkways or driveways provides a simple but quite functional landscape design element. • Detain and retain runoff throughout the site. On flatter sites, smaller Structural BMPs may be interspersed in landscaped areas among the buildings and paving. • On hillside sites, drainage from upper areas may be collected in conventional catch basins and piped to landscaped areas and LID BMPs and/or Hydrologic Control BMPs in lower areas. Low retaining walls may also be used to create terraces that can accommodate LID BMPs. Wherever possible, direct drainage from landscaped slopes offsite and not to impervious surfaces like parking lots. • Reduce curb maintenance and provide for allowances for curb cuts. • Design landscaped areas or other pervious areas to receive and infiltrate runoff from nearby impervious areas. • Use Tree Wells to intercept, infiltrate, and evapotranspire precipitation and runoff before it reaches structural BMPs. Tree wells can be used to limit the size of Drainage Management Areas that must be treated by structural BMPs. Guidelines for Tree Wells are included in the Tree Well Fact Sheet in the LID BMP Design Handbook.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Drainage design include curb cuts to convey runoff to drainage ditch that carries flows towards biofiltration basin.*	
☒ Yes ☐ No ☐ N/A	**Did you utilize native or drought tolerant species in site landscaping?** Wherever possible, use native or drought tolerant species within site landscaping instead of alternatives. These plants are uniquely suited to local soils and climate and can reduce the overall demands for potable water use associated with irrigation.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	

Project- Specific WQMP Site Design BMP Checklist

☐ Yes ☒ No ☐ N/A

Did implement harvest and use of runoff?

Under the Regional MS4 Permit, Harvest and Use BMPs must be employed to reduce runoff on any site where they are applicable and feasible. However, Harvest and Use BMPs are effective for retention of stormwater runoff only when there is adequate demand for non-potable water during the wet season. If demand for non-potable water is not sufficiently large, the actual retention of stormwater runoff will be diminished during larger storms or during back-to-back storms.

For the purposes of planning level Harvest and Use BMP feasibility screening, Harvest and Use is only considered to be a feasible if the total average wet season demand for non-potable water is sufficiently large to use the entire DCV within 72 hours. If the average wet season demand for non-potable water is not sufficiently large to use the entire DCV within 72 hours, then Harvest and Use is not considered to be feasible and need not be considered further.

The general feasibility and applicability of Harvest and Use BMPs should consider:

- Any downstream impacts related to water rights that could arise from capturing storm water (not common).
- Conflicts with recycled water used – where the project is conditioned to use recycled water for irrigation, this should be given priority over storm water capture as it is a year-round supply of water.
- Code Compliance - If a particular use of captured storm water, and/or available methods for storage of captured storm water would be contrary to building codes in effect at the time of approval of the preliminary Project-Specific WQMP, then an evaluation of harvesting and use for that use would not be required.
- Wet season demand – the applicant shall demonstrate, to the acceptance of the [Insert Jurisdiction], that there is adequate demand for harvested water during the wet season to drain the system in a reasonable amount of time.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *See Appendix 5 for harvest and reuse feasibility calculations.*

☐ Yes ☒ No ☐ N/A

Did you keep the runoff from sediment producing pervious area hydrologically separate from developed areas that require treatment?

Pervious area that qualify as self-treating areas or off-site open space should be kept separate from drainage to structural BMPs whenever possible. This helps limit the required size of structural BMPs, helps avoid impacts to sediment supply, and helps reduce clogging risk to BMPs.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Proposed landscape areas are not graded to be classified as self-retaining areas.*

Section C: Delineate Drainage Management Areas (DMAs)

This section provides streamlined guidance and documentation of the DMA delineation and categorization process, for additional information refer to the procedure in Section 3.3 of the SMR WQMP which discusses the methods of delineating and mapping your project site into individual DMAs. Complete Steps 1 to 4 to successfully delineate and categorize DMAs.

Step 1: Identify Surface Types and Drainage Pathways

Carefully delineate pervious areas and impervious areas (including roofs) throughout site and identify overland flow paths and above ground and below ground conveyances. Also identify common points (such as BMPs) that these areas drain to.

Step 2: DMA Delineation

Use the information in Step 1 to divide the entire PDP site into individual, discrete DMAs. Typically, lines delineating DMAs follow grade breaks and roof ridge lines. Where possible, establish separate DMAs for each surface type (e.g., landscaping, pervious paving, or roofs). Assign each DMA a unique code and determine its size in square feet. The total area of your site should total the sum of all of your DMAs (unless water from outside the project limits comingles with water from inside the project limits, i.e. run-on). Complete Table C-1

Table C-1 DMA Identification

DMA Name or Identification	Surface Type(s)[1]	Pervious Area (Sq. Ft.)	Impervious Area (Sq. Ft.)	Total Area (Sq. Ft.)	DMA Type
DMA A-1	Mixed	17,157	86,619	103,776	D
DMA A-1.1	Mixed	20,061	45,733	65,794	D
DMA A-2	Mixed	2,423	934	3,357	D
DMA A-2.1	Mixed	1,406	36,181	37,588	D
DMA A-2.2	Mixed	-	8,109	8,109	D
DMA A-2.3	Mixed	1,983	23,092	25,076	D

Step 3: DMA Classification

Determine how drainage from each DMA will be handled by using information from Steps 1 and 2 and by completing Steps 3.A to 3.C. Each DMA will be classified as one of the following four types:

- Type 'A': Self-Treating Areas:
- Type 'B': Self-Retaining Areas
- Type 'C': Areas Draining to Self-Retaining Areas
- Type 'D': Areas Draining to BMPs

Step 3.A – Identify Type 'A' Self-Treating Area

Indicate if the DMAs meet the following criteria by answering "Yes" or "No".

☐ Yes ☐ No — Area is undisturbed from their natural condition OR restored with Native and/or California Friendly vegetative covers.

☐ Yes ☐ No — Area is irrigated, if at all, with appropriate low water use irrigation systems to prevent irrigation runoff.

☐ Yes ☐ No Runoff from the area will not comingle with runoff from the developed portion of the site, or across other landscaped areas that do not meet the above criteria.

If all answers indicate "Yes," complete Table C-2 to document the DMAs that are classified as Self-Treating Areas.

Table C-2 Type 'A', Self-Treating Areas

DMA Name or Identification	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			
N/A			
N/A			
N/A			

Step 3.B – Identify Type 'B' Self-Retaining Area and Type 'C' Areas Draining to Self-Retaining Areas

Type 'B' Self-Retaining Area: A Self-Retaining Area is shallowly depressed 'micro infiltration' areas designed to retain the Design Storm rainfall that reaches the area, without producing any Runoff.

Indicate if the DMAs meet the following criteria by answering "Yes," "No," or "N/A".

☐ Yes ☐ No ☐ N/A Slopes will be graded toward the center of the pervious area.

☐ Yes ☐ No ☐ N/A Soils will be freely draining to not create vector or nuisance conditions.

☐ Yes ☐ No ☐ N/A Inlet elevations of area/overflow drains, if any, should be clearly specified to be three inches or more above the low point to promote ponding.

☐ Yes ☐ No ☐ N/A Pervious pavements (e.g., crushed stone, porous asphalt, pervious concrete, or permeable pavers) can be self-retaining when constructed with a gravel base course four or more inches deep below any underdrain discharge elevation.

If all answers indicate "Yes," DMAs may be categorized as Type 'B', proceed to identify Type 'C' Areas Draining to Self-Retaining Areas.

Type 'C' Areas Draining to Self-Retaining Areas: Runoff from impervious or partially pervious areas can be managed by routing it to Self-Retaining Areas consistent with the LID Principle discussed in SMR WQMP Section 3.2.5 for 'Dispersing Runoff to Adjacent Pervious Areas'.
Indicate if the DMAs meet the following criteria by answering "Yes" or "No".

☐ Yes ☐ No The drainage from the tributary area must be directed to and dispersed within the Self-Retaining Area.

☐ Yes ☐ No Area must be designed to retain the entire Design Storm runoff without flowing offsite.

If all answers indicate "Yes," DMAs may be categorized as Type 'C'.

Complete Table C-3 and Table C-4 to identify Type 'B' Self-Retaining Areas and Type 'C' Areas Draining to Self-Retaining Areas.

Table C-3 Type 'B', Self-Retaining Areas

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C-4= [C]	Required Retention Depth (inches) [D] = $[B] + \frac{[B]\cdot[C]}{[A]}$
N/A						
N/A						
N/A						

Table C-4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]
N/A							
N/A							
N/A							
N/A							

Note: (See Section 3.3 of SMR WQMP) Ensure that partially pervious areas draining to a Self-Retaining area do not exceed the following ratio:

$$\left(\frac{2}{Impervious\ Fraction}\right) : 1$$

(Tributary Area**:** Self-Retaining Area)

Step 3.C – Identify Type 'D' Areas Draining to BMPs

Areas draining to BMPs are those that could not be fully managed through LID Principles (DMA Types A through C) and will instead drain to an LID BMP and/or a Conventional Treatment BMP designed to manage water quality impacts from that area, and Hydromodification where necessary.

Complete Table C-5 to document which DMAs are classified as Areas Draining to BMPs

Table C-5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID Receiving Runoff from DMA
DMA A-1	BMP-A
DMA A-1.1	
DMA A-2	
DMA A-2.1	
DMA A-2.2	
DMA A-2.3	

Section D: Implement LID BMPs

The Regional MS4 Permit requires the use of LID BMPs to provide retention or treatment of the DCV and includes a BMP hierarchy which requires Full Retention BMPs (Priority 1) to be considered before Biofiltration BMPs (Priority 2) and Flow-Through Treatment BMPs and Alternative Compliance BMPs (Priority 3). LID BMP selection must be based on technical feasibility and should be considered early in the site planning and design process. Use this section to document the selection of LID BMPs for each DMA. Note that feasibility is based on the DMA scale and may vary between DMAs based on site conditions.

D.1 Full Infiltration Applicability

An assessment of the feasibility of utilizing full infiltration BMPs is required for all projects, *except where it can be shown that site design LID principals fully retain the DCV (i.e., all DMAs are Type A, B, or C), or where Harvest and Use BMPs fully retain the DCV. Check the following box if applicable:*

☐ Site design LID principals fully retain the DCV (i.e., all DMAs are Type A, B, or C), (Proceed to Section E).

If the above box remains unchecked, perform a site-specific evaluation of the feasibility of Infiltration BMPs using each of the applicable criteria identified in Chapter 2.3.3 of the SMR WQMP and complete the remainder of Section D.1.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Copermittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the SMR WQMP. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Infiltration Feasibility

Table D-1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the SMR WQMP in Chapter 2.3.3. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D-1 Infiltration Feasibility

Downstream Impacts (SMR WQMP Section 2.3.3.a)		
Does the project site…	**YES**	**NO**
…have any DMAs where infiltration would negatively impact downstream water rights or other Beneficial Uses[2]?		X
If Yes, list affected DMAs:		
Groundwater Protection (SMR WQMP Section 2.3.3.b)		
Does the project site…	**YES**	**NO**
…have any DMAs with industrial, and other land uses that pose a high threat to water quality, which cannot be treated by Bioretention BMPs? Or have DMAs with active industrial process areas?		X
If Yes, list affected DMAs:		
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		N/A
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet horizontally of a water supply well?		X
If Yes, list affected DMAs:		
…have any DMAs that would restrict BMP locations to within a 2:1 (horizontal: vertical) influence line extending from any septic leach line?		X
If Yes, list affected DMAs:		
…have any DMAs been evaluated by a licensed Geotechnical Engineer, Hydrogeologist, or Environmental Engineer, who has concluded that the soils do not have adequate physical and chemical characteristics for the protection of groundwater, and has treatment provided by amended media layers in Bioretention BMPs been considered in evaluating this factor?		N/A
If Yes, list affected DMAs:		
Public Safety and Offsite Improvements (SMR WQMP Section 2.3.3.c)		
Does the project site…	**YES**	**NO**
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		N/A
If Yes, list affected DMAs:		
Infiltration Characteristics For LID BMPs (SMR WQMP Section 2.3.3.d)		
Does the project site…	**YES**	**NO**
…have factored infiltration rates of less than 0.8 inches / hour? (Note: on a case-by-case basis, the City may allow a factor of safety as low as 1.0 to support selection of full infiltration BMPs. Therefore, measured infiltration rates could be as low as 0.8 in/hr to support full infiltration. A higher factor of safety would be required for design in accordance with the LID BMP Deign Handbook).	X	
If Yes, list affected DMAs:		
Cut/Fill Conditions (SMR WQMP Section 2.3.3.e)		
Does the project site…	**YES**	**NO**
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
Other Site-Specific Factors (SMR WQMP Section 2.3.3.f)		
Does the project site…	**YES**	**NO**
…have DMAs where the geotechnical investigation discovered other site-specific factors that would preclude effective and/or safe infiltration?		N/A
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs that rely solely on infiltration should not be used for those DMAs and you should proceed to the assessment for Biofiltration BMPs below. Biofiltration BMPs that provide partial infiltration may still be feasible and should be

[2] Such a condition must be substantiated by sufficient modeling to demonstrate an impact and would be subject to [Insert Jurisdiction] discretion. There is not a standardized method for assessing this criterion. Water rights evaluations should be site-specific.

assessed in Section D.2. Summarize concerns identified in the Geotechnical Report, if any, that resulted in a "YES" response above in the table below.

Table D-2 Geotechnical Concerns for Onsite Infiltration

Type of Geotechnical Concern	DMAs Feasible (By Name or ID)	DMAs Infeasible (By Name or ID)
Collapsible Soil		
Expansive Soil		
Slopes		
Liquefaction		
Other		DMA-A

D.2 Biofiltration Applicability

This section should document the applicability of biofiltration BMPs for Type D DMAs that are not feasible for full infiltration BMPs. The key decisions to be documented in this section include:

1. Are biofiltration BMPs with partial infiltration feasible?
    a. Biofiltration BMPs must be designed to maximize incidental infiltration via a partial infiltration design unless it is demonstrated that this design is not feasible.
    b. These designs can be used at sites with low infiltration rates where other feasibility factors do not preclude incidental infiltration.

    Document summary in Table D-3.
2. If not, what are the factors that require the use of biofiltration with no infiltration? This may include:
    a. Geotechnical hazards
    b. Water rights issues
    c. Water balance issues
    d. Soil contamination or groundwater quality issues
    e. Very low infiltration rates (factored rates < 0.1 in/hr)
    f. Other factors, demonstrated to the acceptance of the City

    If this applies to any DMAs, then rationale must be documented in Table D-3.
3. Are biofiltration BMPs infeasible?
    a. If yes, then provide a site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee with jurisdiction over the Project site to discuss this option. Proceed to Section F to document your alternative compliance measures.

Table D-3 Evaluation of Biofiltration BMP Feasibility

DMA ID	Is Partial/ Incidental Infiltration Allowable? (Y/N)	Basis for Infeasibility of Partial Infiltration (provide summary and include supporting basis if partial infiltration not feasible)
DMA A-1	N	
DMA A-1.1	N	
DMA A-2	N	
DMA A-2.1	N	
DMA A-2.2	N	
DMA A-2.3	N	

Proprietary Biofiltration BMP Approval Criteria

If the project will use proprietary BMPs as biofiltration BMPs, then this section is completed to document that the proprietary BMPs are selected in accordance with Section 2.3.7 of the SMR WQMP. Proprietary Biofiltration BMPs must meet both of the following approval criteria:

1. Approval Criteria for All Proprietary BMPs, and
2. Acceptance Criteria for Proprietary Biofiltration BMPs.

When the use of proprietary biofiltration BMPs is proposed to meet the Pollutant Control performance standards, use Table D-4 to document that appropriate approval criteria have been met for the proposed BMPs. Add additional rows to document approval criteria are met for each type of BMP proposed.

Table D-4 Proprietary BMP Approval Requirement Summary

Proposed Proprietary Biofiltration BMP	Approval Criteria	Notes/Comments
N/A	☐ Proposed BMP has an active TAPE GULD Certification for the project pollutants of concern[3] or equivalent 3rd party demonstrated performance.	Insert text here
	☐ The BMP is used in a manner consistent with manufacturer guidelines and conditions of its third-party certification.	Insert text here
	☐ The BMP includes biological features including vegetation supported by engineered or other growing media.	Describe features here.
	☐ The BMP is designed to maximize infiltration, or supplemental infiltration is provided to achieve retention equivalent to Biofiltration with Partial Infiltration BMPs if factored infiltration rate is between 0.1 and 0.8 inches/hour.	Describe supplemental retention practices if applicable.

[3] Use Table F-1 and F-2 to identify and document the pollutants of concern and include these tables in Appendix 5.

	☐ The BMP is sized using one of two Biofiltration LID sizing options in Section 2.3.2 of the SRM WQMP.	List sizing method used, resulting size (i.e. volume or flow), and provided size (for proposed unit)

D.3 Feasibility Assessment Summaries

From the Infiltration, Biofiltration with Partial Infiltration and Biofiltration with No Infiltration Sections above, complete Table D-5 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D-5 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy			No LID (Alternative Compliance)
	1. Infiltration	2. Biofiltration with Partial Infiltration	3. Biofiltration with No Infiltration	
DMA A-1	☐	☐	☒	☐
DMA A-1.1	☐	☐	☒	☐
DMA A-2	☐	☐	☒	☐
DMA A-2.1	☐	☐	☒	☐
DMA A-2.2	☐	☐	☒	☐
DMA A-2.3	☐	☐	☒	☐

For those DMAs where LID BMPs are not feasible, provide a narrative in Table D-6 below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section F below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

This is based on the clarification letter titled "San Diego Water Board's Expectations of Documentation to Support a Determination of Priority Development Project Infiltration Infeasibility" (April 28, 2017, Via email from San Diego Regional Water Quality Control Board to San Diego County Municipal Storm Water Copermittees[4]).

Table D-6 Summary of Infeasibility Documentation

Question	Narrative Summary (include reference to applicable appendix/attachment/report, as applicable)
a) When in the entitlement process did a geotechnical engineer analyze the site for infiltration feasibility?	Confirmed – Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
b) When in the entitlement process were other investigations conducted (e.g., groundwater quality, water rights) to	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.

[4] http://www.projectcleanwater.org/download/pdp-infiltration-infeasibility/

evaluate infiltration feasibility?	
c) What was the scope and results of testing, if conducted, or rationale for why testing was not needed to reach findings?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
d) What public health and safety requirements affected infiltration locations?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
e) What were the conclusions and recommendations of the geotechnical engineer and/or other professional responsible for other investigations?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
f) What was the history of design discussions between the permittee and applicant for the proposed project, resulting in the final design determination related locations feasible for infiltration?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
g) What site design alternatives were considered to achieve infiltration or partial infiltration on site?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration. Bioretention will be utilized for treatment purposes.
h) What physical impairments (i.e., fire road egress, public safety considerations, utilities) and public safety concerns influenced site layout and infiltration feasibility?	Per Preliminary Geotechnical Investigation Report provided in Appendix 3, the tested infiltration rates are not feasible for infiltration.
i) What LID Principles (site design BMPs) were included in the project site design?	The project site will utilize bioretention planters.

D.4 LID BMP Sizing

Each LID BMP must be designed to ensure that the DCV will be captured by the selected BMPs with no discharge to the storm drain or surface waters during the DCV size storm. Infiltration BMPs must at minimum be sized to capture the DCV to achieve pollutant control requirements.

Biofiltration BMPs must at a minimum be sized to:

- Treat 1.5 times the DCV not reliably retained on site using a volume-base or flow-based sizing method, or
- Include static storage volume, including pore spaces and pre-filter detention volume, at least 0.75 times the portion of the DCV not reliably retained on site.

First**,** calculate the DCV for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using the methods included in Section 3 of the LID BMP Design Handbook. Utilize the worksheets found in the LID BMP Design Handbook or consult with the Copermittee to assist you in correctly sizing your LID BMPs. Use Table D-7 below to document the DCV for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D-7 DCV Calculations for LID BMPs

DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-A*		
	[A]		[B]	[C]	[A] x [C]			
A	*158,656*	*Concrete/Asphalt*	*1*	*0.89*	*141,521*			
A	*38,500*	*Natural (A Soils)*	*0.03*	*0.06*	*2,408*			
A	*27,121*	*Natural (C Soils)*	*0.3*	*0.23*	*6,107*			
A	*34,812*	*Roofs*	*1*	*0.89*	*31,052*			
						Design Storm Depth (in) [E]	*DCV, V_{BMP} (cubic feet)* $[F] = \frac{[D]x[E]}{12}$	*Proposed Volume on Plans (cubic feet)*
	A_T = 259,089				Σ= [D] 182093	0.68	$[F] = \frac{[182093]x[0.68]}{12}$	***10,262***

[B], [C] is obtained as described in Section 2.6.1.b of the SMR WQMP

[E] is obtained from Exhibit A in the SMR WQMP

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6.

Complete Table D-8 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. You can add rows to the table as needed. Alternatively, the Santa Margarita Hydrology Model (SMRHM) can be used to size LID BMPs to address the DCV and, if applicable, to size Hydrologic Control BMPs to meet the Hydrologic Performance Standard described in the SMR WQMP, as identified in Section E.

Table D-8 LID BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	Design Capture Volume (ft^3)	Proposed Volume (ft^3)
BMP-A	A	Biofiltration	10,262	10,342

If bioretention will include a capped underdrain, then include sizing calculations demonstrating that the BMP will meet infiltration sizing requirements with the underdrain capped and also meet biofiltration sizing requirements if the underdrain is uncapped.

Section E: Implement Hydrologic Control BMPs and Sediment Supply BMPs

If a completed Table 1.2 demonstrates that the project is exempt from Hydromodification Performance Standards, specify N/A and proceed to Section G.

☐ N/A Project is Exempt from Hydromodification Performance Standards.

If a PDP is not exempt from hydromodification requirements than the PDP must satisfy the requirements of the performance standards for hydrologic control BMPs and Sediment Supply BMPs. The PDP may choose to satisfy hydrologic control requirements using onsite or offsite BMPs (i.e. Alternative Compliance). Sediment supply requirements cannot be met via alternative compliance. If N/A is not selected above, select one of the two options below and complete the applicable sections.

☒ Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control and Sediment Supply BMPs Onsite (complete Section E).

☐ Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control Requirements using Alternative Compliance (complete Section F). Selection of this option must be approved by the Copermittee.

E.1 Hydrologic Control BMP Selection

Capture of the DCV and achievement of the Hydrologic Performance Standard may be met by combined and/or separate structural BMPs. The user should consider the full suite of Hydrologic Control BMPs to manage runoff from the post-development condition and meet the Hydrologic Performance Standard identified in this section.

The Hydrologic Performance Standard consists of matching or reducing the flow duration curve of post-development conditions to that of pre-existing, naturally occurring conditions, for the range of geomorphically significant flows (10% of the 2-year runoff event up to the 10-year runoff event). Select each of the hydrologic control BMP types that are applied to meet the above performance standard on the site.

☒ LID principles as defined in Section 3.2 of the SMR WQMP.

☒ Structural LID BMPs that may be modified or enlarged, if necessary, beyond the DCV.

☐ Structural Hydrologic Control BMPs that are distinct from the LID BMPs above. The LID BMP Design Handbook provides information not only on Hydrologic Control BMP design, but also on BMP design to meet the combined LID requirement and Hydrologic Performance Standard. The Handbook specifies the type of BMPs that can be used to meet the Hydrologic Performance Standard.

E.2 Hydrologic Control BMP Sizing

Hydrologic Control BMPs must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA for the range of geomorphically significant flows. Using SMRHM, (or another acceptable continuous simulation model if approved by the Copermittee) the applicant shall demonstrate that the performance of the Hydrologic Control BMPs complies with the Hydrologic Performance Standard. Complete Table E-1 below and identify, for each DMA, the type of Hydrologic Control BMP, if the SMRHM model confirmed the management (Identified as "passed" in SMRHM), the total volume capacity of the Hydrologic Control BMP, the Hydrologic Control BMP footprint at top floor elevation, and the drawdown time of the Hydrologic Control BMP. SMRHM summary reports should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table E-1 Hydrologic Control BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	SMRHM Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
BMP-A	A	Biofiltration w/ Underdrain	☐	0.24	0.15	N/A
			☐			
			☐			
			☐			

If a bioretention BMP with capped underdrain is used and hydromodification requirements apply, then sizing calculations must demonstrate that the BMP meets flow duration control criteria with the underdrain capped and uncapped. Both calculations must be included.

E.3 Implement Sediment Supply BMPs

The sediment supply performance standard applies to PDPs for which hydromodification applied that have the potential to impact Potential Critical Coarse Sediment Yield Areas. Refer to Exhibit G of the WQMP to determine if there are onsite Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas. Select one of the two options below and include the Potential Critical Coarse Sediment Yield Area Exhibit showing your project location in Appendix 7.

☒ There are no mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site. The Sediment Supply Performance Standard is met with no further action.

☐ There are mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site, the Sediment Supply Performance Standard will be met through Option 1 or Option 2 below.

The applicant may refer to Section 3.6.4 of the SMR WQMP for a description of the methodology to meet the Sediment Supply Performance Standard. Select the applicable compliance pathway and complete the appropriate sections to demonstrate compliance with the Sediment Supply Performance Standard if the second box is selected above:

☐ Avoid impacts related to any PDP activities to Potential Critical Coarse Sediment Yield Areas. Proceed to Section E.3.1.

☐ Complete a Site-Specific Critical Coarse Sediment Analysis. Proceed to Section E.3.2.

E.3.1 Option 1: Avoid Potential Critical Coarse Sediment Yield Areas and Potential Sediment Source Areas

The simplest approach for complying with the Sediment Supply Performance Standard is to avoid impacts to areas identified as Potential Critical Coarse Sediment Yield Areas or Potential Sediment Supply Areas. If a portion of PDP is identified as a Potential Critical Coarse Sediment Yield Area or a Potential Sediment Source Area, that PDP may still achieve compliance with the Sediment Supply Performance Standards if Potential Critical Coarse Sediment Yield Areas and Potential Sediment Supply Areas are avoided, i.e. areas are not developed and thereby delivery of Critical Coarse Sediment to the receiving waters is not impeded by site developments.

Provide a narrative describing how the PDP has avoided impacts to Potential Critical Coarse Sediment Yield Areas and/or Potential Sediment Source Areas below.

Insert narrative description here

If it is not feasible to avoid these areas, proceed to Option 2 to complete a Site-Specific Critical Coarse Sediment Analysis.

E.3.2 Option 2: Site-Specific Critical Coarse Sediment Analysis

Perform a stepwise assessment to ensure the maintenance of the pre-project source(s) of Critical Coarse Sediment (i.e., Bed Sediment Supply):

1. Determine whether the site or a portion of the site is a Significant Source of Bed Sediment Supply to the Receiving Channel (i.e., an actual verified Critical Coarse Sediment Yield Area);
2. Avoid areas identified as actual verified Critical Coarse Sediment Yield Areas in the PDP design and maintain pathways for discharge of Bed Sediment Supply from these areas to receiving waters.

Step 1: Identify if the site is an actual verified Critical Coarse Sediment Yield Area supplying Bed Sediment Supply to the receiving channel

☐ **Step 1.A** – Is the Bed Sediment of onsite streams similar to that of receiving streams?

Rate the similarity: ☐ High
☐ Medium
☐ Low

Results from the geotechnical and sieve analysis to be performed both onsite and in the receiving channel should be documented in Appendix 7. Of particular interest, the results of the sieve analysis, the soil erodibility factor, a description of the topographic relief of the project area, and the lithology of onsite soils should be reported in Appendix 7.

☐ **Step 1.B** – Are onsite streams capable of delivering Bed Sediment Supply from the site, if any, to the receiving channel?

Rate the potential:
- ☐ High
- ☐ Medium
- ☐ Low

Results from the analyses of the sediment delivery potential to the receiving channel should be documented in Appendix 7 and identify, at a minimum, the Sediment Source, the distance to the receiving channel, the onsite channel density, the project watershed area, the slope, length, land use, and rainfall intensity.

☐ **Step 1.C** – Will the receiving channel adversely respond to a change in Bed Sediment Load?

Rate the need for bed sediment supply:
- ☐ High
- ☐ Medium
- ☐ Low

Results from the in-stream analysis to be performed both onsite should be documented in Appendix 7. The analysis should, at a minimum, quantify the bank stability and the degree of incision, provide a gradation of the Bed Sediment within the receiving channel, and identify if the channel is sediment supply-limited.

☐ **Step 1.D** – Summary of Step 1

Summarize in Table E.3 the findings of Step 1 and associate a score (in parenthesis) to each step. The sum of the three individual scores determines if a stream is a significant contributor to the receiving stream.

- Sum is equal to or greater than eight - Site is a significant source of sediment bed material – all on-site streams must be preserved or by-passed within the site plan. The applicant shall proceed to Step 2 for all onsite streams.
- Sum is greater than five but lower than eight. Site is a source of sediment bed material – some of the on-site streams must be preserved (with identified streams noted). The applicant shall proceed to Step 2 for the identified streams only.
- Sum is equal to or lower than five. Site is not a significant source of sediment bed material. The applicant may advance to Section F.

Table E-2 Triad Assessment Summary

Step	Rating			Total Score
1.A	☐ High (3)	☐ Medium (2)	☐ Low (1)	
1.B	☐ High (3)	☐ Medium (2)	☐ Low (1)	
1.C	☐ High (3)	☐ Medium (2)	☐ Low (1)	
Significant Source Rating of Bed Sediment to the receiving channel(s)				

Step 2: Avoid Development of Critical Coarse Sediment Yield Areas, Potential Sediment Sources Areas, and Preserve Pathways for Transport of Bed Sediment Supply to Receiving Waters

Onsite streams identified as a actual verified Critical Coarse Sediment Yield Areas should be avoided in the site design and transport pathways for Critical Coarse Sediment should be preserved

Check those that apply:

☐ The site design does avoid all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas

AND

☐ The drainage design bypasses flow and sediment from onsite upstream drainages identified as actual verified Critical Coarse Sediment Yield Areas to maintain Critical Coarse Sediment supply to receiving waters

(If both are yes, the applicant may disregard subsequent steps of Section E.3 and directly advance directly to Section G).

- *Or* -

☐ The site design **does NOT avoid** all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas

OR

☐ The project impacts transport pathways of Critical Coarse Sediment from onsite upstream drainages.

(If either of these are the case, the applicant may proceed with the subsequent steps of Section E.3).

Provide in Appendix 7 a site map that identifies all onsite channels and highlights those onsite channels that were identified as a Significant Source of Bed Sediment. The site map shall demonstrate, if feasible, that the site design avoids those onsite channels identified as a Significant Source of Bed Sediment. In addition, the applicant shall describe the characteristics of each onsite channel identified as a Significant Source of Bed Sediment. If the design plan cannot avoid the onsite channels, please provide a rationale for each channel individually.

The site map shall demonstrate that the drainage design bypasses those onsite channels that supply Critical Coarse Sediment to the receiving channel(s). In addition, the applicant shall describe the characteristics of each onsite channel identified as an actual verified Critical Coarse Sediment Yield Area.

Identified Channel #1 - Insert narrative description here

Identified Channel #2 - Insert narrative description here

Identified Channel #3 - Insert narrative description here

E.3.3 Sediment Supply BMPs to Result in No Net Impact to Downstream Receiving Waters

If impacts to Critical Coarse Sediment Yield Areas cannot be avoided, sediment supply BMPs must be implemented such there is no net impact to receiving waters. Sediment supply BMPs may consist of approaches that permit flux of bed sediment supply from Critical Coarse Sediment Yield Areas within the project boundary. This approach is subject to acceptance by the [Insert Jurisdiction]. It may require extensive documentation and analysis by qualified professionals to support this demonstration.

Appendix H of the San Diego Model BMP Design Manual provides additional information on site-specific investigation of Critical Coarse Sediment Supply areas.

http://www.projectcleanwater.org/download/2018-model-bmp-design-manual/

If applicable, insert narrative description here

Documentation of sediment supply BMPs should be detailed in Appendix 7.

Section F: Alternative Compliance

Alternative Compliance may be used to achieve compliance with pollutant control and/or hydromodification requirements for a given PDP. Alternative Compliance may be used under two scenarios, check the applicable box if the PDP is proposing to use Alternative Compliance to satisfy all or a portion of the Pollutant Control and/or Hydrologic Control requirements (but not sediment supply requirements)

☐ If it is not feasible to fully implement Infiltration or Biofiltration BMPs at a PDP site, Flow-Through Treatment Control BMPs may be used to treat pollutants contained in the portion of DCV not reliably retained on site and Alternative Compliance measures must also be implemented to mitigate for those pollutants in the DCV that are not retained or removed on site prior to discharging to a receiving water.

☐ Alternative Compliance is selected to comply with either pollutant control or hydromodification flow control requirements even if complying with these requirements is potentially feasible on-site. If such voluntary Alternative Compliance is implemented, Flow-Through Treatment Control BMPs must still be used to treat those pollutants in the portion of the DCV not reliably retained on site prior to discharging to a receiving water.

Refer to Section 2.7 of the SMR WQMP and consult the City for currently available Alternative Compliance pathways. Coordinate with the Copermittee if electing to participate in Alternative Compliance and complete the sections below to document implementation of the Flow-Through BMP component of the program.

F.1 Identify Pollutants of Concern

The purpose of this section is to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs and to document compliance and.

Utilize Table A-1 from Section A, which noted your project's Receiving Waters, to identify impairments for Receiving Waters (including downstream receiving waters) by completing Table F-1. Table F-1 includes the watersheds identified as impaired in the Approved 2010 303(d) list; check box corresponding with the PDP's receiving water. The most recent 303(d) lists are available from the State Water Resources Control Board website:
https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml).https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

Table F-1 Summary of Approved 2010 303(d) listed waterbodies and associated pollutants of concern for the Riverside County SMR Region and downstream waterbodies.

	Water Body	Nutrients[1]	Metals[2]	Toxicity	Bacteria and Pathogens	Pesticides and Herbicides	Sulfate	Total Dissolved Solids
☐	De Luz Creek	X	X				X	
☐	Long Canyon Creek		X		X	X		
☐	Murrieta Creek	X	X	X		X		
☐	Redhawk Channel	X	X		X	X		X
☐	Santa Gertudis Creek	X	X		X	X		
☐	Santa Margarita Estuary	X						
☐	Santa Margarita River (Lower)	X			X			
☐	Santa Margarita River (Upper)	X		X				
☐	Temecula Creek	X	X	X		X		X
☐	Warm Springs Creek	X	X		X	X		
☒	Lake Elsinore	X		X		X		

[1] Nutrients include nitrogen, phosphorus and eutrophic conditions caused by excess nutrients.

[2] Metals includes copper, iron, and manganese.

Use Table F-2 to identify the pollutants identified with the project site. Indicate the applicable PDP Categories and/or Project Features by checking the boxes that apply. If the identified General Pollutant Categories are the same as those listed for your Receiving Waters, then these will be your Pollutants of Concern; check the appropriate box or boxes in the last row.

Per the California 2020-2022 Integrated Report in Appendix 1 and Table A-1, the project site runoff is discharging to Lake Elsinore. Lake Elsinore has TMDLs for the following pollutants: DDT, nutrients, organic enrichment/low dissolved oxygen, PCBs, and toxicity. The plan indicates a bioretention basin will be used as the BMP. Bioretention practices reduce peak flows in downstream water bodies and allow pollutant removal through filtration and plant uptake.

Table F-2 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)		General Pollutant Categories									
		Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease	Total Dissolved Solids	Sulfate
☐	Detached Residential Development	P	N	P	P	N	P	P	P	N	N
☐	Attached Residential Development	P	N	P	P	N	P	P	P[(2)]	N	N
☒	Commercial/Industrial Development	P[(3)]	P[(7)]	P[(1)]	P[(1)]	P	P[(1)]	P	P	N	N
☐	Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P	N	N
☐	Restaurants (>5,000 ft^2)	P	N	N	P[(1)]	N	N	P	P	N	N
☐	Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P	N	N
☒	Parking Lots (>5,000 ft^2)	P[(6)]	P[(7)]	P[(1)]	P[(1)]	P[(4)]	P	P	P	N	N
☐	Streets, Highways, and Freeways	P[(6)]	P[(7)]	P[(1)]	P[(1)]	P[(4)]	P	P	P	N	N
☐	Retail Gasoline Outlets	N	P[(7)]	N	N	P[(4)]	N	P	P	N	N
Project Priority Pollutant(s) of Concern		☐	☐	☒	☒	☒	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste products; otherwise not expected

(4) Including petroleum hydrocarbons

(5) Including solvents

(6) Bacterial indicators are routinely detected in pavement runoff

(7) A potential source of metals, primarily copper and zinc. Iron, magnesium, and aluminum are commonly found in the environment and are commonly associated with soils, but are not primarily of anthropogenic stormwater origin in the municipal environment.

F.2 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential Pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must be selected to address the Project Priority Pollutants of Concern (identified above) and meet the acceptance criteria described in Section 2.3.7 of the SMR WQMP. Documentation of acceptance criteria must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table F-3 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
BMP-A	Nutrients, Pesticides, Toxicity	

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Copermittee Approved Study and provided in Appendix 6.

F.3 Sizing Criteria

Utilize Table F-4 below to appropriately size flow-through BMPs to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.1 of the SMR WQMP for further information.

Table F-4 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*	
	[A]		[B]	[C]	[A] x [C]		
N/A						*Design Storm (in)*	*Design Flow Rate (cfs)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{[G]}$

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP
[E] either 0.2 inches or 2 times the 85th percentile hourly rainfall intensity
[G] = 43,560,.

F.4 Hydrologic Performance Standard – Alternative Compliance Approach

Alternative compliance options are only available if the governing Copermittee has acknowledged the infeasibility of onsite Hydrologic Control BMPs and approved an alternative compliance approach. See Section 3.5 and 3.6 of the SMR WQMP.

Select the pursued alternative and describe the specifics of the alternative:

☐ Offsite Hydrologic Control Management within the same channel system

Insert narrative description here

☐ In-Stream Restoration Project

Insert narrative description here

For Offsite Hydrologic Control BMP Option

Each Hydrologic Control BMP must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA by more than ten percent over a one-year period. Using SMRHM, the applicant shall demonstrate that the performance of each designed Hydrologic Control BMP is equivalent with the Hydrologic Performance Standard for onsite conditions. Complete Table F-5 below and identify, for each Hydrologic Control BMP, the equivalent DMA the Hydrologic Control BMP mitigates, that the SMRHM model passed, the total volume capacity of the BMP, the BMP footprint at top floor elevation, and the drawdown time of the BMP. SMRHM summary reports for the alternative approach should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table F-5 Offsite Hydrologic Control BMP Sizing

BMP Name / Type	Equivalent DMA (ac)	SMRHM Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
N/A		☐			
		☐			
		☐			
		☐			

For Instream Restoration Option

Attach to Appendix 7 the technical report detailing the condition of the receiving channel subject to the proposed hydrologic and sediment regimes. Provide the full design plans for the in-stream restoration project that have been approved by the Copermittee. Utilize the San Diego Regional Water Quality Equivalency Guidance Document.

Section G: Implement Trash Capture BMPs

The City may require full trash capture BMPs to be installed as part of the project. Consult with the City to determine applicability.

Trash Capture BMPs may be applicable to Type 'D' DMAs, as defined in Section 2.3.4 of the SMR WQMP. Trash Capture BMPs are designed to treat Q_{TRASH}, the runoff flow rate generated during the 1-year 1-hour precipitation depth. Utilize Table G-1 to size Trash Capture BMP. Refer to Table G-2 to determine the Trash Capture Design Storm Intensity (E).

Table G-1 Sizing Trash Capture BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-A*	
	[A]		[B]	[C]	[A] x [C]		
A	*161,393*	*Concrete/Asphalt*	*1*	*0.89*	*141,521*		
A	*37,768*	*Natural (A Soils)*	*0.03*	*0.03*	*2,408*		
A	*33,555*	*Natural (C Soils)*	*0.3*	*0.3*	*6,107*		
A	*31,629*	*Roofs*	*1*	*1*	*31,052*		
						Trash Capture Design Storm Intensity (in)	*Trash Capture Design Flow Rate (cubic feet or cfs)*
	$A_T = \Sigma[A]$				$\Sigma=$ 181,088	0.37	$[F] = \frac{[D]x[E]}{[G]} = 1.51$

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP
[G] = 43,560

Table G-2 Approximate precipitation depth/intensity values for calculation of the Trash Capture Design Storm

City	1-year 1-hour Precipitation Depth/Intensity (inches/hr)
Murrieta	0.47
Temecula	0.50
Wildomar	0.37

Use Table G-3 to summarize and document the selection and sizing of Trash Capture BMPs.

Table G-3 Trash Capture BMPs

BMP Name / ID	DMA No(s)	BMP Type / Description	Required Trash Capture Flowrate (cfs)	Provided Trash Capture Flowrate (cfs)
BMP-A	A	Biofiltration Basin w/ Underdrain	1.51	1.51

*Biofiltration Basin Qualifies as Multi-Benefit Treatment System per City of Wildomar WQMP Sec. 2.5.2

Section H: Source Control BMPs

Source Control BMPs include permanent, structural features that may be required in your Project plans, such as roofs over and berms around trash and recycling areas, and Operational BMPs, such as regular sweeping and "housekeeping," that must be implemented by the site's occupant or user. The Maximum Extent Practicable (MEP) standard typically requires both types of BMPs. In general, Operational Source Control BMPs cannot be substituted for a feasible and effective Structural Source Control BMP. Complete checklist below to determine applicable Source Control BMPs for your site.

Project-Specific WQMP Source Control BMP Checklist

All development projects must implement Source Control BMPs. Source Control BMPs are used to minimize pollutants that may discharge to the MS4. Refer to Chapter 3 (Section 3.8) of the SMR WQMP for additional information. Complete Steps 1 and 2 below to identify Source Control BMPs for the project site.

STEP 1: IDENTIFY POLLUTANT SOURCES

Review project site plans and identify the applicable pollutant sources. "Yes" indicates that the pollutant source is applicable to project site. "No" indicates that the pollutant source is not applicable to project site.

☒ Yes ☐ No	Storm Drain Inlets		☐ Yes ☒ No	Outdoor storage areas	
☐ Yes ☒ No	Floor Drains		☐ Yes ☒ No	Material storage areas	
☐ Yes ☒ No	Sump Pumps		☒ Yes ☐ No	Fueling areas	
☐ Yes ☒ No	Pets Control/Herbicide Application		☐ Yes ☒ No	Loading Docks	
☒ Yes ☐ No	Food Service Areas		☐ Yes ☒ No	Fire Sprinkler Test/Maintenance water	
☒ Yes ☐ No	Trash Storage Areas		☒ Yes ☐ No	Plazas, Sidewalks and Parking Lots	
☐ Yes ☒ No	Industrial Processes		☐ Yes ☒ No	Pools, Spas, Fountains and other water features	
☒ Yes ☐ No	Vehicle and Equipment Cleaning and Maintenance/Repair Areas				

STEP 2: REQUIRED SOURCE CONTROL BMPS

List each Pollutant source identified above in column 1 and fill in the corresponding Structural Source Control BMPs and Operational Control BMPs by referring to the Stormwater Pollutant Sources/Source Control Checklist included in Appendix 8. The resulting list of structural and operational source control BMPs must be implemented as long as the associated sources are present on the project site. Add additional rows as needed.

Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
Storm Drain Inlets		Regular Housekeeping
Food Service Areas	Bioretention BMP	
Trash Storage Areas		Regular Street Sweeping
Vehicle and Equipment Cleaning	Bioretention BMP	
Fueling Areas	Bioretention BMP	
Plazas, Sidewalks, etc..		Regular Street Sweeping

Section I: Coordinate Submittal with Other Site Plans

Populate Table I-1 below to assist the plan checker in an expeditious review of your project. During construction and at completion, City inspectors will verify the installation of BMPs against the approved plans. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table I-1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
Insert text here	Insert text here	Insert text here
Insert text here	Insert text here	Insert text here
Insert text here	Insert text here	Insert text here
Insert text here	Insert text here	Insert text here
	Insert text here	Insert text here

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. The Copermittee with jurisdiction over the Project site can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Use Table I-2 to identify other applicable permits that may impact design of the site. If yes is answered to any of the items below, the Copermittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Table I-2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☒ Y	☐ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Wildomar Grading Permit	☒ Y	☐ N

Section J: Operation, Maintenance and Funding

The Copermittee with jurisdiction over the Project site will periodically verify that BMPs on your Project are maintained and continue to operate as designed. To make this possible, the Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement maintenance of BMPs in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized Operations and Maintenance or inspections but will require typical landscape maintenance as noted in Chapter 5, in the SMR WQMP. Include a brief description of typical landscape maintenance for these areas.

The Copermittee with jurisdiction over the Project site will also require that you prepare and submit a detailed BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a BMP Operation and Maintenance Plan are in Chapter 5 of the SMR WQMP.

Maintenance Mechanism: Insert text here.

Will the proposed BMPs be maintained by a Homeowners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Section K: Acronyms, Abbreviations and Definitions

Regional MS4 Permit	Order No. R9-2013-0001 as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100 an NPDES Permit issued by the San Diego Regional Water Quality Control Board.
Applicant	Public or private entity seeking the discretionary approval of new or replaced improvements from the Copermittee with jurisdiction over the project site. The Applicant has overall responsibility for the implementation and the approval of a Priority Development Project. The WQMP uses consistently the term "user" to refer to the applicant such as developer or project proponent. The WQMP employs also the designation "user" to identify the Registered Professional Civil Engineer responsible for submitting the Project-Specific WQMP, and designing the required BMPs.
Best Management Practice (BMP)	Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.
BMP Fact Sheets	BMP Fact Sheets are available in the LID BMP Design Handbook. Individual BMP Fact Sheets include sitting considerations, and design and sizing guidelines for seven types of structural BMPs (infiltration basin, infiltration trench, permeable pavement, harvest-and-use, bioretention, extended detention basin, and sand filter).
California Stormwater Quality Association (CASQA)	Publisher of the California Stormwater Best Management Practices Handbooks, available at www.cabmphandbooks.com.
Conventional Treatment Control BMP	A type of BMP that provides treatment of storm water runoff. Conventional treatment control BMPs, while designed to treat particular Pollutants, typically do not provide the same level of volume reduction as LID BMPs, and commonly require more specialized maintenance than LID BMPs. As such, the Regional MS4 Permit and this WQMP require the use of LID BMPs wherever feasible, before Conventional Treatment BMPs can be considered or implemented.
Copermittees	The Regional MS4 Permit identifies the Cities of Murrieta, Temecula, and Wildomar, the County, and the District, as Copermittees for the SMR.
County	The abbreviation refers to the County of Riverside in this document.

CEQA	California Environmental Quality Act - a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CIMIS	California Irrigation Management Information System - an integrated network of 118 automated active weather stations all over California managed by the California Department of Water Resources.
CWA	Clean Water Act - is the primary federal law governing water pollution. Passed in 1972, the CWA established the goals of eliminating releases of high amounts of toxic substances into water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. CWA Section 402(p) is the federal statute requiring NPDES permits for discharges from MS4s.
CWA Section 303(d) Waterbody	Impaired water in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.
Design Storm	The Regional MS4 Permit has established the 85th percentile, 24-hour storm event as the "Design Storm". The applicant may refer to Exhibit A to identify the applicable Design Storm Depth (D85) to the project.
DCV	Design Capture Volume (DCV) is the volume of runoff produced from the Design Storm to be mitigated through LID Retention BMPs, Other LID BMPs and Volume Based Conventional Treatment BMPs, as appropriate.
Design Flow Rate	The design flow rate represents the minimum flow rate capacity that flow-based conventional treatment control BMPs should treat to the MEP, when considered.
DCIA	Directly Connected Impervious Areas - those impervious areas that are hydraulically connected to the MS4 (i.e. street curbs, catch basins, storm drains, etc.) and thence to the structural BMP without flowing over pervious areas.
Discretionary Approval	A decision in which a Copermittee uses its judgment in deciding whether and how to carry out or approve a project.
District	Riverside County Flood Control and Water Conservation District.
DMA	A Drainage Management Area - a delineated portion of a project site that is hydraulically connected to a common structural BMP or conveyance point. The Applicant may refer to Section 3.3 for further guidelines on how to delineate DMAs.

Drawdown Time	Refers to the amount of time the design volume takes to pass through the BMP. The specified or incorporated drawdown times are to ensure that adequate contact or detention time has occurred for treatment, while not creating vector or other nuisance issues. It is important to abide by the drawdown time requirements stated in the fact sheet for each specific BMP.
Effective Area	Area which 1) is suitable for a BMP (for example, if infiltration is potentially feasible for the site based on infeasibility criteria, infiltration must be allowed over this area) and 2) receives runoff from impervious areas.
ESA	An Environmental Sensitive Area (ESA) designates an area "in which plants or animals life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments". (Reference: California Public Resources Code § 30107.5).
ET	Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is also an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity
FAR	The Floor Area Ratio (FAR) is the total square feet of a building divided by the total square feet of the lot the building is located on.
Flow-Based BMP	Flow-based BMPs are conventional treatment control BMPs that are sized to treat the design flow rate.
FPPP	Facility Pollution Prevention Plan
HCOC	Hydrologic Condition of Concern - Exists when the alteration of a site's hydrologic regime caused by development would cause significant impacts on downstream channels and aquatic habitats, alone or in conjunction with impacts of other projects.
HMP	Hydromodification Management Plan – Plan defining Performance Standards for PDPs to manage increases in runoff discharge rates and durations.
Hydrologic Control BMP	BMP to mitigate the increases in runoff discharge rates and durations and meet the Performance Standards set forth in the HMP.
HSG	Hydrologic Soil Groups – soil classification to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSGs are A (very low runoff potential/high infiltration rate), B, C, and D (high runoff potential/very low infiltration rate)

Hydromodification	The Regional MS4 Permit identifies that increased volume, velocity, frequency and discharge duration of storm water runoff from developed areas has the potential to greatly accelerate downstream erosion, impair stream habitat in natural drainages, and negatively impact beneficial uses.
JRMP	A separate Jurisdictional Runoff Management Plan (JRMP) has been developed by each Copermittee and identifies the local programs and activities that the Copermittee is implementing to meet the Regional MS4 Permit requirements.
LID	Low Impact Development (LID) is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques. LID site design BMPs help preserve and restore the natural hydrologic cycle of the site, allowing for filtration and infiltration which can greatly reduce the volume, peak flow rate, velocity, and pollutant loads of storm water runoff.
LID BMP	A type of storm water BMP that is based upon Low Impact Development concepts. LID BMPs not only provide highly effective treatment of storm water runoff, but also yield potentially significant reductions in runoff volume – helping to mimic the pre-project hydrologic regime, and also require less ongoing maintenance than Treatment Control BMPs. The applicant may refer to Chapter 2.
LID BMP Design Handbook	The LID BMP Design Handbook was developed by the Copermittees to provide guidance for the planning, design and maintenance of LID BMPs which may be used to mitigate the water quality impacts of PDPs within the County.
LID Bioretention BMP	LID Bioretention BMPs are bioretention areas are vegetated (i.e., landscaped) shallow depressions that provide storage, infiltration, and evapotranspiration, and provide for pollutant removal (e.g., filtration, adsorption, nutrient uptake) by filtering storm water through the vegetation and soils. In bioretention areas, pore spaces and organic material in the soils help to retain water in the form of soil moisture and to promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants use soil moisture and promote the drying of the soil through transpiration. The Regional MS4 Permit defines "retain" as to keep or hold in a particular place, condition, or position without discharge to surface waters.
LID Biofiltration BMP	BMPs that reduce stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration, and other biological and chemical processes. As storm water passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants, and collected through an underdrain.

LID Harvest and Reuse BMP	BMPs used to facilitate capturing storm water runoff for later use without negatively impacting downstream water rights or other Beneficial Uses.
LID Infiltration BMP	BMPs to reduce storm water runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Typical LID Infiltration BMPs include infiltration basins, infiltration trenches and pervious pavements.
LID Retention BMP	BMPs to ensure full onsite retention without runoff of the DCV such as infiltration basins, bioretention, chambers, trenches, permeable pavement and pavers, harvest and reuse.
LID Principles	Site design concepts that prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
MEP	Maximum Extent Practicable - standard established by the 1987 amendments to the Clean Water Act (CWA) for the reduction of Pollutant discharges from MS4s. Refer to Attachment C of the Regional MS4 Permit for a complete definition of MEP.
MF	Multi-family – zoning classification for parcels having 2 or more living residential units.
MS4	Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting or conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.26.
New Development Project	Defined by the Regional MS4 Permit as 'Priority Development Projects' if the project, or a component of the project meets the categories and thresholds described in Section 1.1.1.
NPDES	National Pollution Discharge Elimination System - Federal program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA.
NRCS	Natural Resources Conservation Service

PDP	Priority Development Project - Includes New Development and Redevelopment project categories listed in Provision E.3.b of the Regional MS4 Permit.
Priority Pollutants of Concern	Pollutants expected to be present on the project site and for which a downstream water body is also listed as Impaired under the CWA Section 303(d) list or by a TMDL.
Project-Specific WQMP	A plan specifying and documenting permanent LID Principles and storm water BMPs to control post-construction Pollutants and storm water runoff for the life of the PDP, and the plans for operation and maintenance of those BMPs for the life of the project.
Receiving Waters	Waters of the United States.
Redevelopment Project	The creation, addition, and or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Project that meets the criteria described in Section 1.
Runoff Fund	Runoff Funds have not been established by the Copermittees and are not available to the Applicant. If established, a Runoff Fund will develop regional mitigation projects where PDPs will be able to buy mitigation credits if it is determined that implementing onsite controls is infeasible.
San Diego Regional Board	San Diego Regional Water Quality Control Board - The term "Regional Board", as defined in Water Code section 13050(b), is intended to refer to the California Regional Water Quality Control Board for the San Diego Region as specified in Water Code Section 13200. State agency responsible for managing and regulating water quality in the SMR.
SCCWRP	Southern California Coastal Water Research Project
Site Design BMP	Site design BMPs prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
SF	Parcels with a zoning classification for a single residential unit.
SMC	Southern California Stormwater Monitoring Coalition
SMR	The Santa Margarita Region (SMR) represents the portion of the Santa Margarita Watershed that is included within the County of Riverside.

Source Control BMP	Source Control BMPs land use or site planning practices, or structural or nonstructural measures that aim to prevent runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between Pollutants and runoff.
Structural BMP	Structures designed to remove pollutants from stormwater runoff and mitigate hydromodification impacts.
SWPPP	Storm Water Pollution Prevention Plan
Tentative Tract Map	Tentative Tract Maps are required for all subdivision creating five (5) or more parcels, five (5) or more condominiums as defined in Section 783 of the California Civil Code, a community apartment project containing five (5) or more parcels, or for the conversion of a dwelling to a stock cooperative containing five (5) or more dwelling units.
TMDL	Total Maximum Daily Load - the maximum amount of a Pollutant that can be discharged into a waterbody from all sources (point and non-point) and still maintain Water Quality Standards. Under CWA Section 303(d), TMDLs must be developed for all waterbodies that do not meet Water Quality Standards after application of technology-based controls.
USEPA	United States Environmental Protection Agency
Volume-Based BMP	Volume-Based BMPs applies to BMPs where the primary mode of pollutant removal depends upon the volumetric capacity such as detention, retention, and infiltration systems.
WQMP	Water Quality Management Plan
Wet Season	The Regional MS4 Permit defines the wet season from October 1 through April 30.

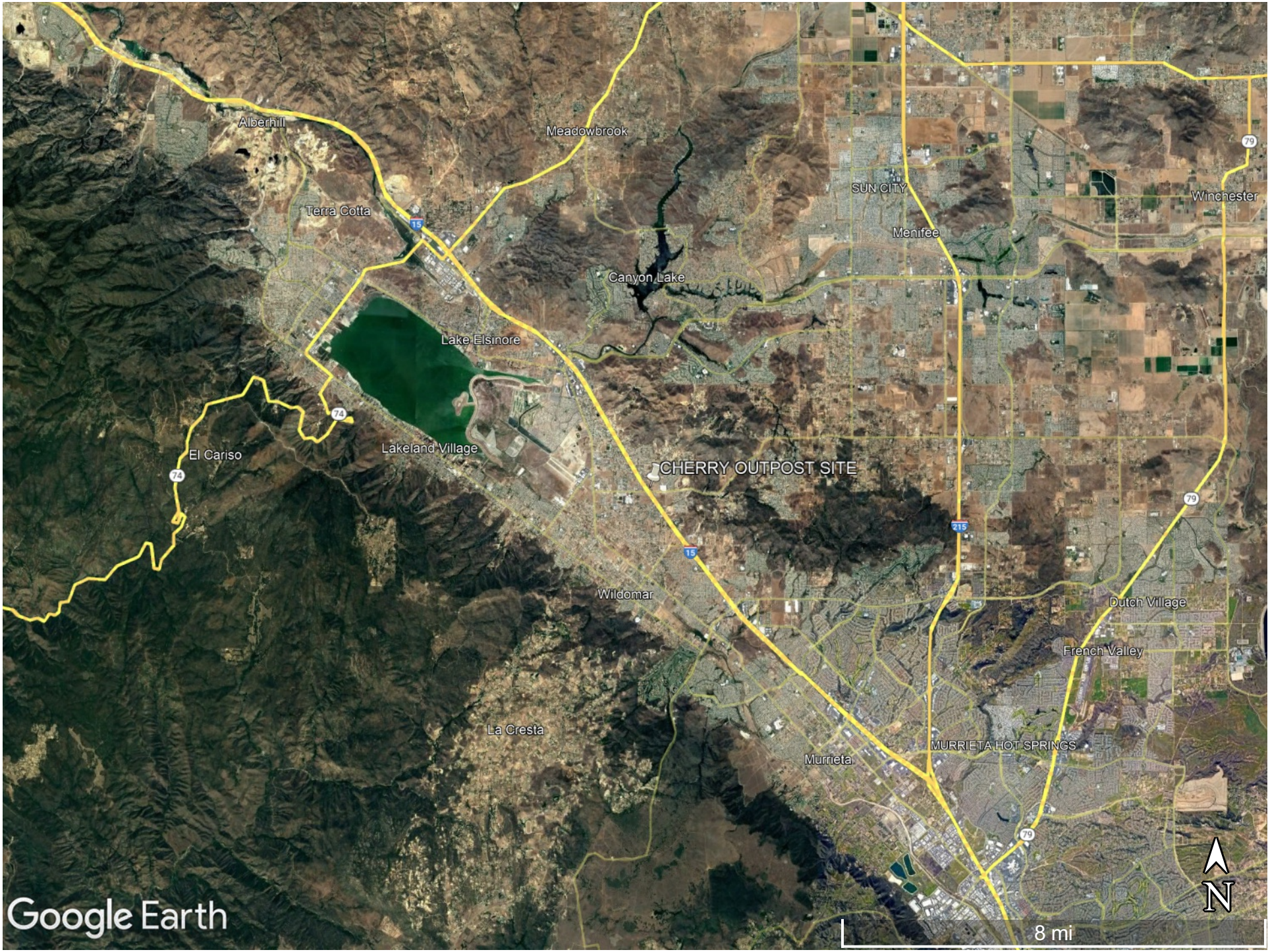
Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Complete the checklist below to verify all exhibits and components are included in the Project-Specific WQMP. Refer Section 4 of the SMR WQMP and Section D of this Template.

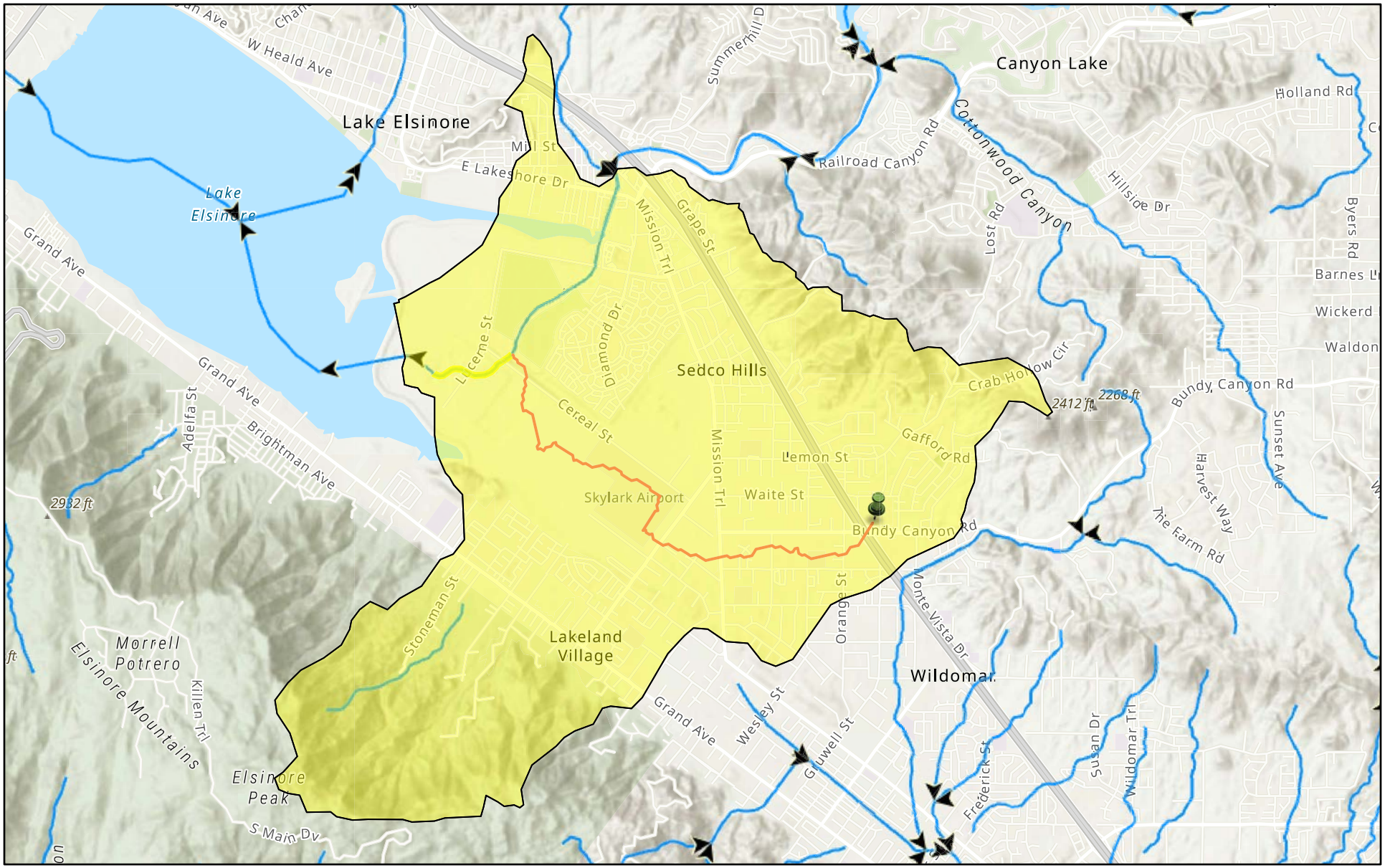
Map and Site Plan Checklist
Indicate all Maps and Site Plans are included in your Project-Specific WQMP by checking the boxes below.
☐ Vicinity and Location Map
☐ Existing Site Map (unless exiting conditions are included in WQMP Site Plan)
☐ WQMP Site Plan
☐ Parcel Boundary and Project Footprint
☐ Existing and Proposed Topography
☐ Drainage Management Areas (DMAs)
☐ Proposed Structural Best Management Practices (BMPs)
☐ Drainage Paths
☐ Drainage infrastructure, inlets, overflows
☐ Source Control BMPs
☐ Site Design BMPs
☐ Buildings, Roof Lines, Downspouts
☐ Impervious Surfaces
☐ Pervious Surfaces (i.e. Landscaping)
☐ Standard Labeling


Hesperia
Angeles National Forest
Burbank
San Bernardino
Los Angeles
Santa Monica
San Bernardino National Forest
Riverside
Joshua Tree National Park
Palm Springs
Anaheim
Long Beach
Palm Desert
Irvine
CHERRY OUTPOST SITE
La Quinta
Temecula
Catalina Island Essential Fish Habitat...
Salton Sea
Cleveland National Forest
Oceanside
Escondido
Anza-Borrego Desert State Park
San Diego
Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Data USGS
Data LDEO-Columbia, NSF, NOAA
N
70 mi


Alberhill
Meadowbrook
Terra Cotta
SUN CITY
Winchester
Menifee
Canyon Lake
Lake Elsinore
El Cariso
Lakeland Village
CHERRY OUTPOST SITE
Wildomar
Dutch Village
French Valley
La Cresta
MURRIETA HOT SPRINGS
Murrieta
Google Earth
N
8 mi


Waite St
2ND Chances Preserve
Cherry St
Spur Brook Dr
Orange St
15
CENTENO POOL PLUMBING
CHERRY OUTPOST SITE
Bundy Canyon Super
Jack in the Box
ARCO
Bundy Canyon Rd
Shell
Temecula Valley Fwy
Google Earth
N
1000 ft

WATERS GeoViewer Print Map



10/19/2023, 11:05:16 AM

Result: Link Path

Result: Streams Selected

Result: Catchments Selected

Result: Delineated Area

Streams

Flow Direction

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

US EPA, Loma Linda University, County of Riverside, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

US Environment Protection Agency

Esri, NASA, NGA, USGS, FEMA | Loma Linda University, County of Riverside, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA | US EPA |

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

PROJECT SITE

Santa Ana River Watershed
Santa Margarita Watershed

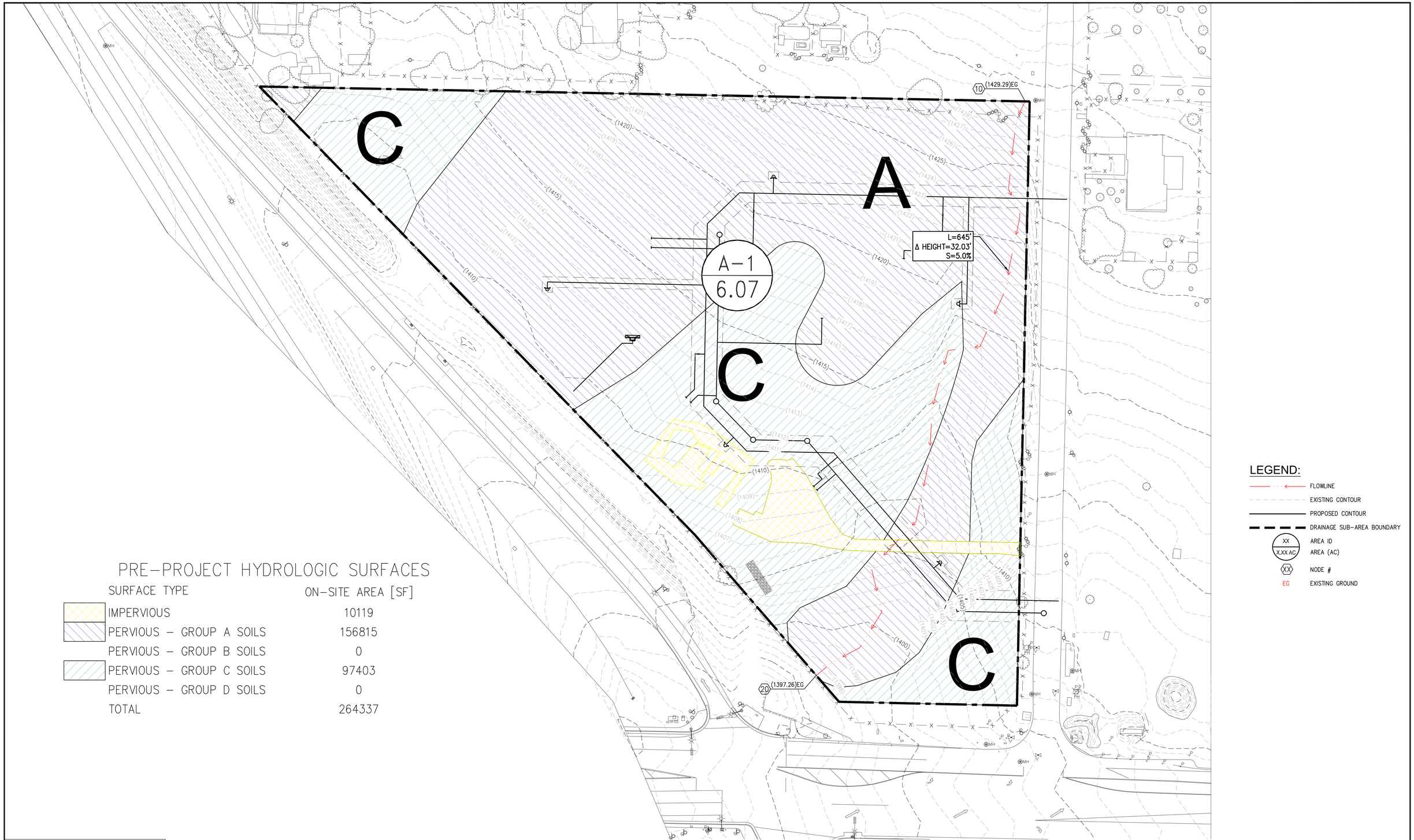
JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MURRIETA | TEMECULA | HEMET

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011



LEGEND:

- FLOWLINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- DRAINAGE SUB-AREA BOUNDARY
- XX / X.XX AC — AREA ID / AREA (AC)
- XX — NODE #
- EG — EXISTING GROUND

PRE-PROJECT HYDROLOGIC SURFACES

SURFACE TYPE	ON-SITE AREA [SF]
IMPERVIOUS	10119
PERVIOUS - GROUP A SOILS	156815
PERVIOUS - GROUP B SOILS	0
PERVIOUS - GROUP C SOILS	97403
PERVIOUS - GROUP D SOILS	0
TOTAL	264337

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MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER — CITY

CITY OF WILDOMAR
ACCEPTED BY:

Date:

Daniel A. York, Director of Public Works/ City Engineer, PE 43212

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BENCHMARK:
Elevation = _____
Datum = _____
BENCHMARK # _____

THIS SURVEY WAS PERFORMED ON (date) BY (surveyor)
L.S. (number), EXP. (date)

SCALE:
H: As Noted V: As Noted

(PP, CUP, PM, TM, etc.) (city project number)

CITY OF WILDOMAR

EXISTING CONDITIONS HYDROLOGY MAP
CHERRY OUTPOST IN THE CITY OF WILDOMAR, RIVERSIDE COUNTY

SHEET No. 1
OF 1 SHTS

City of Wildomar

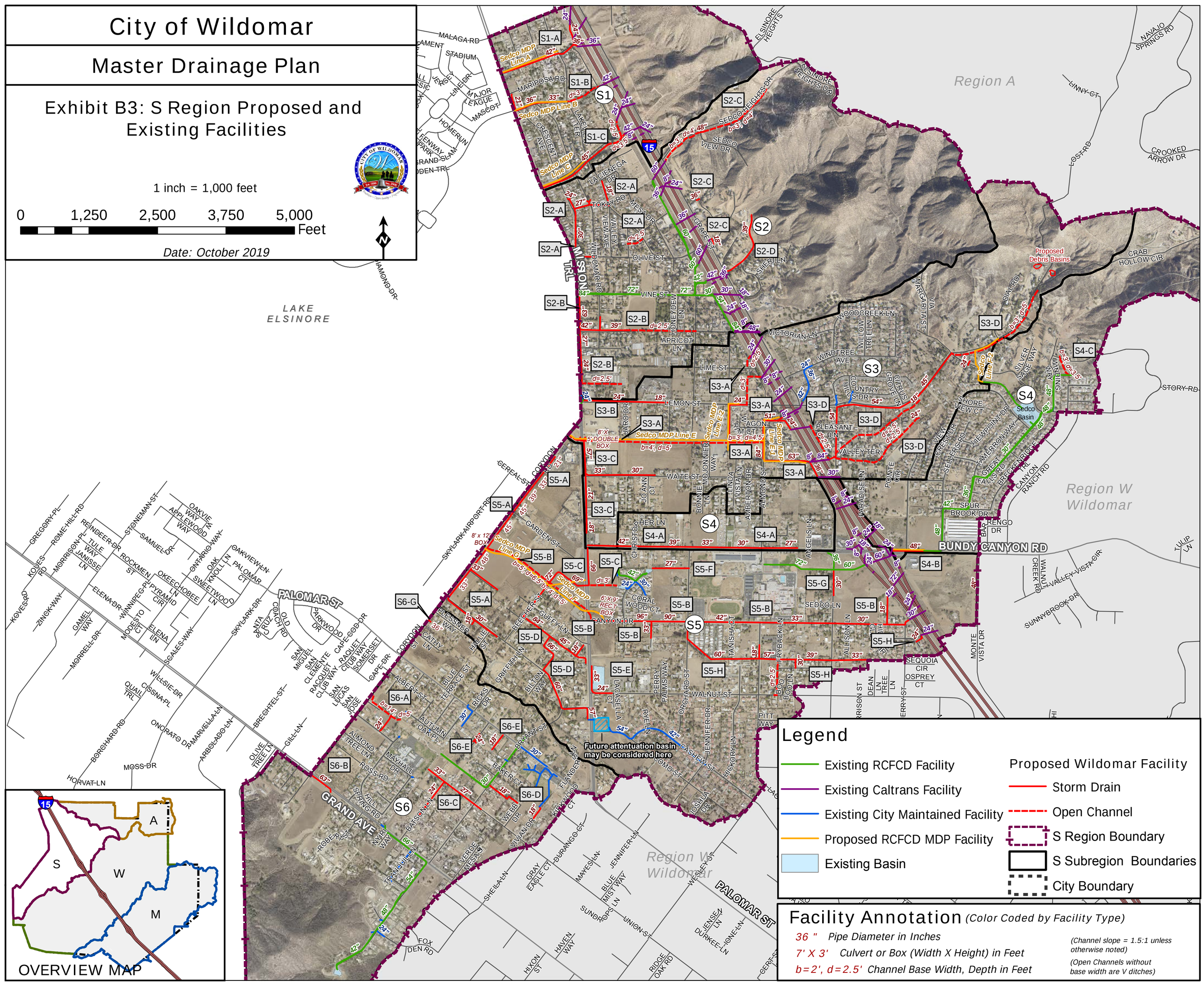
Master Drainage Plan

Exhibit B3: S Region Proposed and Existing Facilities

1 inch = 1,000 feet

0 1,250 2,500 3,750 5,000 Feet

Date: October 2019



Legend

- Existing RCFCD Facility
- Existing Caltrans Facility
- Existing City Maintained Facility
- Proposed RCFCD MDP Facility
- Existing Basin

Proposed Wildomar Facility

- Storm Drain
- Open Channel
- S Region Boundary
- S Subregion Boundaries
- City Boundary

Facility Annotation *(Color Coded by Facility Type)*

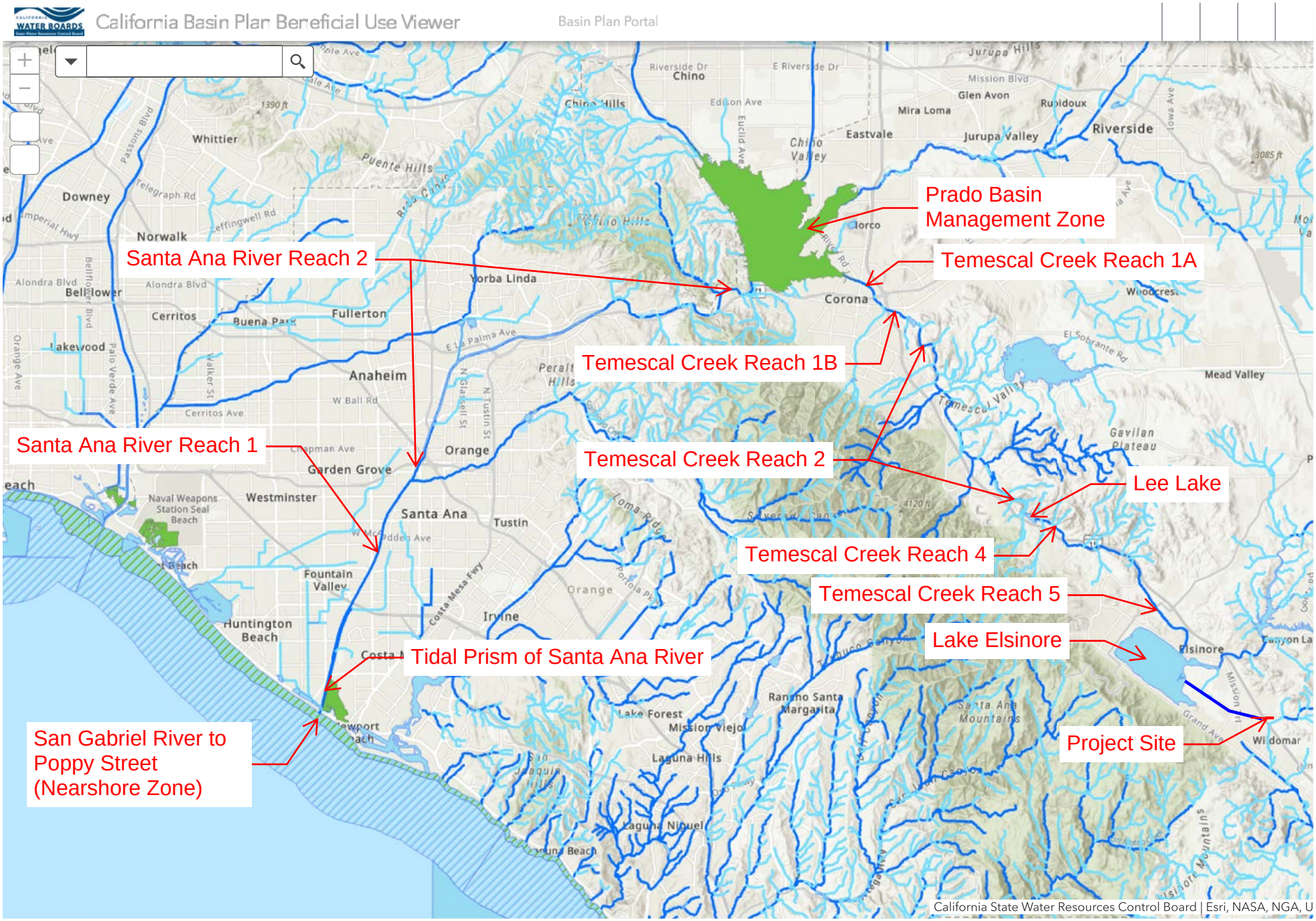
36 " Pipe Diameter in Inches

7' X 3' Culvert or Box (Width X Height) in Feet

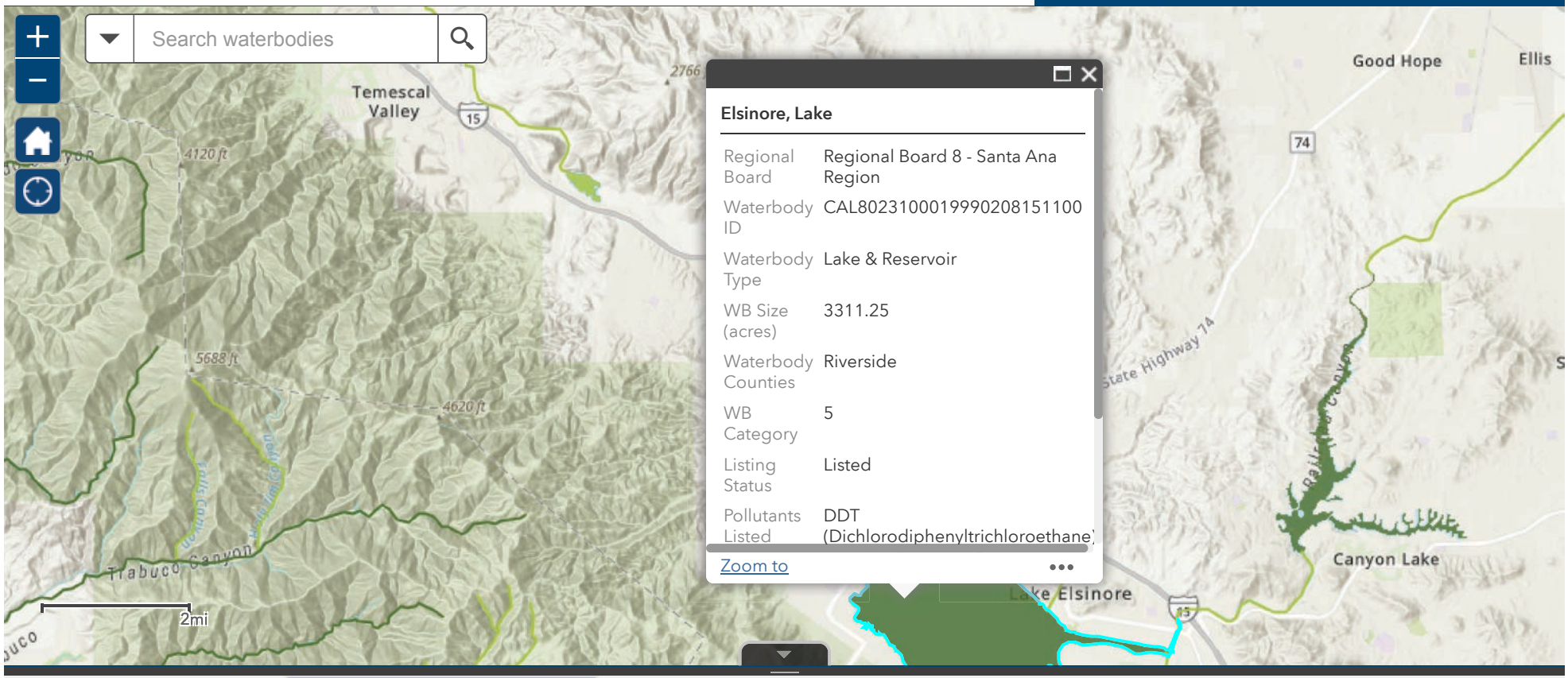
b=2', d=2.5' Channel Base Width, Depth in Feet

(Channel slope = 1.5:1 unless otherwise noted)

(Open Channels without base width are V ditches)


California Basin Plan Beneficial Use Viewer
Basin Plan Portal
Prado Basin Management Zone
Santa Ana River Reach 2
Temescal Creek Reach 1A
Temescal Creek Reach 1B
Santa Ana River Reach 1
Temescal Creek Reach 2
Lee Lake
Temescal Creek Reach 4
Temescal Creek Reach 5
Lake Elsinore
Tidal Prism of Santa Ana River
San Gabriel River to Poppy Street (Nearshore Zone)
Project Site
Chino
Riverside
Corona
Norwalk
Downey
Whittier
Anaheim
Orange
Santa Ana
Garden Grove
Westminster
Fullerton
Yorba Linda
Mead Valley
Lake Forest
Mission Viejo
Laguna Hills
Irvine
Huntington Beach
Fountain Valley
Tustin
Elsinore
Wildomar
California State Water Resources Control Board | Esri, NASA, NGA, U
4mi
-116.927 34.032 Degrees

California 2020-2022 Integrated Report

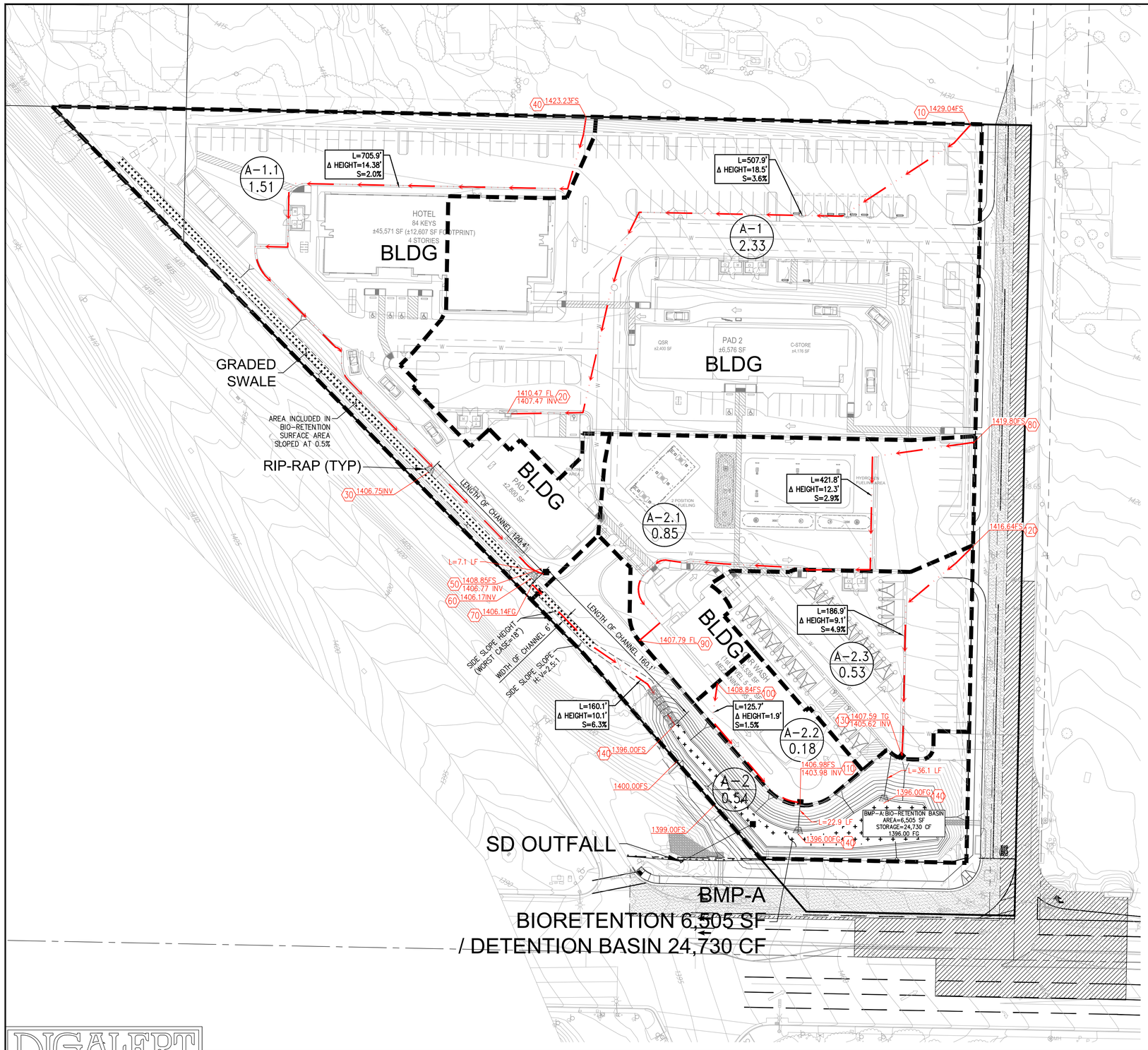


2020-22 Integrated Report Lines | 2020-22 Integrated Report Polygons

Options | Filter by map extent | Zoom to | Clear selection | Refresh

Regional Board	Waterbody ID	Pollutants Listed	Waterbody Type	WB Size (acres)	Waterbody Coun
Regional Board 8 - Santa Ana Region	CAL8023100019990208151100	DDT (Dichlorodiphenyltrichloroethane) (94768), Nutrients (69206), Organic Enrichment/Low Dissolved Oxygen (68808), PCBs (Polychlorinated biphenyls) (68444), Toxicity (76493)	Lake & Reservoir	3311.25	Riverside

1 features 0 selected



LEGEND:

- FLOWLINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- DRAINAGE SUB-AREA BOUNDARY
- XX / X.XX AC — AREA ID / AREA (AC)
- XX — NODE #
- FS — FINISHED SURFACE
- INV — INVERT

DETENTION BASIN SUMMARY

BMP-#	EXISTING PEAK FLOW 100-YR STORM (CFS)	PROPOSED PEAK FLOW 100-YR STORM (CFS)	MITIGATED PEAK FLOW 100-YR STORM (CFS)	DESIGN STORAGE VOLUME (CF)
BMP-A	8.01	13.15	5.20	24,730

DRAINAGE MANAGEMENT AREAS

DMA-#	AREA [SF]	AREA [AC]
DMA A-1	101,569	2.33
DMA A-1.1	65,847	1.51
DMA A-2	23,449	0.54
DMA A-2.1	36,963	0.85
DMA A-2.2	8,023	0.18
DMA A-2.3	23,238	0.53
DMA-A (TOTAL)	259,089	5.95

STORM WATER QUALITY TREATMENT AREAS

BMP-#	TYPE	DESIGN MEDIA DEPTH [FT]	SURFACE AREA [SF]
BMP-A	BIORETENTION BASIN	3.0	6,505
TREATMENT TOTAL	-	–	5,746

N

0 40' 80'

SCALE: 1" = 40'

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

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ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works/ City Engineer, PE 43212
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BENCHMARK # _____

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L.S. (number), EXP. (date)

SCALE:
H: As Noted V: As Noted

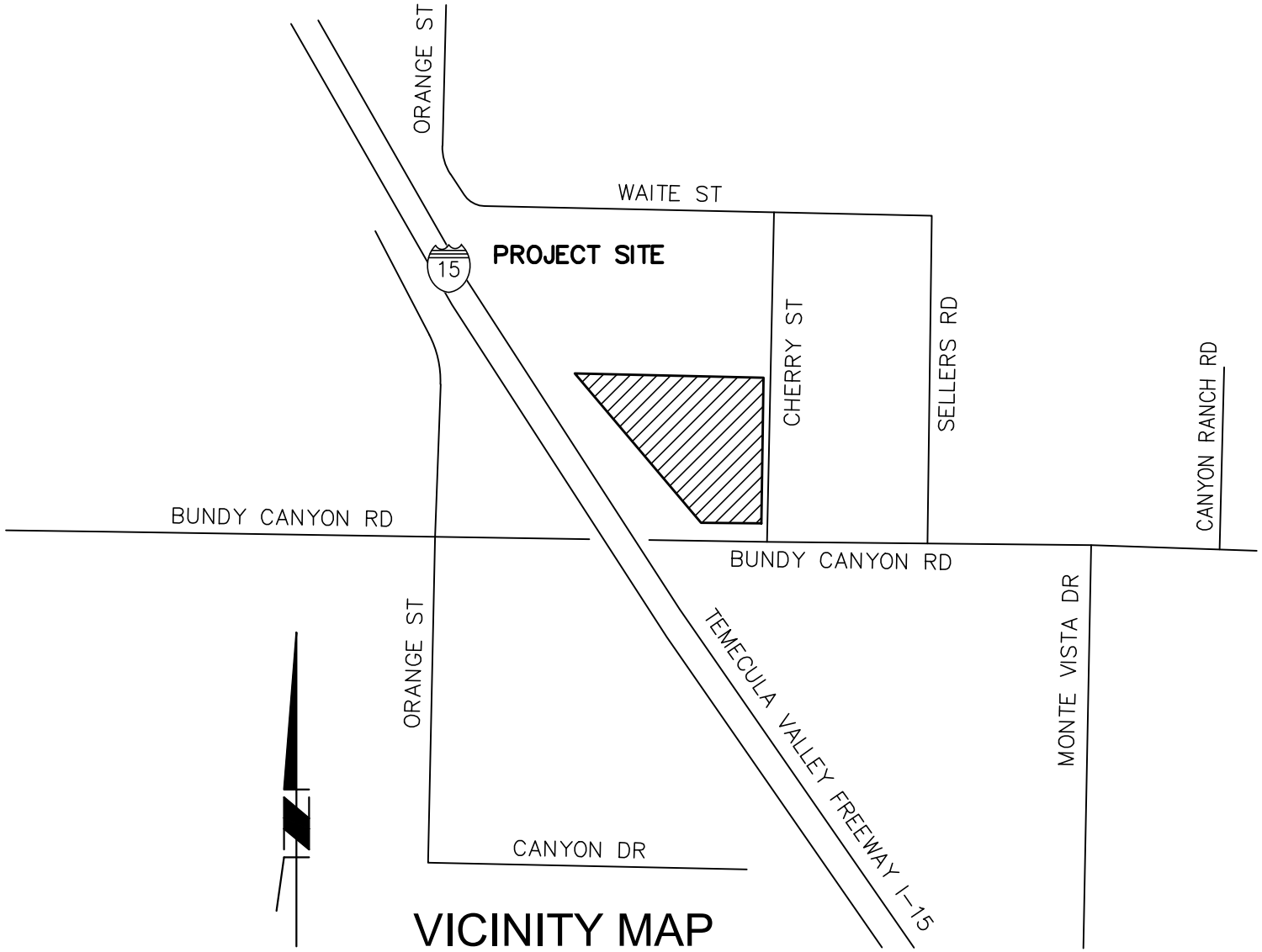
(PP, CUP, PM, TM, etc.) (city project number)

CITY OF WILDOMAR

PRELIMINARY STORMWATER PLAN CHERRY OUTPOST IN THE CITY OF WILDOMAR, RIVERSIDE COUNTY

SHEET No. 1

OF 1 SHTS



VICINITY MAP

NOT TO SCALE

Appendix 2: Construction Plans

Grading and Drainage Plans

Examples of material to provide in Appendix 2 may include but are not limited to the following:

- Site grading plans from the Project's Civil Plan Set,
- Drainage plans showing the exiting condition and proposed drainage system from the project's drainage report,
- Other plan sheets containing elements that impact site grading and drainage.

Refer to Section 4 of the SMR WQMP and Section I of this Template.

SHEET INDEX

LEGEND

(E)	EXISTING
FG	FINISH GRADE
FF	FINISH FLOOR
FS	FINISH SURFACE
NAP	NOT A PART
SF	SQUARE FOOTAGE
TF	TOP OF FOOTING
TW	TOP OF WALL
0000.00XX / 0000.00XX	PROPOSED ELEVATION
	PROPERTY LINES
	INTERIOR LOT LINES
(0000)	EXISTING CONTOUR LINE AND ELEVATION
0000	PROPOSED CONTOUR LINE AND ELEVATION
	PROPOSED RETAINING WALL
	4" AC OVER 5" AB
	COLD PLANE AC AND OVERLAY VARIABLE THICKNESS AC TO MATCH PROPOSED AND EXISTING GRADES

NOTES:

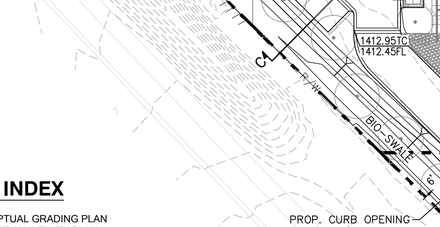
1. ALL FENCING AND WALLS SHALL BE BUILT PER THE LANDSCAPE PLANS
2. DRIVEWAYS SHALL BE COMMERCIAL DRIVEWAYS
3. ONSITE LIGHTING SHALL BE PRIVATE AND PER SEPARATE PLANS

EARTHWORK QUANTITIES:

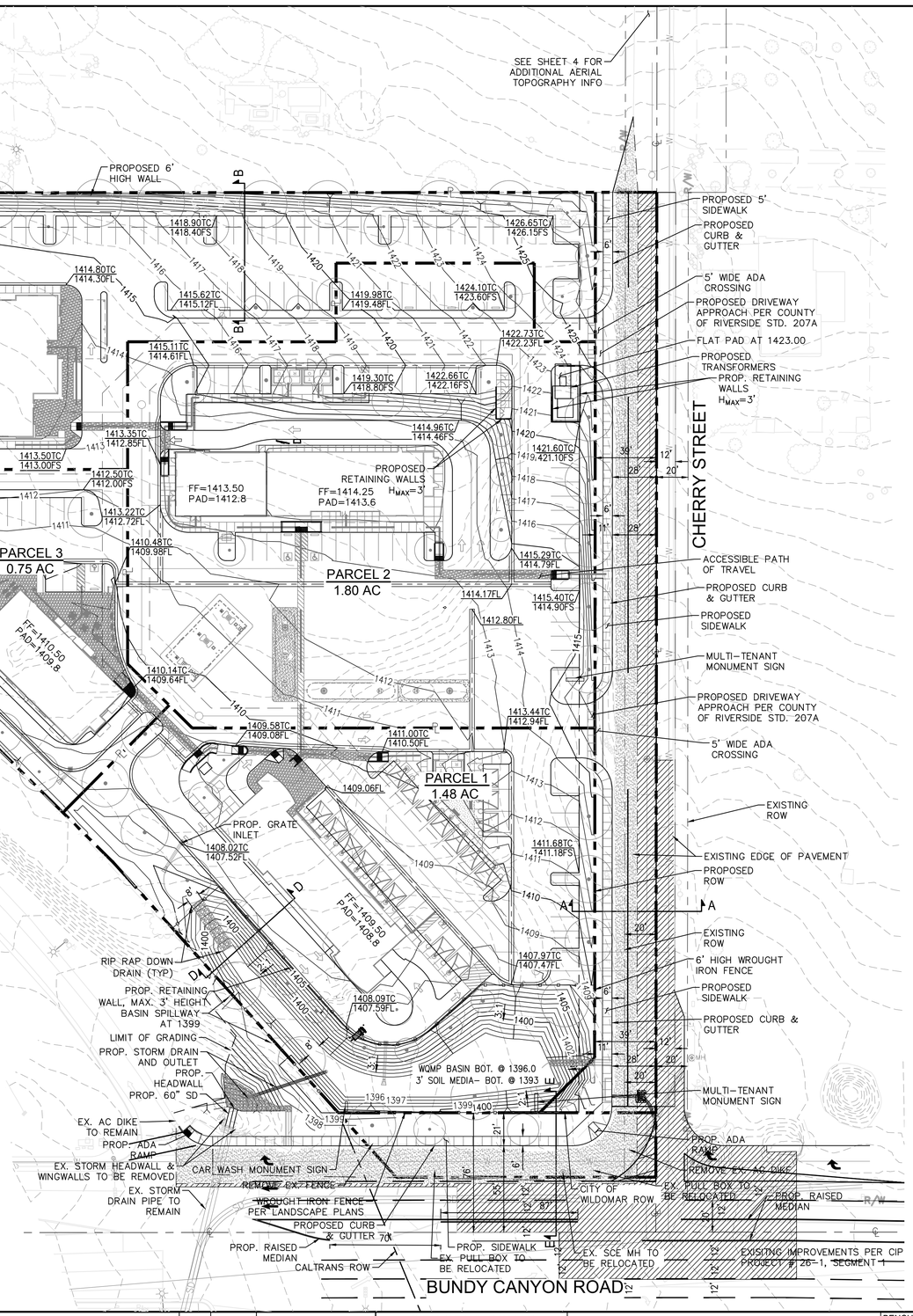
CUT = 14,060 CY
FILL = 9,900 CY
NET EXPORT = 4,160 CY

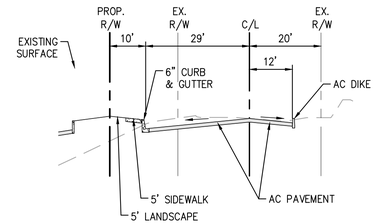
GRADING NOTE:

PRECISE GRADING OF EACH PARCEL WILL BE PER THEIR SPECIFIC SITE REQUIREMENTS.

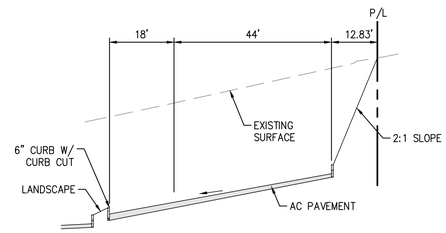


E SECTION E-E NTS

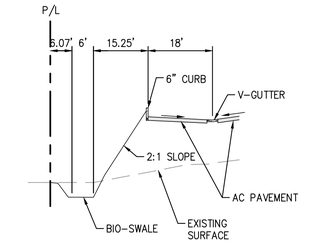




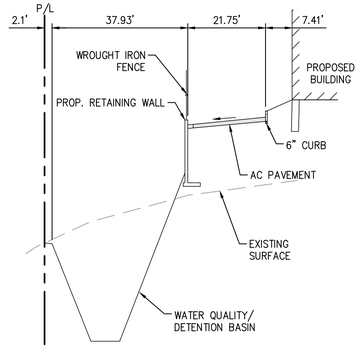
A SECTION A-A NTS



B SECTION B-B NTS



C SECTION C-C NTS



D SECTION D-D NTS

0 40' 80'
SCALE: 1" = 40'

PAR22-0145

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ENGINEER CITY

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Date:
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BENCHMARK: SEE ABOVE
Elevation =
Datum = NGVD29
BENCHMARK #

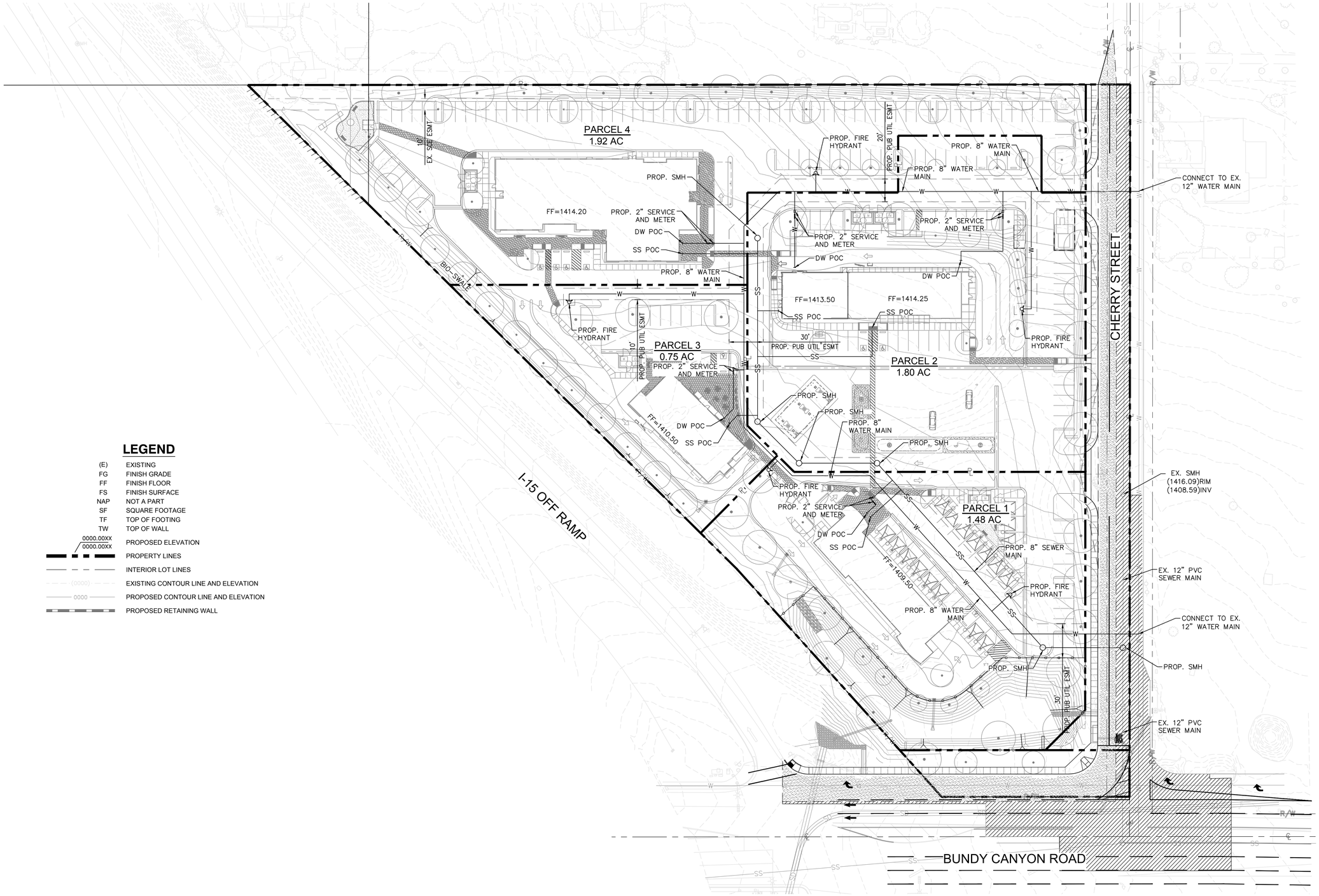
SCALE:
H: As Noted V: As Noted

PP xx-xxxx TM xxxxx PR. No. xx-xxxx

CITY OF WILDOMAR
CHERRY OUTPOST
CONCEPTUAL GRADING PLAN

SHEET No. 1
OF 5 SHTS

K:\DRAWINGS\PJP\JPB997 - WILDOMAR-CHERRY OUTPOST\ENG\CONCEPTUAL PLANS\CG\JPB997-CG-EXH-GPT7.DWG CHRIS DIGEL 7/5/2024 2:33 PM



LEGEND

(E)	EXISTING
FG	FINISH GRADE
FF	FINISH FLOOR
FS	FINISH SURFACE
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SF	SQUARE FOOTAGE
TF	TOP OF FOOTING
TW	TOP OF WALL
0000.00XX / 0000.00XX	PROPOSED ELEVATION
	PROPERTY LINES
	INTERIOR LOT LINES
(0000)	EXISTING CONTOUR LINE AND ELEVATION
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	PROPOSED RETAINING WALL

PAR22–0145

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BENCHMARK: SEE ABOVE
Elevation =
Datum = NGVD29
BENCHMARK #

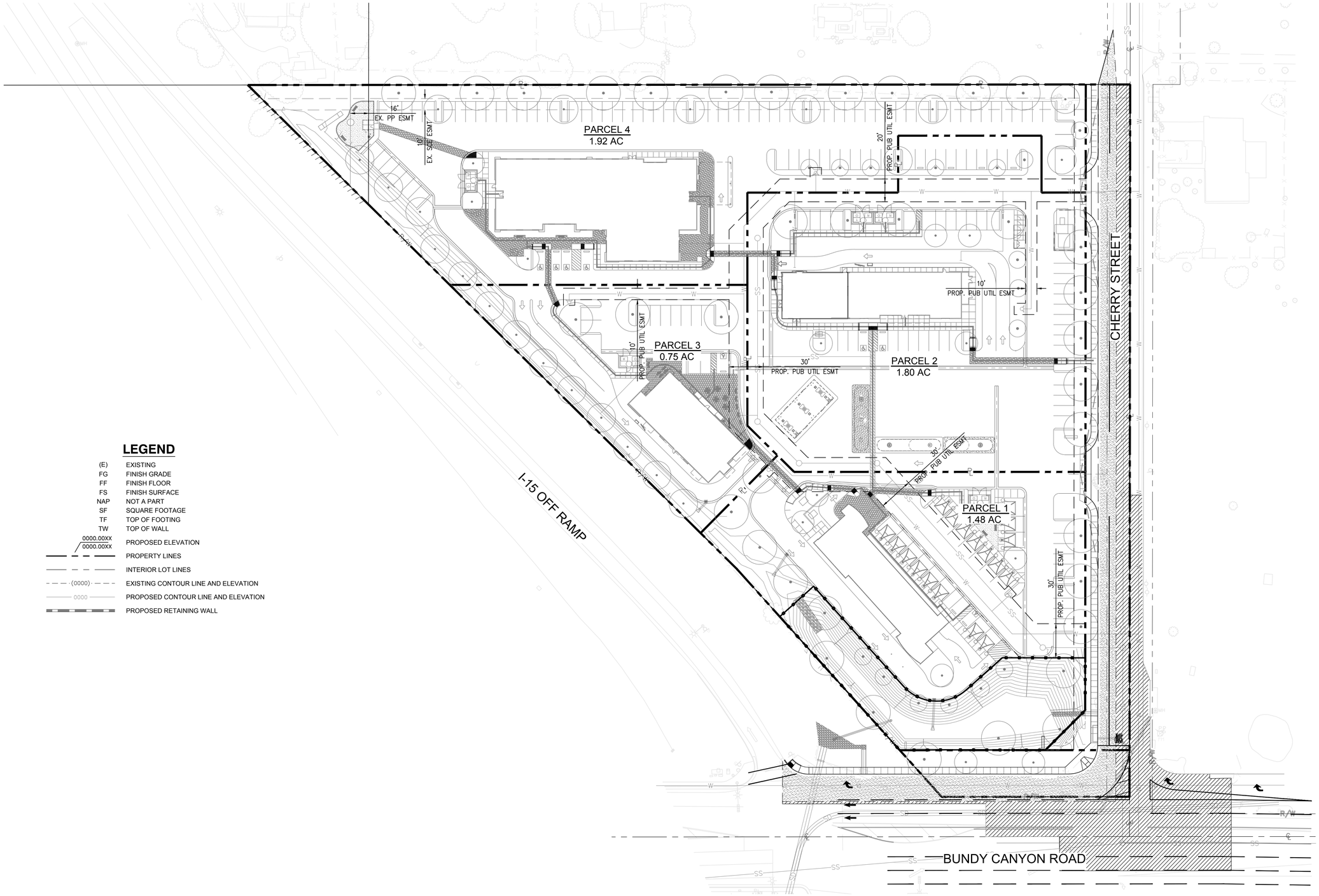
SCALE:
H: As Noted V: As Noted

PP xx-xxxx TM xxxxx PR. No. xx-xxxx

CITY OF WILDOMAR
CHERRY OUTPOST
CONCEPTUAL UTILITY PLAN

SHEET No. 2
OF 5 SHTS

K:\DRAWINGS\SP\SP8997 - WILDOMAR-CHERRY OUTPOST\ENG\CONCEPTUAL PLANS\CUP8997-CUDMD CHRIS DOXEL 7/5/2024 2:34 PM



LEGEND

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	PROPERTY LINES
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(0000)	EXISTING CONTOUR LINE AND ELEVATION
0000	PROPOSED CONTOUR LINE AND ELEVATION
	PROPOSED RETAINING WALL

PAR22–0145

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ENGINEER		

REVISIONS

APPR.	DATE
CITY	

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BENCHMARK: SEE ABOVE
Elevation =
Datum = NGVD29
BENCHMARK #

SCALE:
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PP xx-xxxx TM xxxxx PR. No. xx-xxxx

CITY OF WILDOMAR
CHERRY OUTPOST
EASEMENT PLAN

SHEET No. 3
OF 5 SHTS

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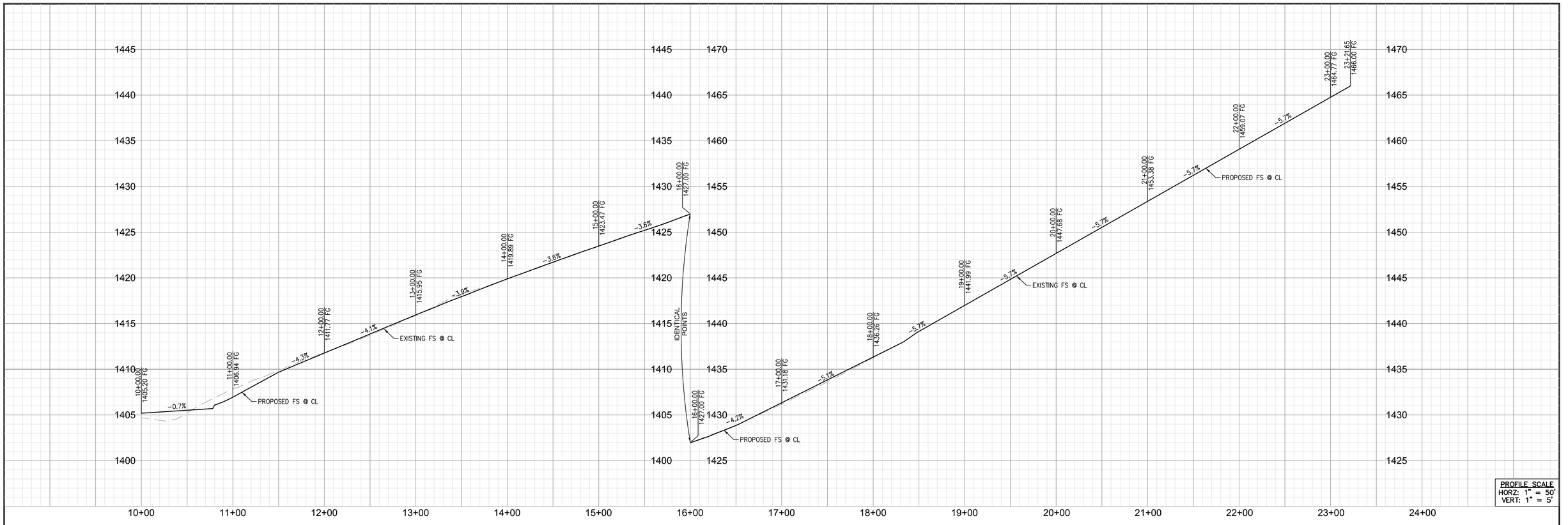
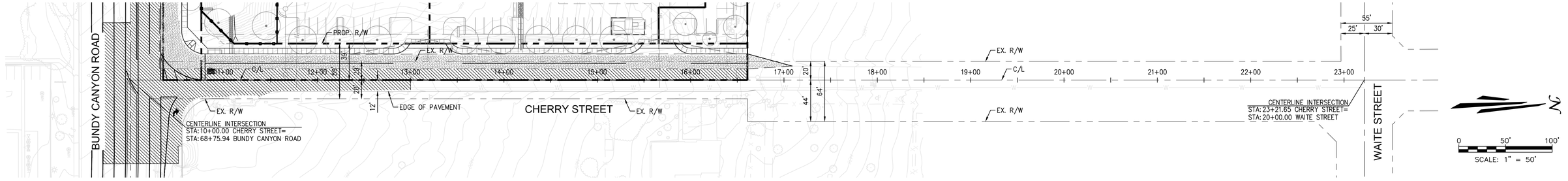
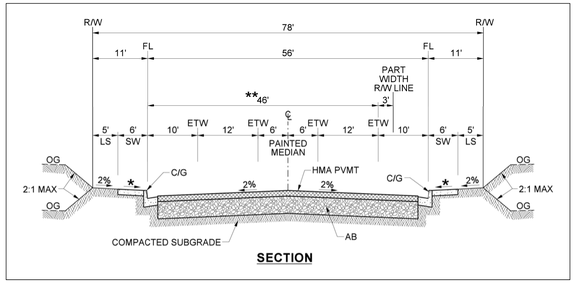




LEGEND

- 4" AC OVER 5" AB
- COLD PLANE AC AND OVERLAY VARIABLE THICKNESS AC TO MATCH PROPOSED AND EXISTING GRADES



SECTION

INDUSTRIAL COLLECTOR STREET SECTION PER RIVERSIDE COUNTY STD. 111 - TYPCIAL STREET SECTION ON CHERRY STREET

PAR22–0145

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MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER | CITY

CITY OF WILDOMAR
ACCEPTED BY:
Date:
JASON B. FARAG, Director of Public Works/ City Engineer, PE 86560
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

TAIT & ASSOCIATES
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Santa Ana, CA 92705
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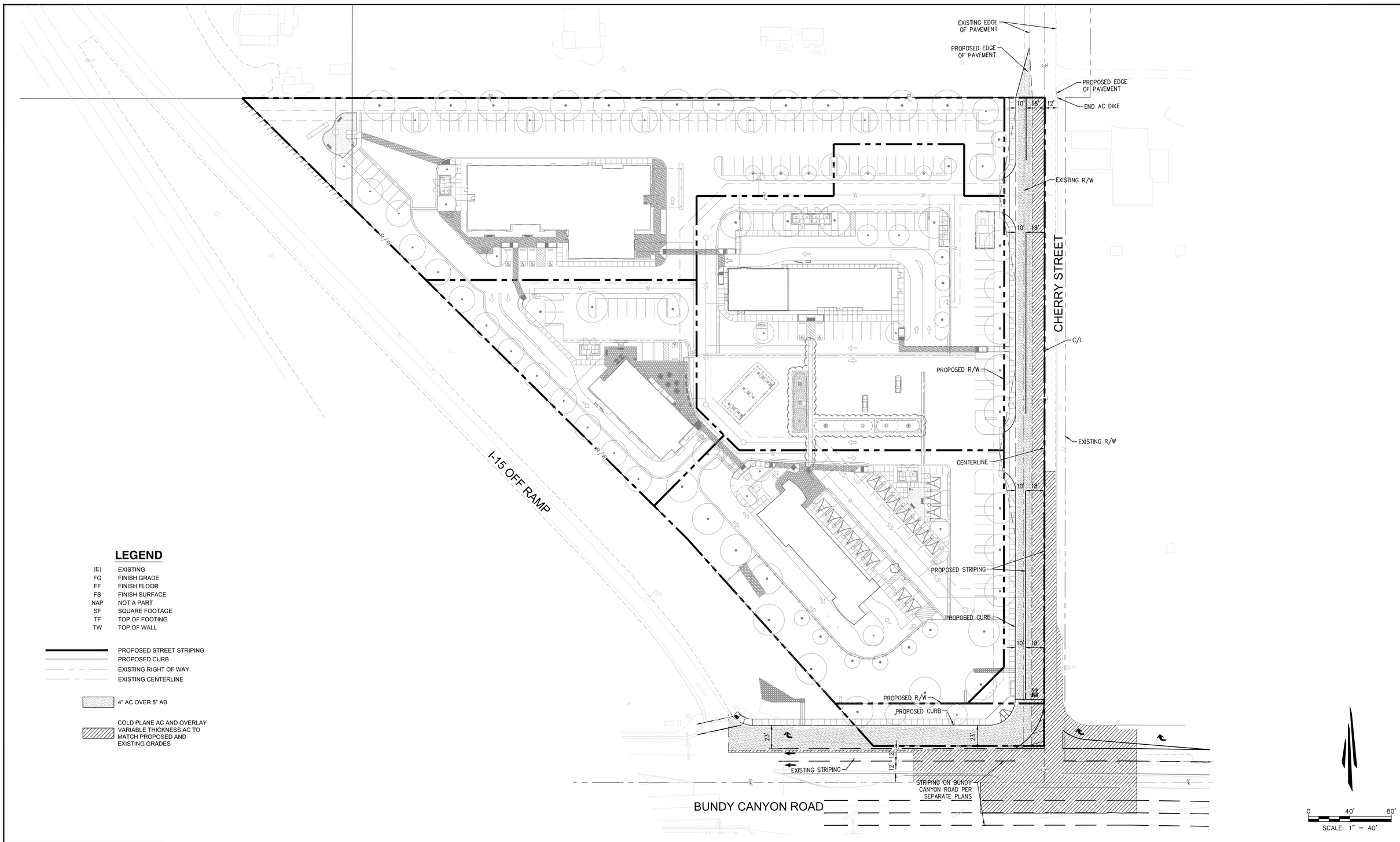
Orange County San Luis Obispo Sacramento Riverside Denver Boise Dallas Atlanta

BENCHMARK: SEE ABOVE
Elevation =
Datum = NGVD29
BENCHMARK #
SCALE: H- As Noted V- As Noted

PP xx-xxxx TM xxxxx PR. No. xx-xxxx
CITY OF WILDOMAR
CHERRY OUTPOST
CHERRY STREET CENTERLINE PROFILE

SHEET No. 4
OF 5 SHTS



LEGEND

(E)	EXISTING
FG	FINISH GRADE
FF	FINISH FLOOR
FS	FINISH SURFACE
NAP	NOT A PART
SF	SQUARE FOOTAGE
TF	TOP OF FOOTING
TW	TOP OF WALL

PROPOSED STREET STRIPING
PROPOSED CURB
EXISTING RIGHT OF WAY
EXISTING CENTERLINE

4" AC OVER 5" AB

COLD PLANE AC AND OVERLAY VARIABLE THICKNESS AC TO MATCH PROPOSED AND EXISTING GRADES

PAR22–0145

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MARK	BY	DATE
ENGINEER		

REVISIONS

APPR.	DATE
CITY	

CITY OF WILDOMAR
ACCEPTED BY:

Date:

JASON B. FARAG, Director of Public Works/ City Engineer, PE 86560

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Datum = NGVD29
BENCHMARK #

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H: As Noted V: As Noted

PP xx-xxxx TM xxxxx PR. No. xx-xxxx

CITY OF WILDOMAR
CHERRY OUTPOST
STRIPING PLAN

SHEET No. 5
OF 5 SHTS

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Appendix 3: Soils Information

Geotechnical Study, Other Infiltration Testing Data, and/or Other Documentation

Examples of material to provide in Appendix 3 may include but are not limited to the following:

- Geotechnical Study/Report prepared for the project,
- Additional soils testing data (if not included in the Geotechnical Study),
- Exhibits/Maps/Other Documentation of the Hydrologic Soils Groups (HSG)s at the project site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections A and D of this Template.

PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED CHERRY OUTPOST
ASSESSOR'S PARCELS
366-290-007 & -008
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

CHERRY OUTPOST, LP
CORONA, CALIFORNIA

JANUARY 6, 2023
PROJECT NO. T3010-22-01

Project No. T3010-22-01
January 6, 2023

Cherry Outpost, LP.
139 Radio Road
Corona, California 92879

Attention: Ms. Claudia Grajeda, Project Manager

Subject: PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED CHERRY OUTPOST
ASSESSOR'S PARCELS 366-290-007 & -008
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Dear Ms. Grajeda:

In accordance with your authorization of Geocon's Proposal IE-4018 dated November 8, 2022, Geocon West, Inc. (Geocon) herein submits the results of our preliminary geotechnical investigation for the proposed development. The accompanying report presents the results of our study, conclusions, and recommendations pertaining to the geotechnical aspects of the proposed development. The site is considered suitable for the proposed development provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

Alireza Kazem
EIT 160387

Lisa A. Battiato
CEG 2316

Neal D. Berliner
GE 2576

ARK:LB:NDB:hd

Distribution: Addressee (email)

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PRELIMINARY GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of our preliminary geotechnical investigation for the planning and design of Cherry Outpost planned for 6.65 acres located northwest of the intersection of Bundy Canyon Road and Cherry Street in Wildomar, California (see *Vicinity Map*, Figure 1). The purpose of the investigation is to evaluate subsurface soil and geologic conditions at the site, and based on the conditions encountered, provide preliminary recommendations pertaining to the geotechnical aspects of the proposed construction.

The scope of our investigation included review of published geotechnical information, site reconnaissance, Underground Service Alert mark out and notification, private utility location, drilling and logging of geotechnical and percolation borings, collection of soil samples, percolation testing, laboratory testing, engineering analyses, and preparation of this report. A summary of the information and documentation reviewed for this study is presented in the *List of References*.

Our field investigation was performed on November 30 and December 1, 2022 by drilling of eight geotechnical borings (B-1 through B-8) and four percolation borings (P-1 through P-4) with a CME-75 truck mounted drill rig, in accessible areas, to depths ranging between approximately 21 and 26 feet (geotechnical borings) and 5 feet (percolation borings) below existing ground surface. The borings were drilled to observe the subsurface geotechnical conditions and collect soil samples for laboratory testing. The percolation testing was performed in the lowest elevation areas, within the southern area of the property and in accordance with Riverside County Flood Control and Water Conservation District's (RCFC) *Low Impact Development Best Management Practices Handbook*. The approximate locations of the exploratory and percolation borings are depicted on the *Geologic Map (*Figure 2).

A detailed discussion of the field investigation, logs of the geotechnical and percolation borings, and the percolation test results are presented in *Appendix A*. Laboratory tests were performed on select soil samples obtained to evaluate pertinent physical and chemical soil properties for use in engineering analysis. *Appendix B* presents a summary of the laboratory test results.

2. SITE AND PROJECT DESCRIPTION

The roughly triangular site is located immediately northwest of Bundy Canyon Road and Cherry Street and encompasses APNs 366-290-007 and -008. The site was previously occupied by a single-family residence and a palm tree nursery. The residence was demolished at the end of 2013; however, young palms are still located within the northern half of the site. The site is bounded by Cherry Street to the east, Bundy Canyon to the south, Interstate 15 to the west, and rural residences to the north. The latitude and longitude of the site are 33.6280 degrees and -117.2717 degrees, respectively.

The elevation of the site varies from 1,406 feet above mean sea level (MSL) in the south to the 1,437 feet MSL in the northeast corner. Drainage is directed to a south flowing valley along the east side of the site.

Based the *Conceptual Site Plan* prepared by KTGY, dated September 30, 2022, the site development will include a 4-story hotel, convenience store, gas station, drive through restaurant, and carwash. Approximately 70 feet of the site's southern area will be utilized to widen Bundy Canyon Road. We also expect Cherry Street will be improved on the east side of the site. Finished grade elevations are not known at the time of this report; however, based on the current site elevations and surrounding grades we expect maximum proposed cuts and fills to be 10 feet or less. Based on our understanding of the general plan for the site, we do not expect slopes to be constructed; however, retaining walls up to 5 feet high may be required.

We expect the structures will be lightly loaded two- to four-story buildings with spread foundations and slab-on-grade floors. Although structural plans and loading information is unavailable at this time, we expect column loads will not exceed 200 kips and wall loads will not exceed 4 kips per linear foot. Preliminary geotechnical recommendations for design of the structure are based on these assumptions and provided herein. If actual plans differ, supplementary geotechnical recommendations may be necessary.

The locations and descriptions provided herein are based on a site reconnaissance, our field exploration, and project information provided by the client. If project details differ significantly from those described, Geocon should be contacted for review and possible revision to this report.

3. GEOLOGIC SETTING

The site is located along the northeastern margin of the Elsinore Trough within the Peninsular Ranges Geomorphic Province. The Peninsular Ranges are bounded on the north by the Transverse Ranges and the Cucamonga/Sierra Madre faults, the east by the San Jacinto fault, the west by the Elsinore fault and the Santa Ana Mountains. The Peninsular Ranges extend southward into Mexico. They are characterized by granitic highlands of low to moderate relief surrounded by alluvial plains and valleys. Locally, the Elsinore Trough is the dominant geomorphic feature of the area and is a graben that formed as a result of a left step over from the Wildomar to the Glen Ivy North branches of the Elsinore fault. Locally, the Glen Ivy North fault is geologically mapped one quarter mile southwest of the site. No faulting is mapped within or projecting on to the site. Faulting is discussed in detail in the *Surface Fault Rupture* section, below.

4. GEOLOGIC MATERIALS

4.1 General

The primary geologic units at the site consist of young alluvial fan deposits and Pauba Sandstone. Localized areas of undocumented fill are present near the previous residence, the residential driveway, and within the occasional end dump piles. Topsoil was encountered up to a depth of approximately 2½ feet within B-3 and is expected throughout the palm tree area. The geologic nomenclature follows that of Morton, D.M. and Weber, F.H. (2003). The soil and geologic units encountered at the site are summarized below and described on the boring logs in *Appendix A*.

4.2 Undocumented Artificial Fill (afu)

Undocumented artificial fill is present at the vicinity of the previous residence and within the driveway to the residence. Potential utility conflicts prevented excavation of a borings in these areas and the condition and extent of the fill is not known at this time. However, we expect the fill was derived from local sources and is similar to the young alluvial fan deposits and Pauba sandstone described below.

4.3 Young Alluvial Fan Deposits (Qyf)

Young alluvial fan deposits were encountered within the percolation test borings and within geotechnical borings B-1, B-2, and B-4 to depths between approximately 2½ and 6 feet below existing ground surface. It consists of silty sand that can be characterized as loose to medium dense, dry to moist, and strong brown to dark brown.

4.4 Pauba Formation (Qps)

Pleistocene-age Pauba Sandstone was observed near the surface and below the younger alluvial fan deposits to the maximum depth explored of approximately 26 feet. It is described herein as a soil because, although it is considered bedrock, it behaves like a soil and its engineering properties are closer to a soil than a rock. The Pauba, as encountered, can be characterized as silty sand which is dense to very dense, dry to moist, and shades of brown, orange-brown, and grayish brown.

5. GROUNDWATER

Groundwater was not encountered in the borings excavated for this study to depths of 26 feet. Well data from the California Department of Water Resources was available for 2019. Well 336251N1172930W001 located west of the site reported groundwater depths of between 357 and 389 feet below existing ground surface. Well 336200N1172734W001 located south of the site reported a groundwater depth of 44 feet below existing ground surface. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. It is not uncommon for seepage conditions to develop where none previously existed. Proper surface drainage will be important to future performance of the planned improvements.

6. GEOLOGIC HAZARDS

6.1 Surface Fault Rupture

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS), formerly known as California Division of Mines and Geology (CDMG), for the Alquist-Priolo Earthquake Fault Zone Program (Byrant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Fault Zone or a Riverside County Fault Hazard Zone. The closest active fault to the site is the Glen Ivy North branch of the Elsinore fault zone located approximately 1/4 mile southwest. Faults within a 50-mile radius of the site are listed in Table 6.1. Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.2.

TABLE 6.1
ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Maximum Magnitude (Mw)	Geometry (Slip Character)	Slip Rate (mm/yr)	Distance from Site (mi)	Direction from Site
Elsinore Fault (Glen Ivy)	6.8	RL-SS	5.0	1/4	SW
Elsinore (Wildomar)	6.8	RL-SS	5.0	2	S
San Jacinto (Casa Loma)	6.9	RL-SS	12.0	20	NE
San Jacinto (Claremont)	6.7	RL-SS	12.0	23	NE
Chino	6.7	RL-R-O	1.0	25	NW
Whittier	6.8	RL-R-O	2.5	30	NW
San Andreas (San Bernardino)	7.5	RL-SS	24.0	35	NE
San Gorgonio Pass	n/a	THRUST	n/a	35	NE
San Jacinto (Clark)	7.2	RL-SS	12.0	35	E
Cucamonga	6.9	R	5.0	40	NW
San Jacinto (Glen Helen)	6.7	RL-SS	12.0	40	N
Pinto Mountain	7.2	LL-SS	2.5	45	NE
San Jacinto (Coyote Creek)	6.8	RL-SS	4.0	45	SE
Morongo Valley	7.2	LL-SS	2.5	47	NE
S Branch San Andreas Fault	7.5	RL-SS	24.0	48	NE
N Branch San Andreas Fault	7.4	RL-SS	30.0	50	NE

6.2 Seismicity

As with all southern California, the site has experienced historic earthquakes from various regional faults. The seismicity of the region surrounding the site was formulated based on research of an electronic database of earthquake data. A number of earthquakes of moderate to major magnitude have occurred in the southern California area within the last 100 years. A partial list of these earthquakes is included in the following table.

TABLE 6.2
LIST OF HISTORIC EARTHQUAKES

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	26	N
Long Beach	March 10, 1933	6.4	40	W
Tehachapi	July 21, 1952	7.5	137	NW
San Fernando	February 9, 1971	6.6	84	NW
Whittier Narrows	October 1, 1987	5.9	55	WNW
Sierra Madre	June 28, 1991	5.8	60	NW
Landers	June 28, 1992	7.3	62	NE
Big Bear	June 28, 1992	6.4	47	NE
Northridge	January 17, 1994	6.7	83	WNW
Hector Mine	October 16, 1999	7.1	88	NE
Ridgecrest China Lake Fault	July 5, 2019	7.1	149	N

6.3 Liquefaction

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Additionally, seismically induced "dry-sand" settlement may occur whether the potential for liquefaction exists or not.

The current standard of practice as outlined in the *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California* (SCEC, 1999) requires a liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be enough to induce liquefaction.

According to the *Map My County* GIS system (RCIT, 2022), the site is located within an area mapped as having a moderate potential for liquefaction. However, due to the presence of Pauba Sandstone at or near the surface, liquefaction is not considered a design consideration for this site.

6.4 Expansive Soil

The on-site surficial soils generally consist of silty sands. Laboratory test results on a select sample indicate that the expansion potential of site soils is 19 which is considered "very low" per ASTM D4829.

6.5 Landslides

We did not observe evidence of previous or incipient slope instability within the site or adjacent hillsides during our site investigation. Further, no landslides have been geologically mapped on or adjacent to the site (Morton & Weber, 2003). Therefore, landslide hazard to the site is not a design consideration.

6.6 Tsunamis and Seiches

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The first order driving force for locally generated tsunamis offshore southern California is expected to be tectonic deformation from large earthquakes (Legg et al., 2002). The site is located more than 24 miles from the nearest coastline, with the Santa Ana Mountains lying between the site and the Pacific Ocean; therefore, the risk associated with tsunamis is not a design consideration.

A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. The site is located almost 3.5 miles from the shore of Lake Elsinore and is up slope from the lake, therefore, a seiche hazard from Lake Elsinore is not a design consideration.

6.7 Slope Stability

A grading plan was not available at the time of this report. In general, it is our opinion that permanent, graded fill slopes constructed of on-site soils and free of any surcharge with gradients of 2:1 (horizontal to vertical) or flatter and vertical heights of 15 feet or less will possess adequate factors of safety for global and surficial stability in static conditions. However, evaluation of the stability of proposed slopes, if any, may need to be performed once detailed grading plans depicting proposed slopes are available.

7. PERCOLATION TESTING

Percolation testing was conducted in accordance with the procedures in the *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A* (Handbook), at the proposed location of the proposed site BMPs. The percolation test locations are depicted on the *Geologic Map* (see Figure 2).

Four percolation test holes were excavated to depths of 5 feet (P-1 through P-4) below the existing ground surface using an 8-inch diameter auger. The geologic conditions at the percolation test locations consist of Alluvium (Silty Sand) over Pauba Sandstone. The deep geotechnical boring (B-1) did not encounter groundwater or impenetrable bedrock within 10 feet of the bottom of the percolation test depths. Approximately two inches of gravel was placed at the bottom of each test hole and a perforated

pipe was placed at top the gravel to keep the test hole open. Gravel was placed around the bottom of the test hole to support the test pipe. The test locations were pre-saturated prior to testing. Infiltration test results are included as Figures A-13 through A-16. Results of the converted percolation test rates to infiltration test rates are presented in Table 7.0 below. The *Handbook* requires a factor of safety of 3 be applied to the values below based on the test method used.

TABLE 7.0
INFILTRATION TEST RATES

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	60	60	60	60
Test Type	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	2.5	3	5.5	5
Average head: Havg (in)	39	40.3	37.5	38
Time Interval (minutes): Δt (minutes)	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	0.2	0.3	0.6	0.5

The results of the infiltration testing indicate that infiltration at the locations tested ranges from 0.2 to 0.6 inches per hour. These rates are the calculated infiltration rates from the tested percolation rates. The *Handbook* requires a factor of safety of 3 be applied to the values above based on the test method used.

The *in-situ* field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time of the test (hours instead of days) and the amount of water used. Where appropriate, the short-term infiltration rates are converted to long-term infiltration rates using reduction factors depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered only as index values of infiltration rates.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 Soil or geologic conditions were not encountered during the investigation that would preclude the construction of the proposed development, provided the recommendations presented herein are followed and implemented during design and construction.

8.1.2 Potential geologic hazards at the site include seismic shaking, and compressible near surface soils.

8.1.3 The existing undocumented artificial fill, topsoil, young alluvial fan deposits, and upper few feet of Pauba Sandstone are not suitable for the support of engineered fill or settlement-sensitive improvements. The earth materials are suitable for re-use as engineered fill provided the recommendations in this geotechnical investigation report are followed. Remedial grading of the uppermost earth materials will be required as discussed herein.

8.1.4 The *in-situ* moisture content of upper site soils is below optimum moisture content. Therefore, moisture conditioning site soils to be used as fill material throughout the grading and backfill processes will be required.

8.1.5 Proper surface drainage should be maintained to prevent ponding and saturation of the fill in pad areas. Recommendations for site drainage are provided herein.

8.1.6 An evaluation of seismically induced "dry-sand" settlement during earthquake indicates that the existing young alluvial fan deposits could be prone to minor settlement during a high-magnitude earthquake; however, the recommended site grading will minimize or eliminate this risk since these soils will be properly compacted.

8.1.7 Once the design and civil grading plans are made available, the recommendations within this report should be reviewed and revised, as necessary. Additionally, as the project design progresses toward a final design, changes in the design, location, or elevation of the proposed improvements should be reviewed by this office. Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

8.2 Soil Characteristics

8.2.1 Based on the earth materials encountered in the field, the soils are expected to be "non-expansive" (Expansion Index [EI] 20 or less) as defined by 2019 California Building Code (CBC) Section 1803.5.3. The existing soil possesses a "very low" expansion potential (expansion index of 19) in accordance with ASTM D 4829. Table 8.2.1 presents soil classifications based on the expansion index.

TABLE 8.2.1
SOIL CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM Expansion Classification	2019 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.2 Additional testing for expansion potential should be performed during finish grading along with plasticity index testing on soils with expansion indices of more than 20.

8.2.3 Laboratory tests performed on samples of the site materials indicate that the on-site materials possess a "S0" sulfate exposure to concrete structures as defined by 2019 CBC Section 1904.3 and ACI 318. Table 8.2.3 presents a summary of concrete requirements set forth by 2019 CBC Section 1904.3 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 8.2.3
REQUIREMENTS FOR CONCRETE
EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
S0	**0.00-0.10**	**--**	**--**	**2,500**
S1	0.10-0.20	II	0.50	4,000
S2	0.20-2.00	V	0.45	4,500
S3	> 2.00	V+ Pozzolan or Slag	0.45	4,500

8.2.4 Laboratory testing has been performed on two representative bulk samples of soil obtained in the upper five feet in Borings B-3 and B-6. Boring locations are depicted in Figure 2 and results are presented in the following table.

TABLE 8.2.4
LABORATORY RESULTS

Sample	Depth (ft)	Resistivity (OHM CM)	Chloride (PPM)	Sulfate (PPM)	pH
B-3	0-5	1900	121	1	9.3
B-6	0-5	4400	75	0	8.8

8.2.5 Test results for B-3 and B-6 show Resistivity of 1,900 and 4,400 ohm-cm, pH of 9.3 and 8.8, chloride content of 121 and 75 ppm. The site soils are not classified as corrosive to metal improvements in accordance with Caltrans Corrosion Guidelines, provided in Table 8.2.5 below. (Caltrans, 2021).

TABLE 8.2.5
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,500	500 or greater	1,500 or greater	5.5 or less

8.2.6 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

8.3 Consolidation and Settlement

8.3.1 Undocumented artificial fill, topsoil, alluvium, and the upper few feet of Pauba Sandstone at the site are subject to consolidation settlement (densification by the removal of water within the soil) under loads imposed by placement of fill or structure loads. Appendix B presents the laboratory consolidation test results.

8.4 Hydrocollapse

8.4.1 The Hydrocollapse is the tendency of unsaturated soil structure to collapse upon saturation resulting in the overall settlement of the effected soil and overlying foundations or improvements supported thereon. Recommended removals to Pauba Sandstone and proper compaction of the upper younger, compressible surficial earth materials will minimize the potential for settlement due to hydrocollapse.

8.5 Grading

8.5.1 Grading should be performed in accordance with the *Recommended Grading Specifications* of *Appendix C* and the grading ordinances of the City of Wildomar.

8.5.2 Prior to commencing grading, a preconstruction conference should be held at the site with the City Inspector, Owner or Developer, Grading Contractor, Civil Engineer, and Geotechnical Engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.

8.5.3 Site preparation should begin with the removal of existing improvements, deleterious material, debris and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.

8.5.4 The undocumented artificial fill, topsoil, alluvium and upper few feet of Pauba Sandstone within a 1:1 (h:v) projection of the limits of grading should be removed to expose competent Pauba Sandstone bedrock. Areas of loose, dry, or compressible soils will require deeper excavation and processing prior to fill placement. The approximate remedial removal depths are depicted on the *Geologic Map*, Figure 2. The excavation bottoms should expose dense Pauba Sandstone. The engineering geologist should evaluate the actual depth of removal during grading operations. Where over-excavation and compaction is to be conducted, the excavations should be extended laterally a minimum distance of 5 feet beyond the foundation footprint or for a distance equal to the depth of removal plus additional fill, whichever is greater. Patios and building appurtenances should be considered as part of the building footprint when determining the limits of lateral excavation. Grading should be performed under the full-time observation and testing of Geocon.

8.5.5 Proposed spread foundations for each building may derive support in either Pauba Sandstone, or engineered fill, but not a combination of both. Foundations should maintain a minimum depth of 18 inches below the ground surface. Foundations deriving support in Pauba Sandstone should be deepened as necessary to maintain a minimum embedment of 12-inches into the competent Pauba Sandstone. Foundations deriving support in newly placed engineered fill should be underlain by a minimum of 3 feet of engineered fill.

8.5.6 Proposed building slabs-on-grade may derive support directly in newly placed engineered fill, approved Pauba Sandstone, or a combination of both if exposed at the building pad elevation.

8.5.7 The site should be brought to finish grade elevations with engineered fill compacted in layers. Layers of fill should be no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density at or slightly above optimum moisture content (as determined by ASTM D1557). Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill.

8.5.8 The fill placed within 4 feet of proposed finish grade should possess a "very low" to "low" expansion potential (EI of 51 or less), where practical.

8.5.9 Import fill (if necessary) should consist of granular materials with a "very low" expansion potential (EI of 20 or less), generally free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to evaluate its suitability as fill material.

8.6 Utility Trench Backfill

8.6.1 Utility trenches should be properly backfilled in accordance with the requirements of the City of Wildomar and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well-graded crushed rock or clean sand (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. If open graded rock is used it should be wrapped in filter fabric to prevent finer soils from migrating into the rock voids. The remainder of the trench backfill may be derived from onsite soil or approved import soil. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized, and additional stabilization should be considered at these transitions.

8.6.2 Utility trench backfill should be placed in layers no thicker than will allow for adequate bonding and compaction. Utility backfill should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density and moisture conditioned at or slightly above optimum moisture content (as determined by ASTM D1557). Backfill at the finish subgrade elevation of new pavements should be compacted to at least 95 percent of the maximum dry density. Backfill materials placed below the recommended moisture content may require additional moisture conditioning prior to placing additional fill.

8.7 Seismic Design Criteria

8.7.1 The following table summarizes site-specific design criteria obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. We used the computer program *U.S. Seismic Design Maps*, provided by the OSHPD to calculate the seismic design parameters. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.2.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented herein are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 8.7.1
2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	C	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.669g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.618g	Figure 1613.2.1(2)
Site Coefficient, F_A	1.2	Table 1613.2.3(1)
Site Coefficient, F_V	1.4	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.012g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.866g	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.341g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.578	Section 1613.2.4 (Eqn 16-39)

8.7.2 The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

TABLE 8.7.2
ASCE 7-16 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.725g	Figure 22-7
Site Coefficient, F_{PGA}	1.2	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.87g	Section 11.8.3 (Eqn 11.8-1)

8.7.3 The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. According to the 2019 California Building Code and ASCE 7-16, the MCE is to be utilized for the evaluation of liquefaction, lateral spreading, seismic settlements, and it is our understanding that the intent of the Building Code is to maintain "Life Safety" during an MCE event. The Design Earthquake Ground Motion (DE) is the level of ground motion that has a 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years.

8.7.4 Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, 2014 Conterminous U.S. Dynamic edition. The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 7.71 magnitude event occurring at a hypo central distance of 2.37 kilometers from the site.

8.7.5 Deaggregation was also performed for the Design Earthquake (DE) peak ground acceleration, and the result of the analysis indicates that the predominant earthquake contributing to the DE peak ground acceleration is characterized as a 6.8 magnitude occurring at a hypocentral distance of 12.58 kilometers from the site.

8.7.6 Conformance to the criteria for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.8 Foundation and Concrete Slabs-On-Grade Recommendations

8.8.1 The foundation recommendations presented herein are intended for all structures after completion of the recommended grading. Spread foundations are recommended for support of proposed site structures and improvements.

8.8.2 The foundation recommendations have been separated into two categories based on either the maximum and differential fill thickness or Expansion Index, as provided in Table 8.8.2. Structures will be Category I; however, the category may be increased to II where maximum fill dictates. Final foundation categories will be evaluated once site grading has been completed.

TABLE 8.8.2
FOUNDATION CATEGORY CRITERIA

Foundation Category	Maximum Fill Thickness, T (Feet)	Differential Fill Thickness, D (Feet)	Expansion Index (EI)
I	$T<20$	$D<10$	$EI \leq 50$
II	$20 \leq T<50$	$10 \leq D<20$	$50<EI \leq 90$

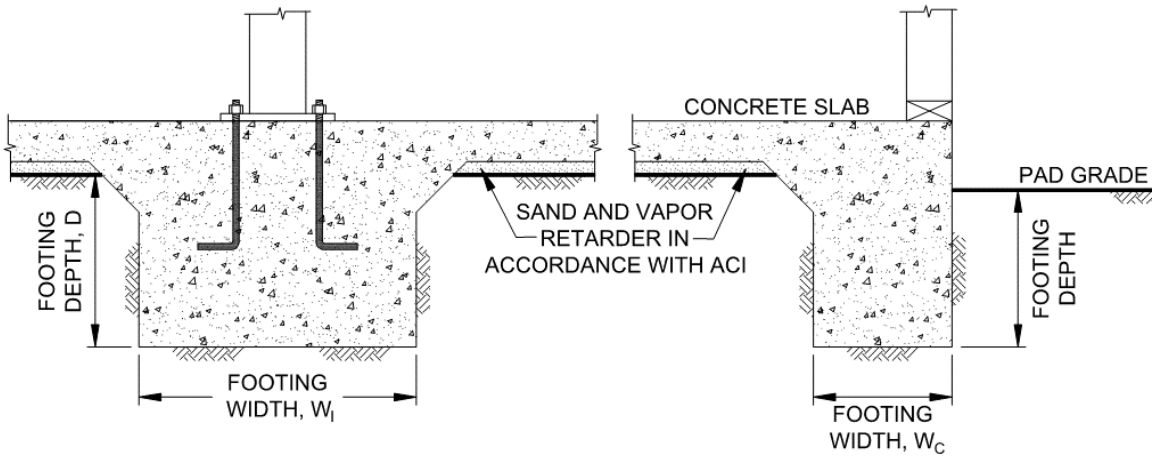
8.8.3 Proposed spread foundations for each building may derive support in either Pauba Sandstone, or engineered fill, but not a combination of both. Foundations should maintain a minimum depth of 18 inches below the ground surface (24 inches for Category II). Foundations deriving support in Pauba Sandstone should be deepened as necessary to maintain a minimum embedment of 18-inches into the Pauba Sandstone. Foundations deriving support in newly placed engineered fill should be underlain by a minimum of 3 feet of engineered fill.

8.8.4 Table 8.8.4 provides a summary of the foundation design recommendations.

TABLE 8.8.4
SUMMARY OF FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Continuous Foundation Width, W_C	12 inches
Minimum Isolated Foundation Width, W_I	24 inches
Minimum Foundation Depth, D	18 Inches Below Lowest Adjacent Grade
Minimum Steel Reinforcement	4 No. 4 Bars, 2 at the Top and 2 at the Bottom
Allowable Bearing Capacity	3,500 psf
Bearing Capacity Increase	500 psf per Foot of Depth
	250 psf per Foot of Width
Maximum Allowable Bearing Capacity	4,500 psf
Estimated Total Settlement	1 Inch
Estimated Differential Settlement	½ Inch in 30 Feet (One-Story Buildings)
Footing Size Used for Settlement	6-Foot Square
Design Expansion Index	20 or less

8.8.5 The foundations should be embedded in accordance with the recommendations herein and the Wall/Column Footing Dimension Detail. The embedment depths should be measured from the lowest adjacent pad grade for both interior and exterior footings. If there is any slope designed footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope (unless designed with a post-tensioned foundation system as discussed herein).



Wall/Column Footing Dimension Detail

8.8.6 The bearing capacity values presented herein are for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

8.8.7 We should observe the foundation excavations prior to the placement of reinforcing steel and concrete to verify that the exposed soil conditions are similar to those expected and that they have been extended to the appropriate bearing strata. Foundation modifications may be required if unexpected soil conditions are encountered.

8.8.8 Proposed building slabs-on-grade may derive support directly in newly placed engineered fill, approved Pauba Sandstone, or a combination of both if exposed at the building pad elevation.

8.8.9 Table 8.8.9 presents minimum foundation and interior concrete slab design criteria for conventional shallow foundation systems.

TABLE 8.8.9
CONVENTIONAL FOUNDATION RECOMMENDATIONS BY CATEGORY

Foundation Category	Minimum Footing Embedment Depth (inches)	Continuous Footing Reinforcement	Interior Slab Reinforcement
I	18	Four No. 4 bars, two top and two bottom	No. 3 bars at 24 inches on center, both directions
II	24	Four No. 5 bars, two top and two bottom	No. 3 bars at 18 inches on center, both directions

8.8.10 The concrete slab-on-grade should be a minimum of 4 inches thick for Foundation Category I, and 5 inches thick for Foundation Category II.

8.8.11 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. The vapor retarder should be puncture resistant and durable, so as to avoid perforations during its installation.

8.8.12 The bedding sand thickness should be determined by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl.

8.8.13 As an alternative to the conventional foundation recommendations, consideration should be given to the use of post-tensioned concrete slab and foundation systems for the support of the proposed structures. The post-tensioned systems should be designed by a structural engineer experienced in post-tensioned slab design and design criteria of the Post-Tensioning Institute (PTI) DC 10.5-12 *Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils* or *WRI/CRSI Design of Slab-on-Ground Foundations*, as required by the 2019 California Building Code (CBC Section 1808.6.2). Although this procedure was developed for expansive soil conditions, it can also be used to reduce the potential for foundation distress due to differential fill settlement. The post-tensioned design should incorporate the geotechnical parameters presented in Table 8.8.9 for the Foundation Category designated. The parameters presented in Table 8.8.13 are based on the guidelines presented in the PTI DC 10.5 design manual.

TABLE 8.8.13
POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

Post-Tensioning Institute (PTI) DC 10.5-12 Design Parameters	Foundation Category	
	I	II
1. Thornthwaite Index	-20	-20
2. Equilibrium Suction	3.9	3.9
3. Edge Lift Moisture Variation Distance, e_M (Feet)	5.3	5.1
4. Edge Lift, y_M (Inches)	0.61	1.10
5. Center Lift Moisture Variation Distance, e_M (Feet)	9.0	9.0
6. Center Lift, y_M (Inches)	0.30	0.66

8.8.14 The foundations for the post-tensioned slabs should be embedded in accordance with the recommendations of the structural engineer. If a post-tensioned mat foundation system is planned, the slab should possess a thickened edge with a minimum width of 18 inches and extend below the clean sand or crushed rock layer.

8.8.15 If the structural engineer proposes a post-tensioned foundation design method other than the 2019 CBC:

- The deflection criteria presented in Table 8.8.9 are still applicable.
- Interior stiffener beams should be used for Foundation Category II.
- The width of the perimeter foundations should be at least 12 inches.
- The perimeter footing embedment depths should be at least 18 inches, and 24 inches for foundation categories I, and II, respectively. The embedment depths should be measured from the lowest adjacent pad grade.

8.8.16 Our experience indicates post-tensioned slabs may be susceptible to excessive edge lift, regardless of the underlying soil conditions. Placing reinforcing steel at the bottom of the perimeter footings and the interior stiffener beams may mitigate this potential. The structural engineer should design the foundation system to reduce the potential of edge lift occurring for the proposed structures.

8.8.17 During the construction of the post-tension foundation system, the concrete should be placed monolithically. Under no circumstances should cold joints form between the footings/grade beams and the slab during the construction of the post-tension foundation system unless designed by the structural engineer.

8.8.18 Foundations may be designed for an allowable soil bearing pressure of 3,500 pounds per square foot (psf) (dead plus live load) for the site. This bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

8.8.19 The maximum expected static settlement for the planned structures, supported on conventional foundation systems with the above allowable bearing pressures, and deriving support in engineered fill is estimated to be 1 inch and to occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement due to foundation loads is not expected to exceed ½ inch over a horizontal distance of 30 feet.

8.8.20 Isolated footings outside of the slab area, if present, should have the minimum embedment depth and width recommended for conventional foundations for a Foundation Category. In addition, consideration should be given to connecting patio slabs that exceed 5 feet in width to the building foundation, to reduce the potential for future separation to occur.

8.8.21 Interior stiffening beams should be incorporated into the design of the foundation system in accordance with the PTI design procedures.

8.8.22 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisture conditioned at or slightly above optimum moisture content.

8.8.23 The recommendations of this report are intended to reduce the potential for cracking of slabs and foundations. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

8.8.24 Concrete slabs should be provided with adequate crack-control joints, construction joints and/or expansion joints to reduce unsightly shrinkage cracking. The design of joints should consider criteria of the American Concrete Institute when establishing crack-control spacing. Additional reinforcing steel, concrete admixtures and/or closer crack control joint spacing should be considered where concrete-exposed finished floors are planned.

8.8.25 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.9 Exterior Concrete Flatwork

8.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein assuming the subgrade materials possess an Expansion Index of 30 or less. Subgrade soils should be compacted to 90 percent relative compaction at or slightly above optimum moisture content. Slab panels should be a minimum of 4 inches thick and when in excess of 8 feet square should be reinforced with No. 3 reinforcing bars spaced 24 inches center-to-center in both directions to reduce the potential for cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the *Grading* section prior to concrete placement. Subgrade soil should be properly compacted, and the moisture content of subgrade soil should be verified prior to placing concrete. Base materials will not be required below concrete improvements.

8.9.2 The reinforcement steel should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

8.9.3 Where exterior flatwork abuts the structure at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stem wall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

8.9.4 The recommendations presented herein are intended to reduce the potential for cracking of exterior slabs as a result of differential movement. However, even with the incorporation of the recommendations presented herein, slabs-on-grade will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.10 Conventional Retaining Walls

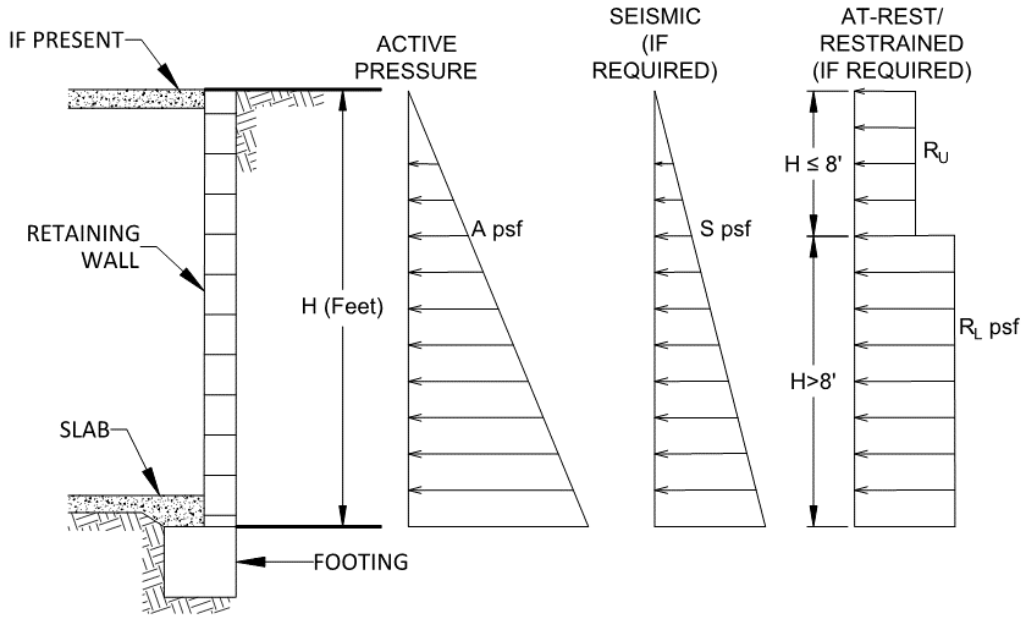
8.10.1 Spread foundations are recommended for support of proposed retaining walls. Soil with an expansion index (EI) of greater than 30 should not be used as backfill material behind retaining walls.

TABLE 8.10.1
RETAINING WALL DESIGN RECOMMENDATIONS

Parameter	Value
Active Soil Pressure, A (Fluid Density, Level Backfill)	30 pcf
Active Soil Pressure, A (Fluid Density, 2:1 Sloping Backfill)	50 pcf
Seismic Pressure, S	15H psf
At-Rest/Restrained Walls Additional Uniform Pressure, R_U (0 to 8 Feet High)	7H psf
At-Rest/Restrained Walls Additional Uniform Pressure, R_L (8+ Feet High)	13H psf
Expected Expansion Index for the Subject Property	EI≤30

H equals the height of the retaining portion of the wall

8.10.2 The project retaining walls should be designed as shown in the Retaining Wall Loading Diagram.



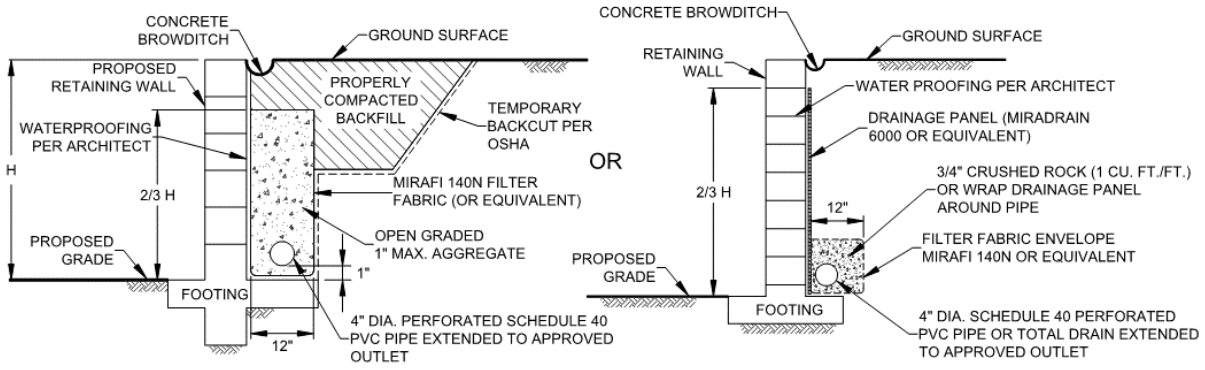
Retaining Wall Loading Diagram

8.10.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall) at the top of the wall. Where walls are restrained from movement at the top (at-rest condition), an additional uniform pressure should be applied to the wall. For retaining walls subject to vehicular loads within a horizontal distance equal to two-thirds the wall height, a surcharge equivalent to 2 feet of fill soil should be added to the upper 10 feet of the retaining wall.

8.10.4 The structural engineer should determine the Seismic Design Category for the project in accordance with Section 1613.3.5 of the 2019 CBC or Section 11.6 of ASCE 7-16. For structures assigned to Seismic Design Category of D, E, or F, retaining walls that support more than 6 feet of backfill should be designed with seismic lateral pressure in accordance with Section 1803.5.12 of the 2019 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall.

8.10.5 Retaining walls should be designed to ensure stability against overturning sliding, and excessive foundation pressure. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, it is not necessary to consider active pressure on the keyway.

8.10.6 Drainage openings through the base of the wall (weep holes) should not be used where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted granular (EI of 90 or less) free-draining backfill material with no hydrostatic forces or imposed surcharge load. The retaining wall should be properly drained as shown in the Typical Retaining Wall Drainage Detail. If conditions different than those described are expected, or if specific drainage details are desired, Geocon should be contacted for additional recommendations.



Typical Retaining Wall Drainage Detail

8.10.7 The retaining walls may be designed using either the active and restrained (at-rest) loading condition or the active and seismic loading condition as suggested by the structural engineer. Typically, it appears the design of the restrained condition for retaining wall loading may be adequate for the seismic design of the retaining walls. However, the active earth pressure combined with the seismic design load should be reviewed and also considered in the design of the retaining walls.

8.10.8 In general, wall foundations should be designed in accordance with Table 8.10.8. The proximity of the foundation to the top of a slope steeper than 3:1 could impact the allowable soil bearing pressure. Therefore, retaining wall foundations should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.

TABLE 8.10.8
SUMMARY OF RETAINING WALL FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Retaining Wall Foundation Width	12 inches
Minimum Retaining Wall Foundation Depth	18 Inches
Minimum Steel Reinforcement	Per Structural Engineer
Allowable Bearing Capacity	3,500 psf
Bearing Capacity Increase	500 psf per Foot of Depth
	300 psf per Foot of Width
Maximum Allowable Bearing Capacity	4,500 psf
Estimated Total Settlement	1 Inch
Estimated Differential Settlement	½ Inch in 30 Feet

8.10.9 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls. In the event that other types of walls (such as mechanically stabilized earth [MSE] walls, soil nail walls, or soldier pile walls) are planned, Geocon should be consulted for additional recommendations.

8.10.10 It is common to see retaining walls constructed in the areas of the elevator pits. The retaining walls should be properly drained and designed in accordance with the recommendations presented herein. If the elevator pit walls are not drained, the walls should be designed with an increased active pressure with an equivalent fluid density of 90 pcf. It is also common to see seepage and water collection within the elevator pit. The pit should be designed and properly waterproofed to prevent seepage and water migration into the elevator pit.

8.10.11 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.10.12 Soil contemplated for use as retaining wall backfill, including import materials, should be identified in the field prior to backfill. At that time, Geocon should obtain samples for laboratory testing to evaluate its suitability. Modified lateral earth pressures may be necessary if the backfill soil does not meet the required expansion index or shear strength. City or regional standard wall designs, if used, are based on a specific active lateral earth pressure and/or soil friction angle. In this regard, on-site soil to be used as backfill may or may not meet the values for standard wall designs. Geocon should be consulted to assess the suitability of the on-site soil for use as wall backfill if standard wall designs will be used.

8.10.13 Retaining walls up to 6 feet high and not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 30 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 50 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 30 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.

8.10.14 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls with a level backfill surface should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 50 pcf.

8.10.15 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.10.16 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral

distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 20 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations. A graphic depicting typical retaining wall drainage is provided below.

8.11 Lateral Loading

8.11.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid weight of 250 pounds per cubic foot (pcf) should be used for the design of footings or shear keys poured neat against compacted fill or Pauba Sandstone. The allowable passive pressure assumes a horizontal surface extending at least 5 feet or 3 times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

8.11.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between compacted fill or Pauba Sandstone and concrete of 0.35 should be used for design.

8.12 Preliminary Pavement Recommendations

8.12.1 The final pavement design should be based on R-value testing of soils at road subgrade elevation. Roadways should be designed in accordance with the County of Riverside Ordinance No. 461, *Road Improvement Standards & Specifications*, Section 8.07 and Standard Drawing No. 114, *Roadway Design Requirements,* when final Traffic Indices (TI) and R-value test results of subgrade soils are completed.

8.12.2 For preliminary design purposes, we used an assumed R-value test result of 30 based on the material observed in the field. A value of 78 was considered for aggregate base materials for the purposes of this preliminary analysis. Pavements should meet the minimum requirement for pavement thickness per County of Riverside Ordinance No. 461, *Road Improvement Standards & Specifications*, Section 8.07 and Standard Drawing No. 114, *Roadway Design Requirements*. Preliminary flexible pavement sections are presented in Table 8.12.2. Geocon should be contacted if other roadway classifications and traffic indices are appropriate for the project.

TABLE 8.12.2
PRELIMINARY FLEXIBLE PAVEMENT SECTIONS

Road Classification	Assumed Traffic Index	Assumed Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Local Street/Access Road	5.5	30	3	7
Enhanced Local Street at School or Park	6.5	30	4	8
Collector	7.0	30	4	10

8.12.3 The upper 12 inches of the roadway subgrade soil should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at or slightly above optimum moisture content (as determined by ASTM D1557).

8.12.4 The asphalt concrete materials should conform to Section 203-6, of the latest edition of the California *Greenbook*. Class 2 Aggregate Base should conform to Section 26 of the Caltrans *Standard Specifications*. Base materials should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at or slightly above optimum moisture content (as determined by ASTM D1557). Asphalt concrete should be compacted to a density of 95 percent of the laboratory Hveem density (as determined by ASTM D1561).

8.12.5 A rigid Portland cement concrete (PCC) pavement section should be placed in roadway aprons and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330-21 *Commercial Concrete Parking Lots and Site Paving Design and Construction – Guide.* Table 8.12.5 provides the traffic categories and design parameters used for the calculations for 20-year design life.

TABLE 8.12.5
TRAFFIC CATEGORIES

Traffic Category	Description	Reliability (%)	Slabs Cracked at End of Design Life (%)
A	Car Parking Areas and Access Lanes	60	15
B	Entrance and Truck Service Lanes	60	15
C	School or City Buses (Excluding Large Articulated Buses)	75	15
D	Heavy Duty Trucks (Gross Weight of 80 Kips)	75	15
E	Garbage or Fire Truck Lane	75	15

8.12.6 We used the parameters presented in Table 8.12.6 to calculate the pavement design sections. We should be contacted to provide updated design sections, if necessary.

TABLE 8.12.6
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of Subgrade Reaction, k	100 pci
Modulus of Rupture for Concrete, M_R	500 psi
Concrete Compressive Strength	3,000 psi
Concrete Modulus of Elasticity, E	3,150,000 psi

8.12.7 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.7.

TABLE 8.12.7
RIGID VEHICULAR PAVEMENT RECOMMENDATIONS

Traffic Category	Trucks Per Day	Portland Cement Concrete, T (Inches)
A = Car Parking Areas and Access Lanes	10	6
B = Entrance and Truck Service Lanes	10	6½
B = Entrance and Truck Service Lanes	50	7
B = Entrance and Truck Service Lanes	100	7
C = School or City Buses	50	10
C = School or City Buses	100	10½
D = Heavy Duty Trucks	50	7½
D = Heavy Duty Trucks	100	8½
E = Garbage or Fire Truck Lanes	5	7½
E = Garbage or Fire Truck Lanes	10	7½

8.12.8 The PCC vehicular pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. The garbage truck pad should be large enough such that all wheels are on the concrete pad during the loading operations.

8.12.9 Adequate joint spacing should be incorporated into the design and construction of the rigid pavement in accordance with Table 8.12.9.

TABLE 8.12.9
MAXIMUM JOINT SPACING

Pavement Thickness, T (Inches)	Maximum Joint Spacing (Feet)
4<T<5	10
5≤T<6	12.5
6≤T	15

8.12.10 The rigid pavement should also be designed and constructed incorporating the parameters presented in Table 8.12.10.

TABLE 8.12.10
ADDITIONAL RIGID PAVEMENT RECOMMENDATIONS

Subject	Value
Thickened Edge	1.2 Times Slab Thickness Adjacent to Structures
	1.5 Times Slab Thickness Adjacent to Soil
	Minimum Increase of 2 Inches
	4 Feet Wide
Crack Control Joint Depth	Early Entry Sawn = T/6 to T/5, 1.25 Inch Minimum
	Conventional (Tooled or Conventional Sawing) = T/4 to T/3
Crack Control Joint Width	¼-Inch for Sealed Joints and Per Sealer Manufacturer's Recommendations
	$^{1}/_{16}$- to $^{1}/_{4}$-Inch is Common for Unsealed Joints

8.12.11 Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

8.12.12 To control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab. Crack-control joints should be sealed with an appropriate sealant to prevent the migration of water through the control joint to the subgrade materials. The depth of the crack-control joints should be in accordance with the referenced ACI guide.

8.12.13 To provide load transfer between adjacent pavement slab sections, a butt-type construction joint should be constructed. The butt-type joint should be thickened by at least 20 percent at the edge and taper back at least 4 feet from the face of the slab.

8.12.14 Concrete curb/gutter should be placed on soil subgrade compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Cross-gutters that receives vehicular should be placed on subgrade soil compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Base materials should not be placed below the curb/gutter, or cross-gutters so water is not able to migrate from the adjacent parkways to the pavement sections. Where flatwork is located directly adjacent to the curb/gutter, the concrete flatwork should be structurally connected to the curbs to help reduce the potential for offsets between the curbs and the flatwork.

8.13 Temporary Excavations

8.13.1 The recommendations included herein are provided for stable excavations. It is the responsibility of the contractor and their competent person to ensure all excavations, temporary slopes and trenches are properly constructed and maintained in accordance with applicable OSHA guidelines in order to maintain safety and the stability of the excavations and adjacent improvements. These excavations should not be allowed to become saturated or to dry out. Surcharge loads should not be permitted to a distance equal to the height of the excavation from the top of the excavation. If there is any improvement designed, the top of the excavation should be a minimum of 15 feet from the edge of existing improvements. Excavations steeper than those recommended or closer than 15 feet from an existing surface improvement should be shored in accordance with applicable OSHA codes and regulations.

8.13.2 The stability of the excavations is dependent on the design and construction of the shoring system and site conditions. Therefore, Geocon cannot be responsible for site safety and the stability of the proposed excavations.

8.13.3 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring are provided in the following section.

8.13.4 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA regulations so that modifications of the slopes can be made if variations in the soil conditions occur.

8.14 Site Drainage and Moisture Protection

8.14.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2019 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

8.14.2 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks and detected leaks should be repaired promptly. Detrimental soil movement could occur if water can infiltrate the soil for prolonged periods of time.

8.14.3 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. We recommend that area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes be used. In addition, where landscaping is planned adjacent to the pavement, we recommend construction of a cutoff wall or the use of an impermeable geosynthetic along the edge of the pavement that extends at least 6 inches below the bottom of the base material.

8.14.4 Proposed infiltration systems should be offset from the outside edge of planned foundations a minimum lateral distance of 20 feet to reduce the occurrence of water migrating below the load projection of planned structures.

8.14.5 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Downgradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.15 Plan Review

8.15.1 Grading and foundation plans should be reviewed by the Geotechnical Engineer of Record prior to finalization of design to check that the plans have been prepared in substantial conformance with the recommendations of this report, and to provide additional analyses or recommendations, if necessary.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in this investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that expected herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials was not part of the scope of services provided by Geocon West, Inc.

This report is issued with the understanding that it is the responsibility of the owner, or of their representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

The requirements for concrete and reinforcing steel presented in this report are preliminary recommendations from a geotechnical perspective. The Structural Engineer should provide the final recommendations for structural design of concrete and reinforcing steel for foundation systems, floor slabs, exterior concrete, or other systems where concrete and reinforcing steel are utilized, in accordance with the latest version of applicable codes.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project Geotechnical Engineer of Record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

LIST OF REFERENCES

1. American Concrete Institute, 2019, *Building Code Requirements for Structural Concrete*, Report by ACI Committee 318.

2. American Concrete Institute, 2008, *Guide for Design and Construction of Concrete Parking Lots*, Report by ACI Committee 330.

3. ASCE 7-16, 2019, *Minimum Design Loads for Buildings and Other Structures*.

4. California Building Standards Commission, 2019, *California Building Code (CBC)*, California Code of Regulations Title 24, Part 2.

5. California Geological Survey, 2003, *Earthquake Shaking Potential for California*, from USGS/CGS Seismic Hazards Model, CSSC No. 03-02.

6. California Department of Transportation (Caltrans), Division of Engineering Services, Materials Engineering and Testing Services, 2021, *Corrosion Guidelines, Version 3.2,* dated March.

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9. Kennedy, Michael P., 1977, *Recency and Character of Faulting Along the Elsinore Fault Zone in Southern Riverside County, California,* California Division of Mines and Geology, Special Report 131.

10. KTGY, 2022, *Conceptual Site Plan*, www.ktgy.com, dated September 30.

11. Legg, M.R., J.C. Borrero, and C.E. Synolakis, 2003*, Evaluation of Tsunami Risk to Southern California Coastal Cities*, EERI, NEHRP Professional Fellowship Report PF2002-11, dated January.

12. Morton, D.M. and Weber, F.H., 2003, *Preliminary Geologic Map of the Elsinore 7.5' Quadrangle, Riverside County, California*, U.S. Geological Survey, Open-File Report OF-2003-281, 1:24,000.BedGISIn View

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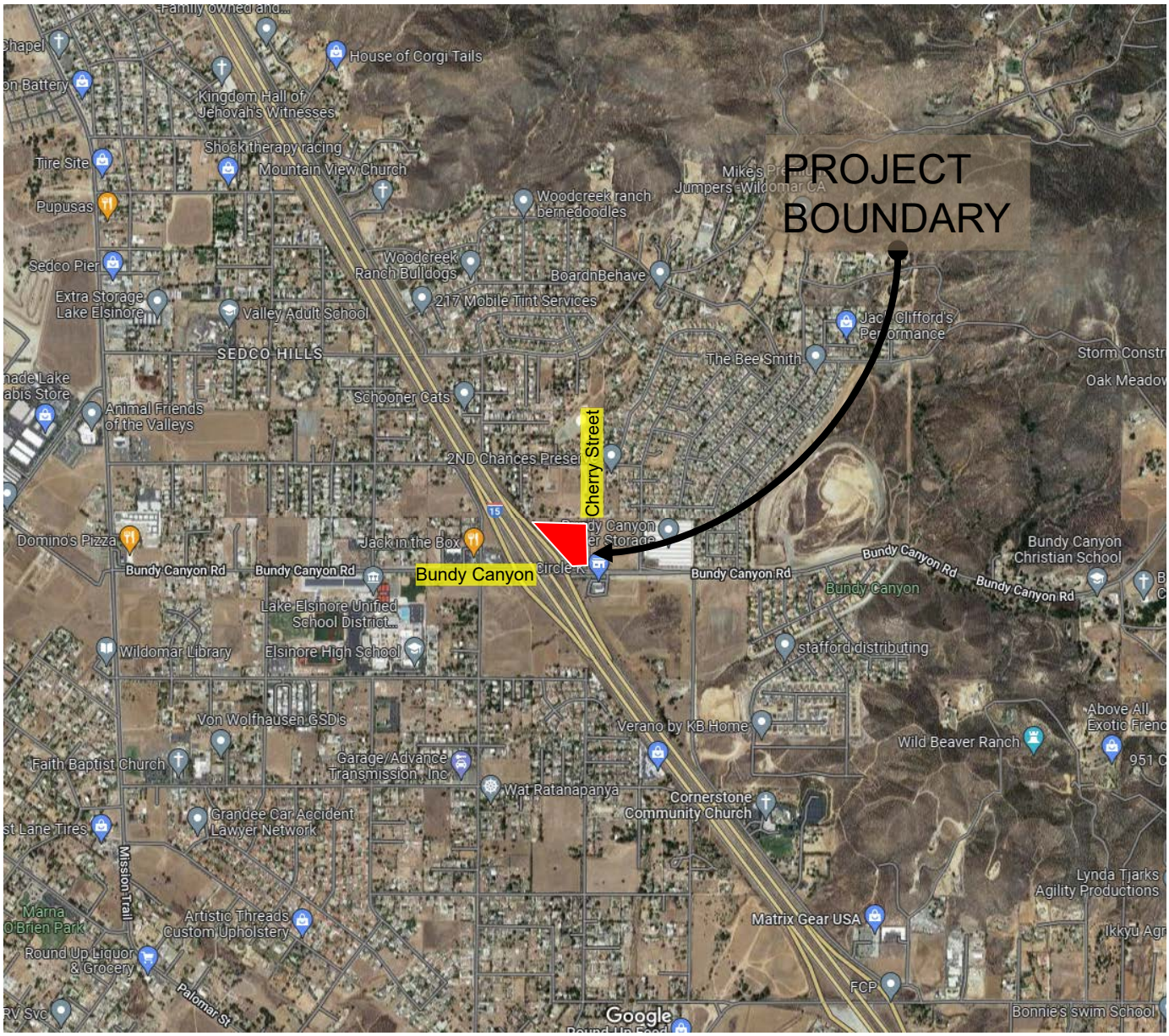


0’ 1000’ 2000’

SCALE: 1” = 1000’

N

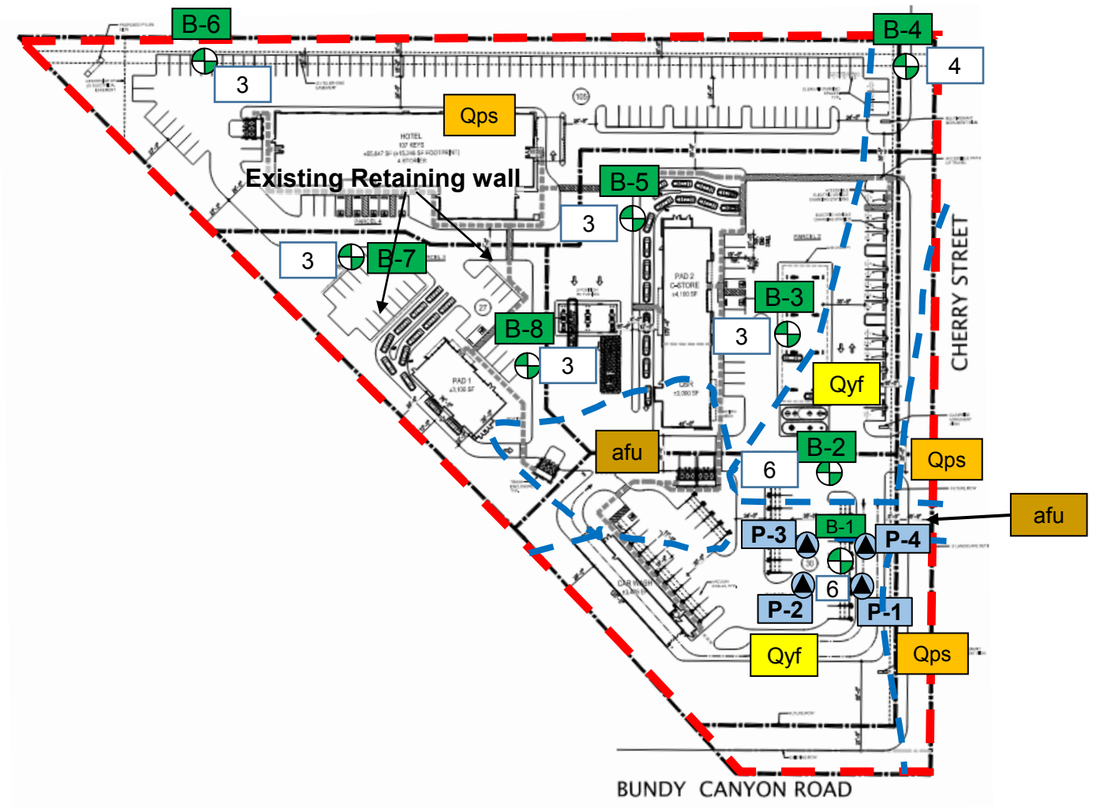
SOURCE: Google Earth, 2022

VICINITY MAP

GEOCON WEST, INC.
GEOTECHNICAL, ENVIRONMENTAL, MATERIALS
41571 CORNING PLACE #101, MURRIETA, CALIFORNIA 92562
PHONE 951-304-2300 www.geoconinc.com

PROPOSED CHERRY OUTPOST
CHERRY ST & BUNDY CANYON RD
WILDOMAR, CALIFORNIA

HD			JANUARY 2023	PROJECT NO. T3010-22-01	FIG. 1



GEOCON LEGEND

Locations are approximate

B-8 ..... HOLLOW STEM AUGER BORING LOCATION

6 ..... DEPTH OF EXPECTED REMEDIAL REMOVAL BELOW EXISTING GRADE (ft)

P-4 ..... PERCOLATION TEST LOCATION

..... LIMIT OF THE PROJECT

afu ..... UNDOCUMENTED ARTIFICIAL FILL

Qyf ..... YOUNG ALLUVIUM

Qps ..... POTATO SANDSTONE

..... GEOLOGIC CONTACT

0’ 50’ 100’

SCALE: 1” = 50’

N

Source: KTGY Architecture and Planning, 2022, *Conceptual Site Plan*, dated September 30.

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GEOLOGIC MAP

PROPOSED CHERRY OUTPOST
CHERRY ST & BUNDY CANYON RD
WILDOMAR, CALIFORNIA

HD			JANUARY 2023	PROJECT NO. T3010-22-01	FIG. 2

APPENDIX A

APPENDIX A

EXPLORATORY EXCAVATIONS

Eight exploratory borings and four percolation test borings were drilled on November 30, 2022. Percolation testing was conducted on December 1, 2022. The borings and percolation holes were drilled with a CME-75 truck mounted drill rig. Borings B-1 through B-8 were drilled to depths between 20½ and 26 feet. Percolation test borings were drilled to depths of 5 feet. Representative and relatively undisturbed samples were obtained by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from an above-ground auto-hammer. The sampler was equipped with 1-inch by 2⅜-inch brass sampler rings to facilitate removal and testing. Bulk samples were also obtained. The soil conditions encountered in the excavations were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the geotechnical borings are presented on Figures A-1 through A-8, with logs of the percolation test borings presented on Figures A-9 and A-12. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The approximate locations of the borings are indicated on the *Geotechnical Map* (see Figure 2).

Percolation testing was performed in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A*. The percolation tests were run in general accordance with *Section 2.3, Shallow Percolation Test*. Percolation test result data are presented on Figures A-13 and A-16.

PROJECT NO. T3010-22-01

BORING B-1

ELEV. (MSL.) **1410** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-1@0-5' (BULK/DRIVE)			SM	**Young ALLUVIAL Fan Deposits (Quall)** Silty SAND, loose to medium dense, moist, orange brown; fine to coarse sand; abundant small pores			
2								
4								
6	B-1@5'				**PAUBA SANDSTONE (Qps)** Silty SAND, very dense, dry, orange brown; fine to coarse sand; less pores	55	101.5	5.2
8								
10	B-1@10'					75/11"	121.0	7.8
12								
14								
16	B-1@15'				-Becomes cemented	50/6"	98.1	7.2
18								
20	B-1@20'				-Becomes moist; locally massive; driller added H2O to facilitate drilling	50/6"	122.0	5.3
22								
24								
	B-1@25'				-Becomes dry, strong brown to orange brown.	50/5"	119.7	6.2

Total Depth = 25'5"
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30 inches by auto hammer
Backfilled with cuttings 11/30/2022

T3010-22-02 BORING LOGS.GPJ

Figure A-1,
Log of Boring B-1, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-2

ELEV. (MSL.) **1418** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-2@0-5'					SM	**Young ALLUVIAL Fan Deposits (Quall)** Silty SAND, loose to dense, dry, dark brown; fine to coarse sand			
2										
4	B-2@2.5'						**PAUBA SANDSTONE (Qps)** Moist, Orange Brown, weathered, Cemneted	59	123.6	3.9
6	B-2@5'							85	127.8	6.0
8	B-2@7.5'						-Becomes dry, Very dense	90/10"	125.7	12.0
10	B-2@10'						-Becomes very dense	50/6"	125.3	6.8
12										
14										
16	B-2@15'							83/12"	122.9	4.6
18										
20	B-2@20'						-Becomes dense, light brown to strong brown; more cemented trace Clay	59	114.5	6.3
							Total Depth = 21'6" Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-2,
Log of Boring B-2, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-3

ELEV. (MSL.) **1423** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0						SM	**TOPSOIL** Silty SAND, loose, strong brown			
2	B-3@2.5'						**PAUBA SANDSTONE (Qps)** Silty SAND, very dense, dry, light to orange brown; trace porousity	76/12"	110.5	5.2
4										
6	B-3@5' B-3@0-5'						-Becomes cemented	95/12"	116.1	10.9
8	B-3@7.5'						-Becomes very dense	77/12"	119.7	8.8
10	B-3@10'						Less dense	80	120.4	11.8
12										
14										
16	B-3@15'						Difficult Drilling	77/12"	119.5	9.9
18										
20	B-3@20'						Driller added water to facilitate drilling, very dense	80/12"	122.1	4.9
22										
24										
	B-3@25'							95/11"	127.6	4.4
							Total Depth = 25'11" Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-3,
Log of Boring B-3, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-4

ELEV. (MSL.) **1431** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-4@0-5'					SM	**Young ALLUVIAL Fan Deposits (Quall)** Silty SAND, loose, moist, strong brown			
2										
4							**PAUBA SANDSTONE (Qps)** Silty SAND, dense, dry, light brown; cemented			
6	B-4@5'							85/11"	124.7	4.4
8										
10	B-4@10'							72	127.3	7.4
12										
14										
16	B-4@15'						-Becomes Clayey	64	126.5	5.7
18										
20	B-4@20'						-Increase in sand	63	126.6	3
							Total Depth = 21'6" Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-4,
Log of Boring B-4, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-5

ELEV. (MSL.) **1428** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0						SM	**TOPSOIL** Silty SAND, loose, strong brown			
2							**PAUBA SANDSTONE (Qps)** Silty SAND, dense, dry, light orange brown			
4										
6	B-5@5' B-5@0-5'							50	117.8	4.5
8										
10	B-5@10'						-gray to brown	49	122.7	2.1
12										
14										
16	B-5@15'						-Becomes very dense, dry; cemented	85/12"	129.9	4.8
18										
20	B-5@20'						-Becomes Clayey	78/12"	116.5	5.2
							Total Depth = 21' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-5,
Log of Boring B-5, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-6

ELEV. (MSL.) **1419** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0						SM	**TOPSOIL** Silty SAND, loose, dry, strong brown			
2										
							PAUBA SANDSTONE (Qps) Silty SAND, dense, dry, strong brown; cemented			
4										
6	B-6@5' B-6@0-5'							90	116.1	6.6
8										
10	B-6@10'						-Becomes very dense, light brown	75/12"	118.8	5.7
12										
14										
16	B-6@15'						-Becomes dense, dry	82		
18										
20	B-6@20'						-Becomes lighter in color; increase in sand	71	121.8	3.0

Total Depth = 21'6"
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30 inches by auto hammer
Backfilled with cuttings 11/30/2022

Figure A-6,
Log of Boring B-6, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-7

ELEV. (MSL.) **1419** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0						SM	**TOPSOIL** Silty SAND, loose, dry, strong brown			
2										
4							**PAUBA SANDSTONE (Qps)** Silty SAND, medium dense, dry, light brown to strong brown			
6	B-7@5' B-7@0-5'							48	129.5	5.3
8										
10	B-7@10'						-Becomes cemented	49		
12										
14										
16	B-7@15'						-density increases with depth	75	132.5	8.4
18										
20	B-7@20'						-Becomes very dense	78/12"	129.8	7.7
							Total Depth = 21' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-7,
Log of Boring B-7, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

BORING B-8

ELEV. (MSL.) **1421** DATE COMPLETED **11/30/2022**

EQUIPMENT **CME 75 HSA** BY: **A. KAZEM**

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-8@0-5'					SM	**TOPSOIL** Silty SAND, loose, dry, strong brown			
2	B-8@2.5'						**PAUBA SANDSTONE (Qps)** Silty SAND, dense, dry; strong brown Becomes medium dense	69	123.0	3.3
4										
6	B-8@5'							28	118.0	3.5
8	B-8@7.5'						-Becomes cemented	21	121.0	2.9
10	B-8@10'							44	120.1	2.7
12										
14										
16	B-8@15'						-Becomes very dense	88	127.2	5.5
18										
20	B-8@20'						-Difficult drilling	66	130.2	12.0
							Total Depth = 21'6" Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 11/30/2022			

Figure A-8,
Log of Boring B-8, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-1** ELEV. (MSL.)**1410** DATE COMPLETED **11/30/2022** EQUIPMENT _____ BY: **A. KAZEM**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
							MATERIAL DESCRIPTION			
0						SM	**ALLUVIUM (Qyf)** Silty SAND, medium dense, dry, orange brown; fine to coarse sand; abundant small pores			
2										
4										
							Total Depth = 5' Groundwater not encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 12/1/2022			

Figure A-9,
Log of Boring P-1, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-2** ELEV. (MSL.)**1410** DATE COMPLETED **11/30/2022** EQUIPMENT _____ BY: **A. KAZEM**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
							MATERIAL DESCRIPTION			
0						SM	**ALLUVIUM (Qyf)** Silty SAND, medium dense, dry, orange brown; fine to coarse sand; abundant small pores			
2										
4										
							Total Depth = 5' Groundwater not encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 12/1/2022			

Figure A-10,
Log of Boring P-2, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-3** ELEV. (MSL.)**1410** DATE COMPLETED **11/30/2022** EQUIPMENT _____ BY: **A. KAZEM**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
							MATERIAL DESCRIPTION			
0						SM	**ALLUVIUM (Qyf)** Silty SAND, medium dense, dry, orange brown; fine to coarse sand; abundant small pores			
2										
4										
							Total Depth = 5' Groundwater not encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 12/1/2022			

Figure A-11,
Log of Boring P-3, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◥ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T3010-22-01

DEPTH IN FEET	SAMPLE NO.	BULK	DRIVE	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-4** ELEV. (MSL.)**1410** DATE COMPLETED **11/30/2022** EQUIPMENT _____ BY: **A. KAZEM**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
							MATERIAL DESCRIPTION			
0						SM	**ALLUVIUM (Qyf)** Silty SAND, medium dense, dry, orange brown; fine to coarse sand; abundant small pores			
2										
4										
							Total Depth = 5' Groundwater not encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 12/1/2022			

Figure A-12,
Log of Boring P-4, Page 1 of 1

T3010-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST REPORT

Project Name:		Cherry Outpost GI			**Project No.:**		T3010-22-01
Test Hole No.:		P-1			**Date Excavated:**		11/30/2022
Length of Test Pipe:			60.0	inches	**Soil Classification:**		0
Height of Pipe above Ground:			6.0	inches	**Presoak Date:**		11/30/2022
Depth of Test Hole:			54.0	inches	**Perc Test Date:**		12/1/2022
Check for Sandy Soil Criteria Tested by:				AK	**Percolation Tested by:**		AK
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:00 AM 9:25 AM	25	25	39.0	37.0	2.0	12.5
2	9:25 AM 9:50 AM	25	50	40.0	35.5	4.5	5.6
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10:00 AM 10:30 AM	30	30	40.8	37.5	3.3	9.2
2	10:30 AM 11:00 AM	30	60	41.0	38.0	3.0	10.0
3	11:00 AM 11:30 AM	30	90	38.0	35.0	3.0	10.0
4	11:30 AM 12:00 PM	30	120	41.0	38.3	2.8	10.9
5	12:00 PM 12:30 PM	30	150	38.3	35.5	2.8	10.9
6	12:30 PM 1:00 PM	30	180	40.0	37.3	2.8	10.9
7	1:00 PM 1:30 PM	30	210	37.3	34.8	2.5	12.0
8	1:30 PM 2:00 PM	30	240	41.5	39.0	2.5	12.0
9	2:00 PM 2:30 PM	30	270	39.0	36.5	2.5	12.0
10	2:30 PM 3:00 PM	30	300	40.8	38.3	2.5	12.0
11	3:00 PM 3:30 PM	30	330	38.3	35.8	2.5	12.0
12	3:30 PM 4:00 PM	30	360	40.3	37.8	2.5	12.0

Infiltration Rate (in/hr):			0.2				
Radius of test hole (in):			4				**Figure A-13**
Average Head (in):			39.0				

PERCOLATION TEST REPORT

Project Name:		Cherry Outpost GI			**Project No.:**		T3010-22-01
Test Hole No.:		P-2			**Date Excavated:**		11/30/2022
Length of Test Pipe:			60.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			5.0	inches	**Presoak Date:**		11/30/2022
Depth of Test Hole:			55.0	inches	**Perc Test Date:**		12/1/2022
Check for Sandy Soil Criteria Tested by:				AK	**Percolation Tested by:**		AK
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:01 AM 9:26 AM	25	25	41.5	38.0	3.5	7.1
2	9:26 AM 9:51 AM	25	50	43.0	39.0	4.0	6.2
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10:00 AM 10:30 AM	30	30	43.8	39.0	4.8	6.3
2	10:30 AM 11:00 AM	30	60	45.0	40.8	4.3	7.1
3	11:00 AM 11:30 AM	30	90	40.8	36.8	4.0	7.5
4	11:30 AM 12:00 PM	30	120	44.5	40.8	3.8	8.0
5	12:00 PM 12:30 PM	30	150	40.8	37.0	3.8	8.0
6	12:30 PM 1:00 PM	30	180	44.5	41.0	3.5	8.6
7	1:00 PM 1:30 PM	30	210	41.0	37.5	3.5	8.6
8	1:30 PM 2:00 PM	30	240	44.8	41.5	3.3	9.2
9	2:00 PM 2:30 PM	30	270	41.5	38.3	3.3	9.2
10	2:30 PM 3:00 PM	30	300	43.8	40.8	3.0	10.0
11	3:00 PM 3:30 PM	30	330	40.8	37.8	3.0	10.0
12	3:30 PM 4:00 PM	30	360	41.8	38.8	3.0	10.0

Infiltration Rate (in/hr):			0.3				
Radius of test hole (in):			4				**Figure A-14**
Average Head (in):			40.3				

PERCOLATION TEST REPORT							
Project Name:		Cherry Outpost GI			**Project No.:**		T3010-22-01
Test Hole No.:		P-3			**Date Excavated:**		11/30/2022
Length of Test Pipe:			63.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			6.0	inches	**Presoak Date:**		11/30/2022
Depth of Test Hole:			57.0	inches	**Perc Test Date:**		12/1/2022
Check for Sandy Soil Criteria Tested by:				AK	**Percolation Tested by:**		AK
Water level measured from BOTTOM of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time**	**Total**	**Initial Water**	**Final Water**	**Δ in Water**	**Percolation**
		Interval	**Elapsed**	**Level**	**Level**	**Level**	**Rate**
		(min)	**Time (min)**	**(in)**	**(in)**	**(in)**	**(min/inch)**
1	9:02 AM 9:27 AM	25	25	46.0	41.0	5.0	5.0
2	9:27 AM 9:52 AM	25	50	43.5	38.0	5.5	4.5
			Soil Criteria: Normal				
			Percolation Test				
Reading	**Time**	**Time**	**Total**	**Initial Water**	**Final Water**	**Δ in Water**	**Percolation**
No.		**Interval**	**Elapsed**	**Head**	**Head**	**Level**	**Rate**
		(min)	**Time (min)**	**(in)**	**(in)**	**(in)**	**(min/inch)**
1	10:02 AM 10:32 AM	30	30	44.0	38.3	5.8	5.2
2	10:32 AM 11:02 AM	30	60	45.0	38.8	6.3	4.8
3	11:02 AM 11:32 AM	30	90	38.8	32.8	6.0	5.0
4	11:32 AM 12:02 PM	30	120	45.0	38.8	6.3	4.8
5	12:02 PM 12:32 PM	30	150	38.8	32.3	6.5	4.6
6	12:32 PM 1:02 PM	30	180	44.8	38.8	6.0	5.0
7	1:02 PM 1:32 PM	30	210	38.8	32.8	6.0	5.0
8	1:32 PM 2:02 PM	30	240	42.8	37.0	5.8	5.2
9	2:02 PM 2:32 PM	30	270	37.0	31.3	5.8	5.2
10	2:32 PM 3:02 PM	30	300	43.5	38.0	5.5	5.5
11	3:02 PM 3:32 PM	30	330	45.8	40.3	5.5	5.5
12	3:32 PM 4:02 PM	30	360	40.3	34.8	5.5	5.5
Infiltration Rate (in/hr):			0.6				
Radius of test hole (in):			4				**Figure A-15**
Average Head (in):			37.5				

PERCOLATION TEST REPORT

Project Name:		Cherry Outpost GI			**Project No.:**		T3010-22-01
Test Hole No.:		P-4			**Date Excavated:**		11/30/2022
Length of Test Pipe:			60.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			6.0	inches	**Presoak Date:**		11/30/2022
Depth of Test Hole:			54.0	inches	**Perc Test Date:**		12/1/2022
Check for Sandy Soil Criteria Tested by:				AK	**Percolation Tested by:**		AK
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:03 AM 9:28 AM	25	25	40.5	35.0	5.5	4.5
2	9:28 AM 9:53 AM	25	50	39.0	33.3	5.8	4.3
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10:03 AM 10:33 AM	30	30	38.0	31.8	6.3	4.8
2	10:33 AM 11:03 AM	30	60	40.0	33.8	6.3	4.8
3	11:03 AM 11:33 AM	30	90	33.8	27.5	6.3	4.8
4	11:33 AM 12:03 PM	30	120	34.5	28.8	5.8	5.2
5	12:03 PM 12:33 PM	30	150	28.8	23.0	5.8	5.2
6	12:33 PM 1:03 PM	30	180	39.5	34.0	5.5	5.5
7	1:03 PM 1:33 PM	30	210	34.0	28.5	5.5	5.5
8	1:33 PM 2:03 PM	30	240	37.5	32.3	5.3	5.7
9	2:03 PM 2:33 PM	30	270	32.3	27.0	5.3	5.7
10	2:33 PM 3:03 PM	30	300	42.8	37.8	5.0	6.0
11	3:03 PM 3:33 PM	30	330	37.8	32.8	5.0	6.0
12	3:33 PM 4:03 PM	30	360	40.5	35.5	5.0	6.0

Infiltration Rate (in/hr):			0.5				
Radius of test hole (in):			4				**Figure A-16**
Average Head (in):			38.0				

APPENDIX B

APPENDIX B

LABORATORY TESTING

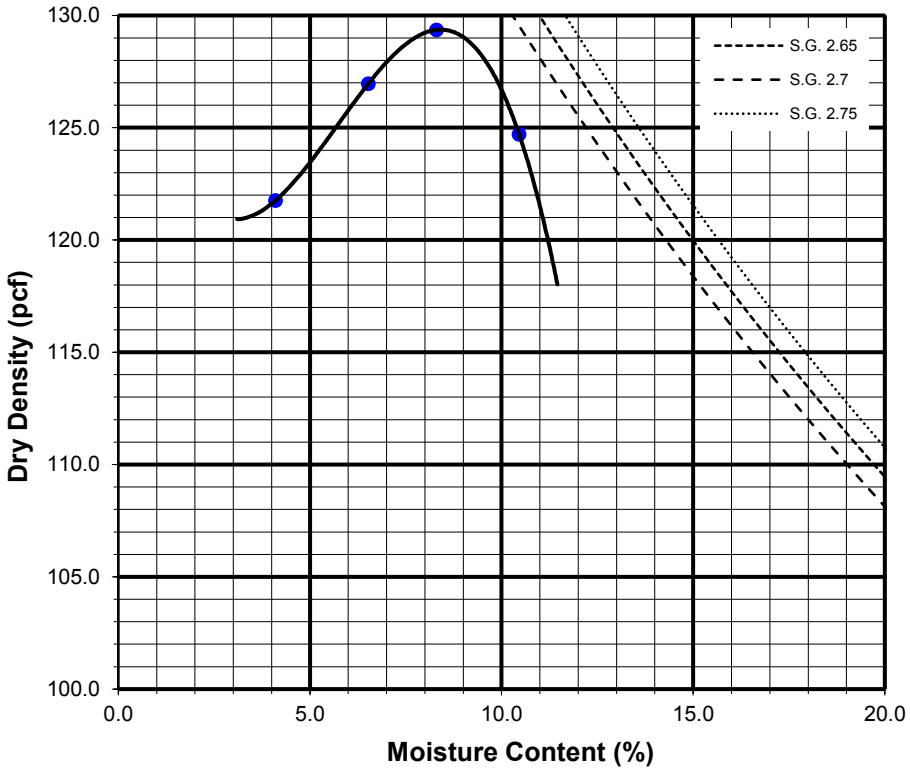
We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for in-place dry density/moisture content, maximum dry density/optimum moisture content, expansion potential, corrosivity, grain size analysis, consolidation potential, and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-13 and on the logs presented in *Appendix A*.

Sample No:

B1@0-5	Silty SAND (SM), brown

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6174	6302	6375	6340		
Weight of Mold	(g)	4259	4259	4259	4259		
Net Weight of Soil	(g)	1915	2043	2116	2081		
Wet Weight of Soil + Cont.	(g)	654.9	642.7	761.8	717.5		
Dry Weight of Soil + Cont.	(g)	639.2	619.1	723.3	674.1		
Weight of Container	(g)	256.4	257.2	259.4	259.1		
Moisture Content	(%)	4.1	6.5	8.3	10.5		
Wet Density	(pcf)	126.8	135.2	140.1	137.8		
Dry Density	(pcf)	121.8	127.0	129.4	124.7		

Maximum Dry Density (pcf)	**129.5**	**Optimum Moisture Content (%)**	**8.5**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

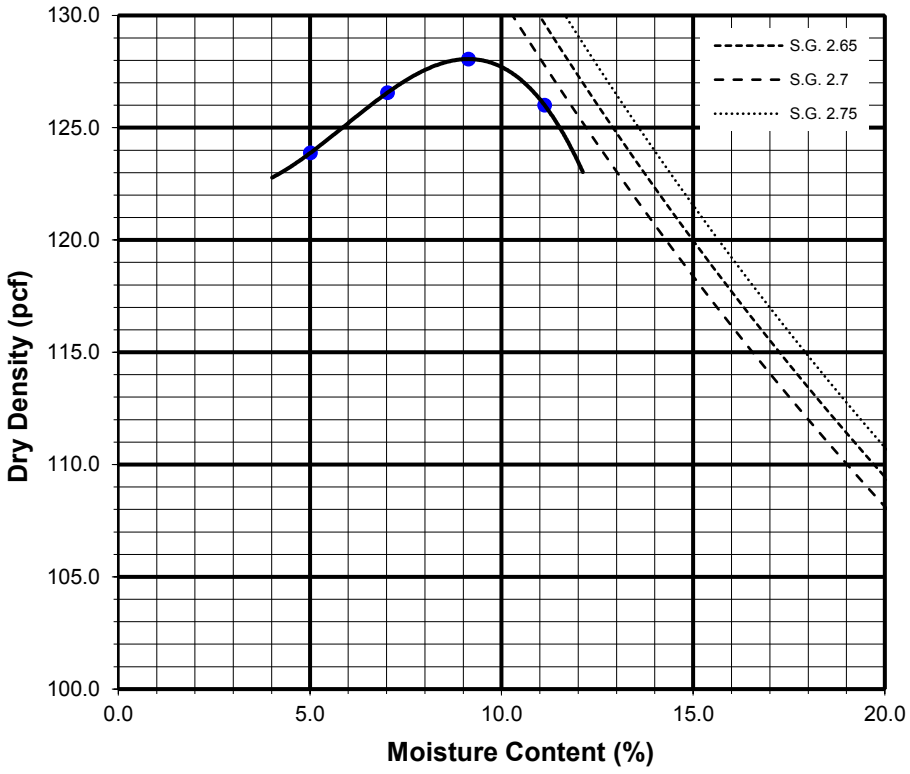
Jan 23 Figure B-1

Sample No:

B3@0-5'	Silty SAND (SM), brown

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6333	6337	6268	6187		
Weight of Mold	(g)	4222	4222	4222	4222		
Net Weight of Soil	(g)	2111	2115	2046	1965		
Wet Weight of Soil + Cont.	(g)	767.8	730.0	699.2	674.6		
Dry Weight of Soil + Cont.	(g)	719.0	675.4	665.4	651.2		
Weight of Container	(g)	184.8	184.4	184.2	184.4		
Moisture Content	(%)	9.1	11.1	7.0	5.0		
Wet Density	(pcf)	139.8	140.0	135.5	130.1		
Dry Density	(pcf)	128.1	126.0	126.6	123.9		

Maximum Dry Density (pcf)	**128.0**	**Optimum Moisture Content (%)**	**9.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

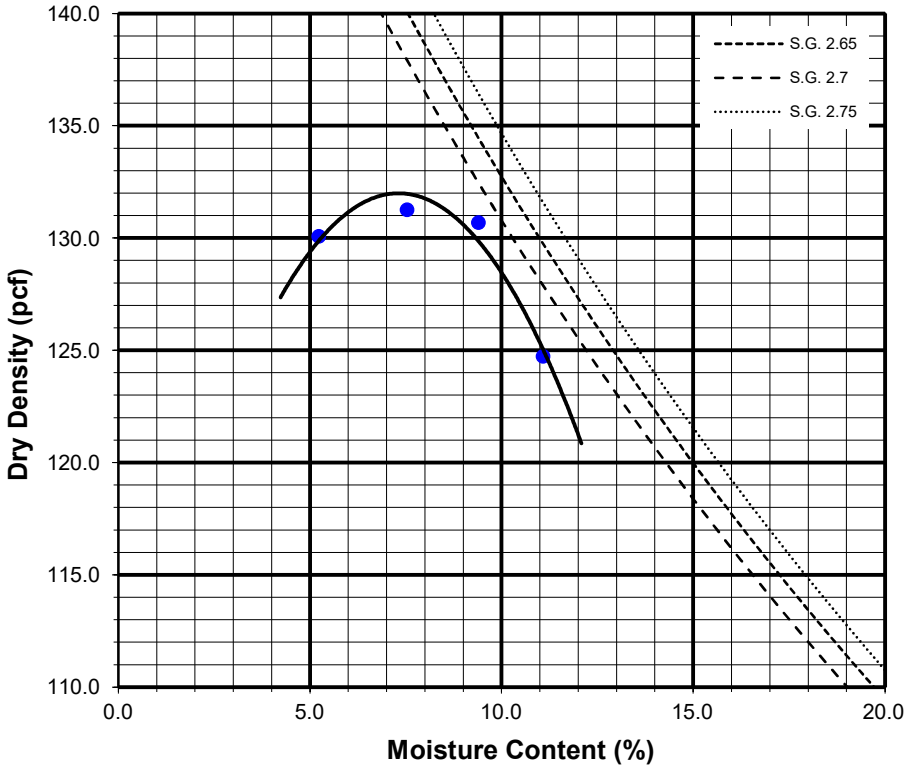
Jan 23 Figure B-2

Sample No:

B6@0-5	Silty SAND (SM), brown

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6327	6391	6419	6352		
Weight of Mold	(g)	4259	4259	4259	4259		
Net Weight of Soil	(g)	2068	2132	2160	2093		
Wet Weight of Soil + Cont.	(g)	674.3	707.6	776.2	730.5		
Dry Weight of Soil + Cont.	(g)	653.5	676.2	731.5	683.4		
Weight of Container	(g)	256.0	259.2	255.8	258.4		
Moisture Content	(%)	5.2	7.5	9.4	11.1		
Wet Density	(pcf)	136.9	141.1	143.0	138.6		
Dry Density	(pcf)	130.1	131.3	130.7	124.7		

Maximum Dry Density (pcf)	**131.5**	**Optimum Moisture Content (%)**	**8.5**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-3

B3@0-5

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	630.3	660.5
Wt. of Mold	(gm)	200.3	200.3
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	473.2	660.5
Dry Wt. of Soil + Cont.	(gm)	452.3	400.0
Wt. of Container	(gm)	173.2	200.3
Moisture Content	(%)	7.5	15.1
Wet Density	(pcf)	129.7	138.6
Dry Density	(pcf)	120.7	120.5
Void Ratio		0.4	0.4
Total Porosity		0.3	0.3
Pore Volume	(cc)	58.8	62.8
Degree of Saturation	(%) [S_{meas}]	51.4	95.8

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
12/14/2022	10:00	1.0	0	0.4069
12/14/2022	10:10	1.0	10	0.4066
Add Distilled Water to the Specimen				
12/15/2022	10:00	1.0	1430	0.4258
12/15/2022	11:00	1.0	1490	0.4258

Expansion Index (EI meas) =	19.2
Expansion Index (Report) =	19

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2019 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

GEOCON

EXPANSION INDEX TEST RESULTS

ASTM D-4829

Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-4

SUMMARY OF LABORATORY
POTENTIAL OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
AASHTO T289 ASTM D4972 and AASHTO T288 ASTM G187

Sample No.	pH	Resistivity (ohm centimeters)
B3@0-5	9.3	1900 (Corrosive)
B6@0-5	8.8	4400 (Moderately Corrosive)

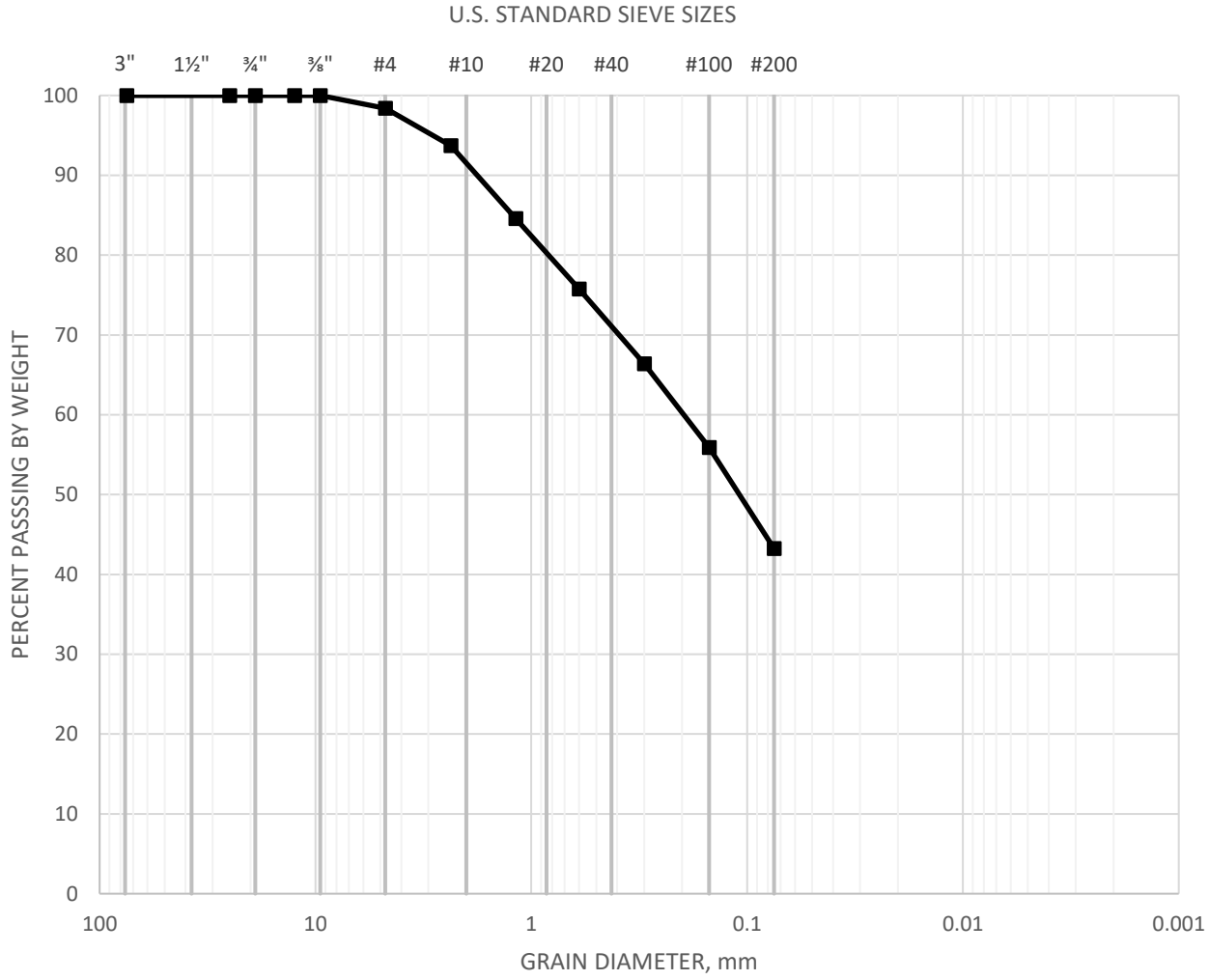
SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
AASHTO T291 ASTM C1218

Sample No.	Chloride Ion Content (%)
B3@0-5	0.012
B6@0-5	0.008

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
AASHTO T290 ASTM C1580

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure
B3@0-5	0.000	S0
B6@0-5	0.000	S0

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
B1@0-5	Silty SAND (SM), brown	0.2	0.075	0.075

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

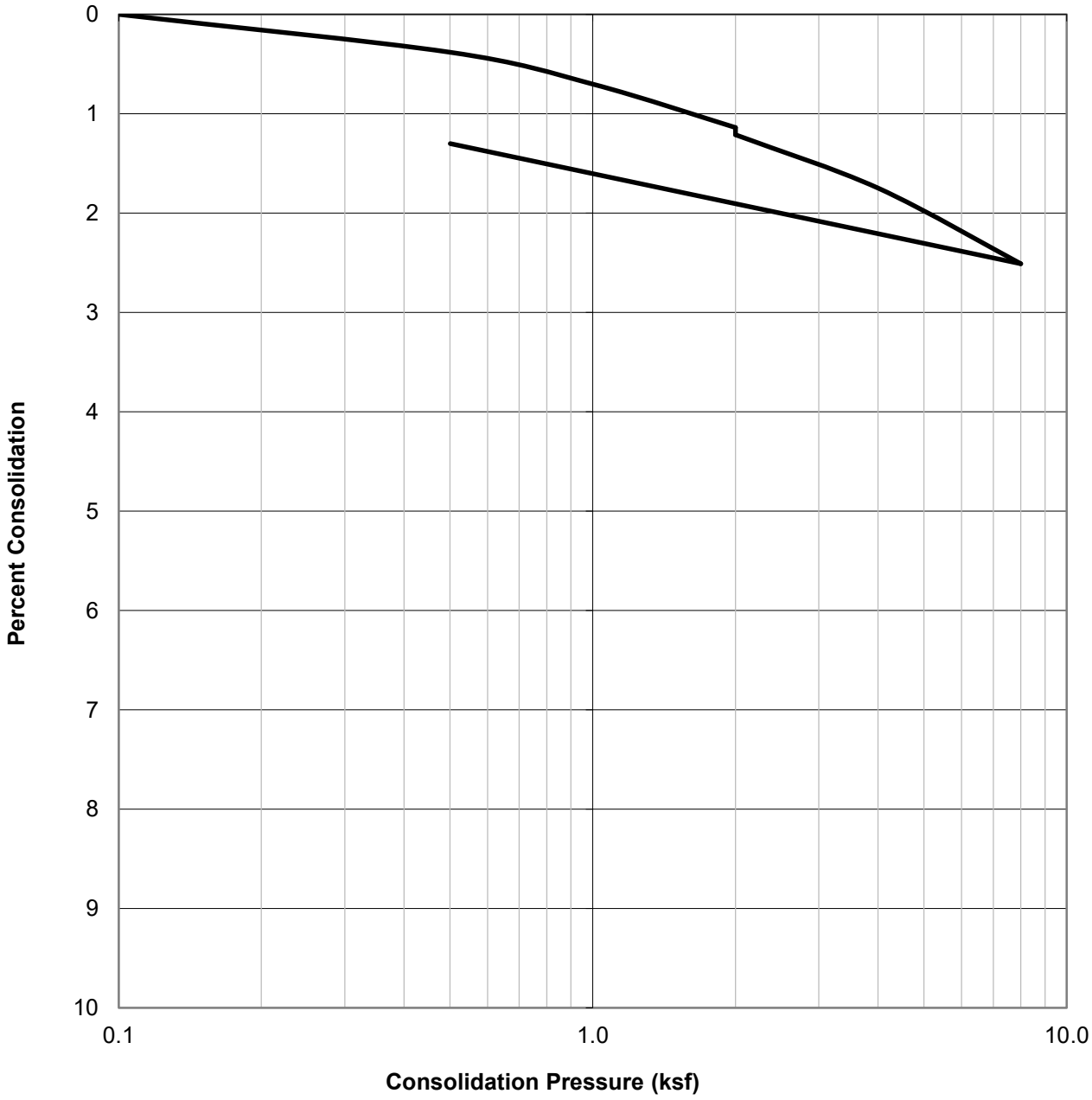
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-6

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@0-5	Silty SAND (SM), brown	122.2	8.9	13.6

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

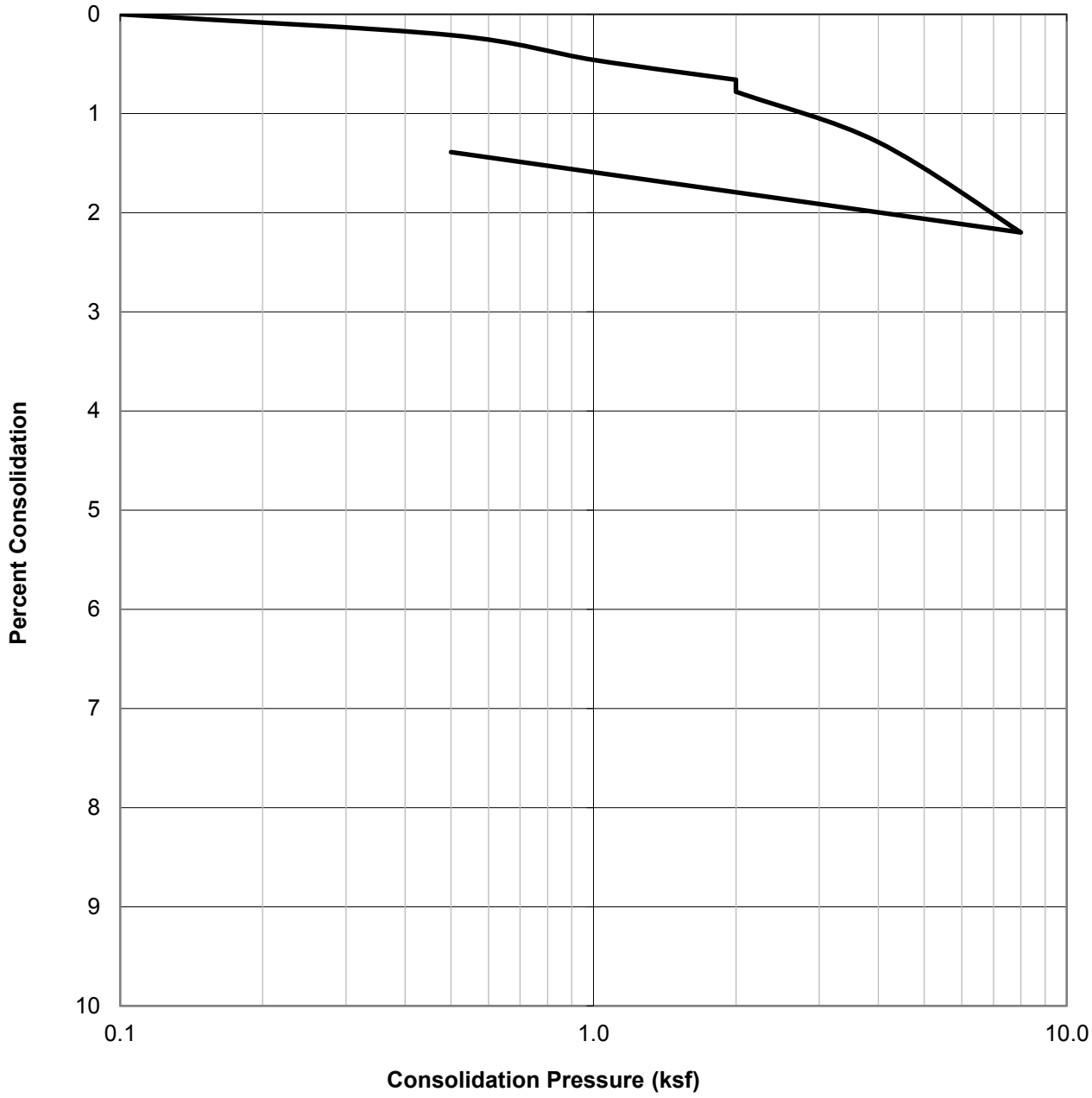
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-7

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B6@0-5	Silty SAND (SM), brown	117.4	9.0	14.3

GEOCON

CONSOLIDATION TEST RESULTS

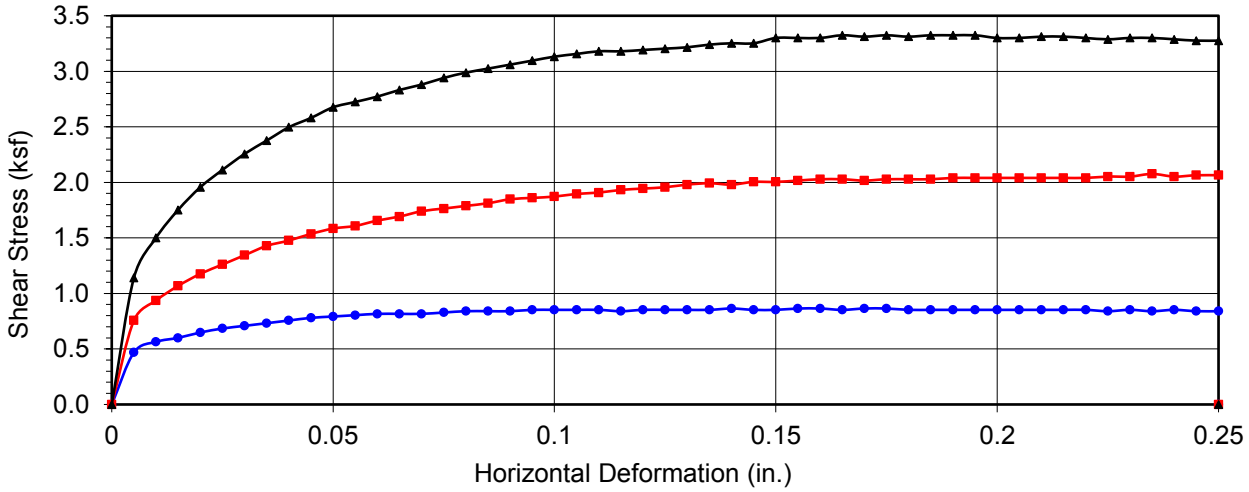
ASTM D-2435

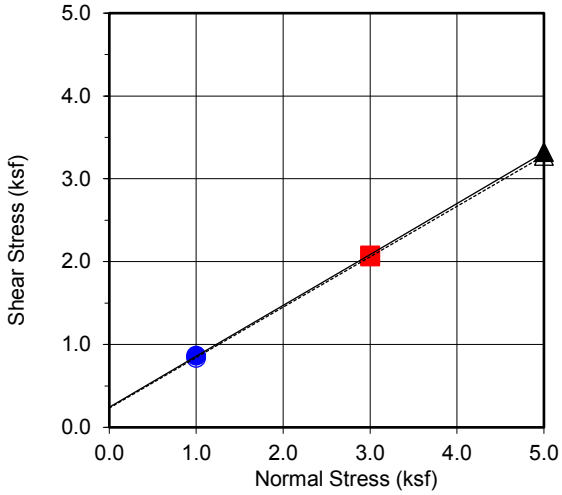
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-8





Boring No.	**B3**
Sample No.	**B3@0-5**
Depth (ft)	**0-5**
Sample Type:	Bulk

Soil Identification:

Silty SAND (SM), brown

Strength Parameters

	C (psf)	ϕ (^{o})
Peak	243	32
Ultimate	233	31

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.86	■ 2.08	▲ 3.32
Shear Stress @ End of Test (ksf)	○ 0.84	□ 2.06	△ 3.28
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	9.1	8.9	9.0
Initial Dry Density (pcf)	115.1	115.0	115.0
Initial Degree of Saturation (%)	52.7	51.3	52.0
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	14.6	12.6	10.9

GEOCON

DIRECT SHEAR TEST RESULTS

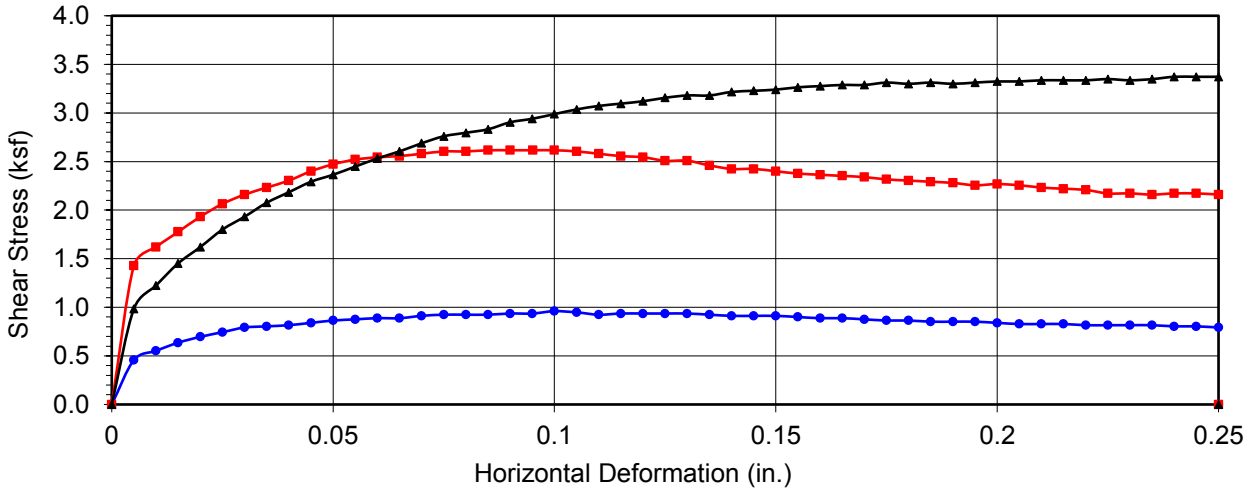
Consolidated Drained ASTM D-3080

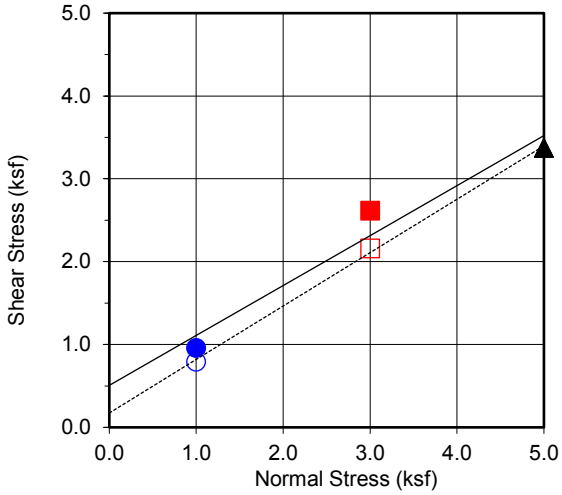
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-9





Boring No.	**B3**
Sample No.	**B3@5**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:		
Silty SAND (SM), brown		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	507	31
Ultimate	173	33

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.96	■ 2.62	▲ 3.37
Shear Stress @ End of Test (ksf)	○ 0.79	□ 2.16	△ 3.37
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	10.9	10.3	10.3
Initial Dry Density (pcf)	124.3	122.7	119.4
Initial Degree of Saturation (%)	82.5	74.1	67.6
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	17.4	15.9	15.5

GEOCON

DIRECT SHEAR TEST RESULTS

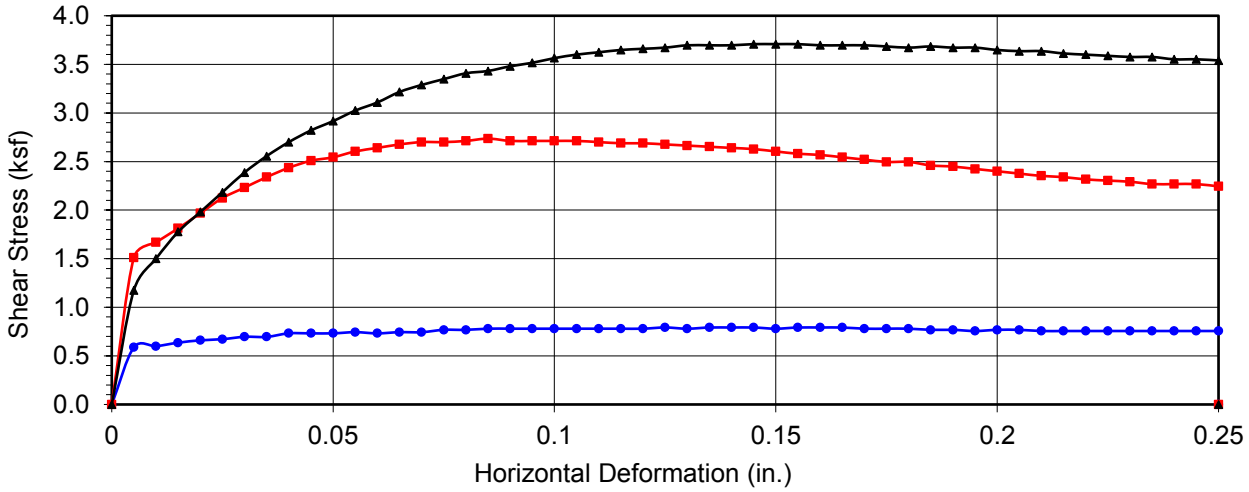
Consolidated Drained ASTM D-3080

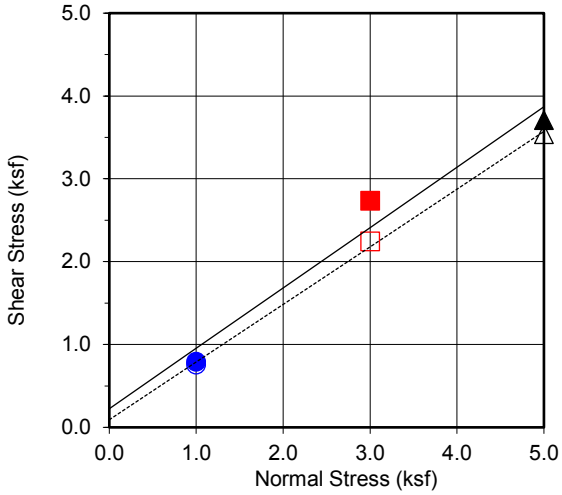
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-10





Boring No.	**B3**
Sample No.	**B3@10**
Depth (ft)	**10**
Sample Type:	ring

Soil Identification:		
Silty SAND (SM), brown		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	225	36
Ultimate	92	35

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.79	■ 2.74	▲ 3.71
Shear Stress @ End of Test (ksf)	○ 0.76	□ 2.24	△ 3.54
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	13.2	11.8	11.0
Initial Dry Density (pcf)	116.7	127.6	115.2
Initial Degree of Saturation (%)	80.2	99.1	64.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	18.6	15.6	16.2

GEOCON

DIRECT SHEAR TEST RESULTS

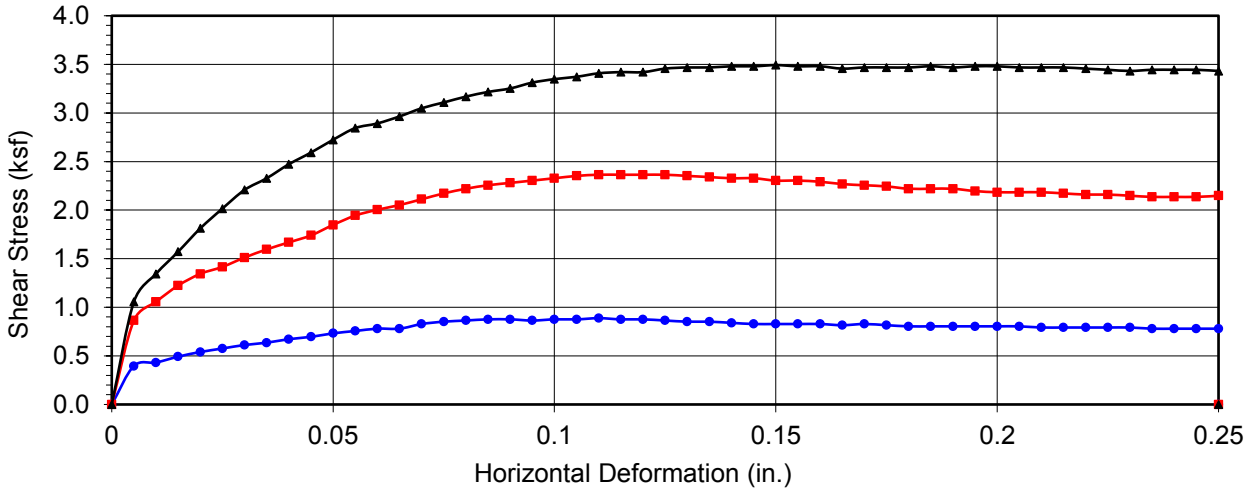
Consolidated Drained ASTM D-3080

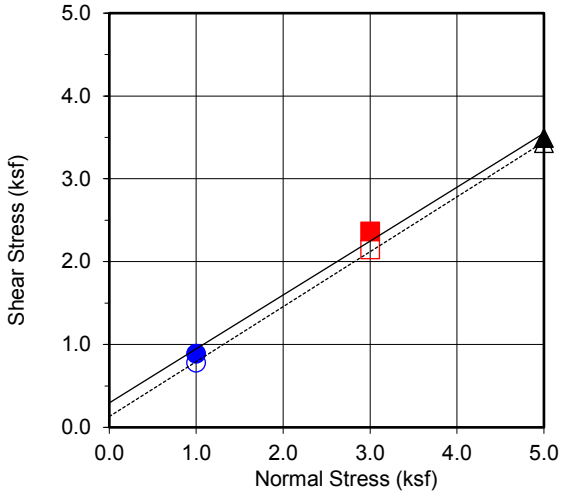
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-11





Boring No.	**B3**
Sample No.	**B3@15**
Depth (ft)	**15**
Sample Type:	Ring

Soil Identification:		
Silty SAND (SM), brown		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	295	33
Ultimate	131	34

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.89	■ 2.36	▲ 3.49
Shear Stress @ End of Test (ksf)	○ 0.78	□ 2.15	△ 3.43
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	10.1	8.7	8.0
Initial Dry Density (pcf)	113.2	113.1	114.2
Initial Degree of Saturation (%)	55.7	48.1	45.5
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	17.0	15.0	15.0

GEOCON

DIRECT SHEAR TEST RESULTS

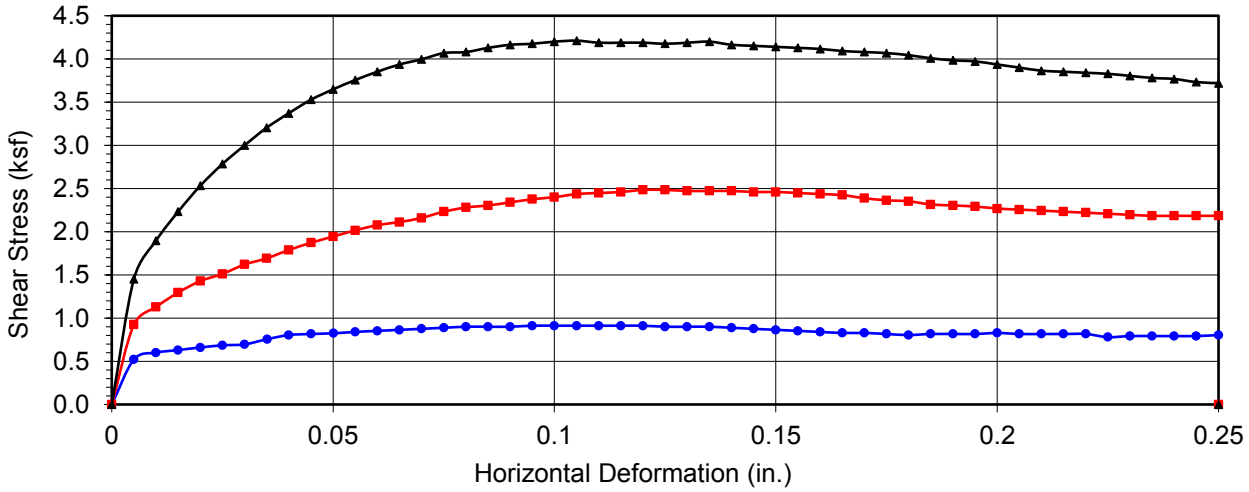
Consolidated Drained ASTM D-3080

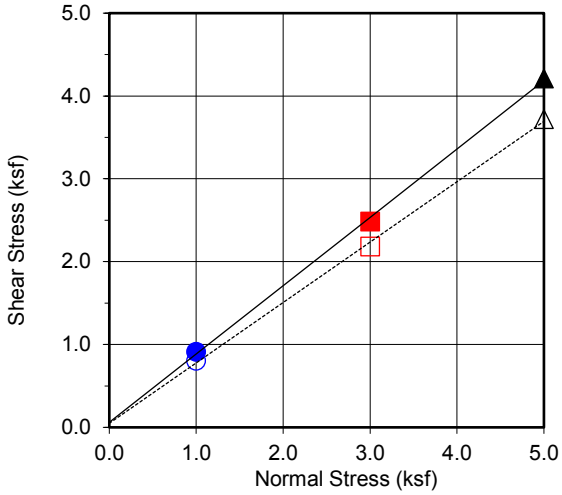
Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-12





Boring No.	**B6**
Sample No.	**B6@5**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:		
SM		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	61	40
Ultimate	49	36

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.91	■ 2.48	▲ 4.21
Shear Stress @ End of Test (ksf)	○ 0.80	□ 2.18	△ 3.72
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	7.2	7.2	6.6
Initial Dry Density (pcf)	106.7	113.4	124.6
Initial Degree of Saturation (%)	33.5	40.1	50.6
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	17.1	15.3	14.0

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

Checked by: ARK

Project No.: T3010-22-01

PROPOSED CHERRY OUTPOST
NWC OF BUNDY CANYON AND CHERRY STREET
WILDOMAR, CALIFORNIA

Jan 23 Figure B-13

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

PROPOSED CHERRY OUTPOST
ASSESSOR'S PARCELS
366-290-007 & -008
NWC OF BUNDY CANYON AND
CHERRY STREET
WILDOMAR, CALIFORNIA

PROJECT NO. T3010-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

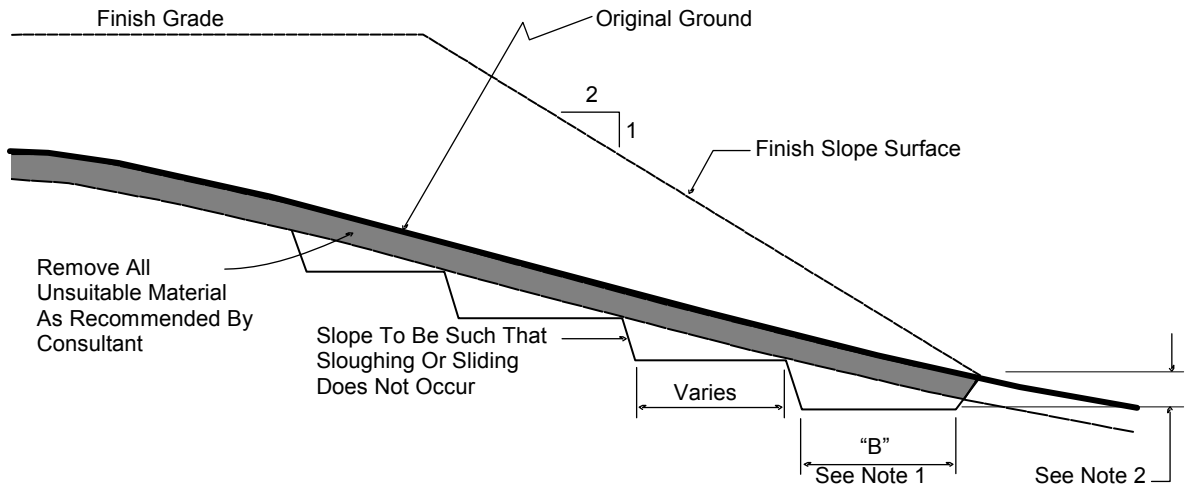
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

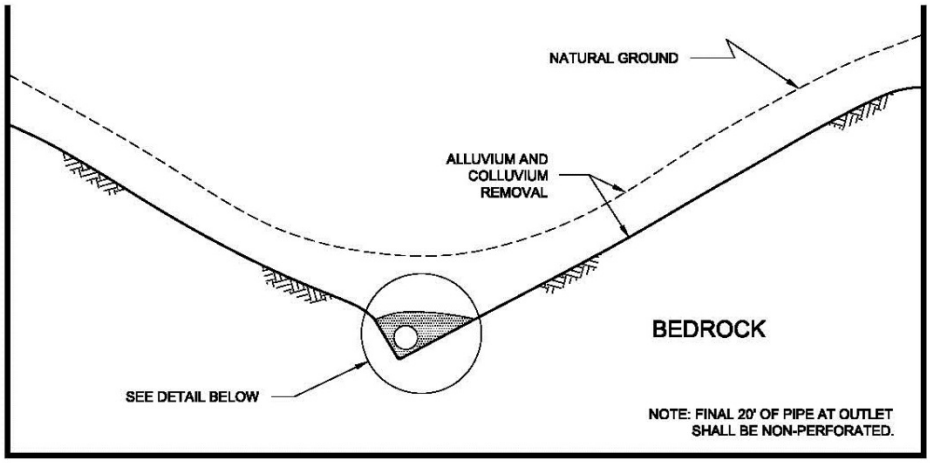
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

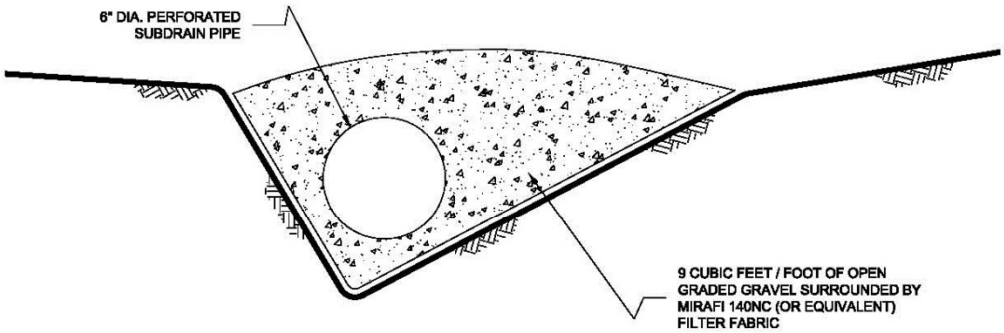
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

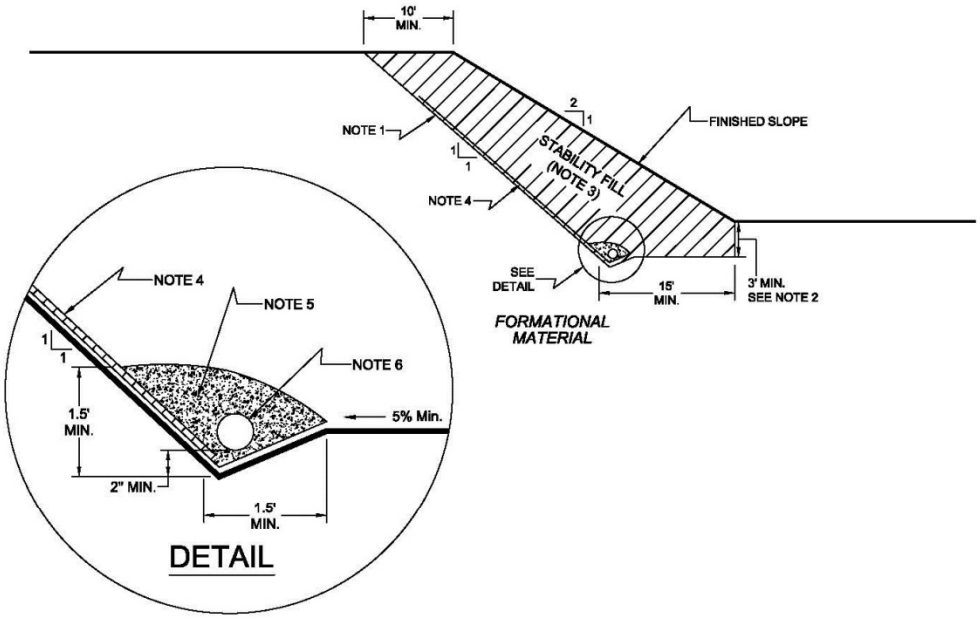
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

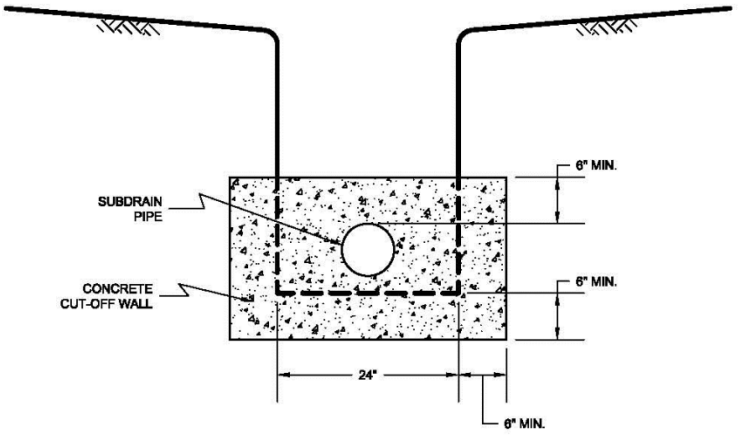
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

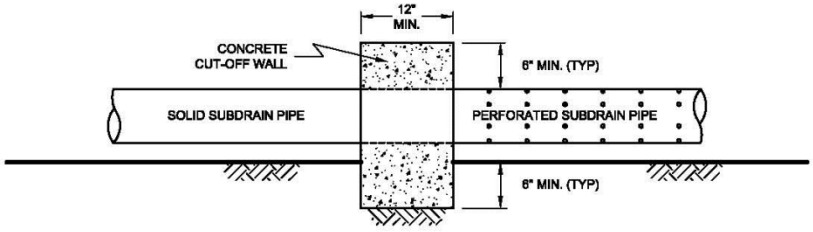
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

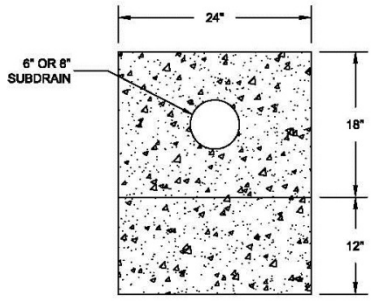


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

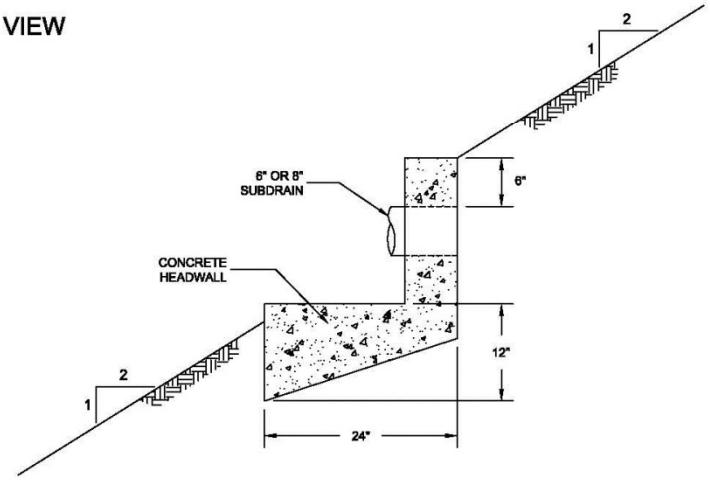
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)*.

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

Map Scale: 1:1,720 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 16, Aug 30, 2023

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

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	A	3.2	41.3%
HcC	Hanford coarse sandy loam, 2 to 8 percent slopes	A	0.9	11.7%
RaD2	Ramona sandy loam, 8 to 15 percent slopes, eroded	C	3.0	38.6%
RaD3	Ramona sandy loam, 8 to 15 percent slopes, severely eroded	C	0.5	6.9%
ReC2	Ramona very fine sandy loam, 0 to 8 percent slopes, eroded	C	0.1	1.6%
Totals for Area of Interest			**7.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Examples of material to provide in Appendix 4 may include but are not limited to the following:

- Environmental Site Assessments conducted for the project,
- Other information on Past Site Use that impacts the feasibility of LID BMP implementation on the site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

Appendix 5: LID Feasibility Supplemental Information

Information that supports or supplements the determination of LID technical feasibility documented in Section D

Examples of material to provide in Appendix 5 may include but are not limited to the following:

- Technical feasibility criteria for DMAs
- Site specific analysis of technical infeasibility of all LID BMPs (if Alternative Compliance is needed)
- Documentation of Approval criteria for Proprietary Biofiltration BMPs

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

Table 2-4: Harvest and Use Data for Irrigation Use[A]

General landscape type	Conservation Design: K_L[B]=0.35	Active Turf Areas: K_L[B]=0.70
Design Capture Storm Depth[C], in	Minimum required irrigated area per tributary impervious acre for partial capture (ac/ac)	
0.50	0.36	0.22
0.55	0.72	0.35
0.60	1.08	0.47
0.65	1.45	0.60
0.75	2.17	1.16
0.80	2.53	1.41
0.85	2.90	1.66
0.90	3.26	1.91
0.95	3.62	2.16
1.00	3.98	2.41
1.05	4.35	2.66
1.10	4.71	2.91
1.15	5.07	3.16
1.20	5.43	3.41

[A]ET data from the CIMIS station at Temecula used for this analysis

[B] (KL) incorporates plant species, microclimate and water management/irrigation practices, as described in the 2011 Orange County WQMP and Technical Guidance Document.

[C]Design storm capture = 0.7 in. was calculated using Lake Elsinore rainfall; 1.0 in. with Temecula rainfall. Other values were linearly interpolated/extrapolated

Proposed Irrigated Area: 1.64 acre
Proposed Impervious Area:4.43 acre

$\frac{1.64}{4.43}$ =

Harvest and Reuse not feasible

Appendix 6: LID BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation to supplement Section D

Examples of material to provide in Appendix 6 may include but are not limited to the following:

- DCV calculations,
- LID BMP sizing calculations from Exhibit C of the SMR WQMP
- Design details/drawings from manufacturers for proprietary BMPs

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 3.4 of the SMR WQMP and Sections D.4 of this Template.

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

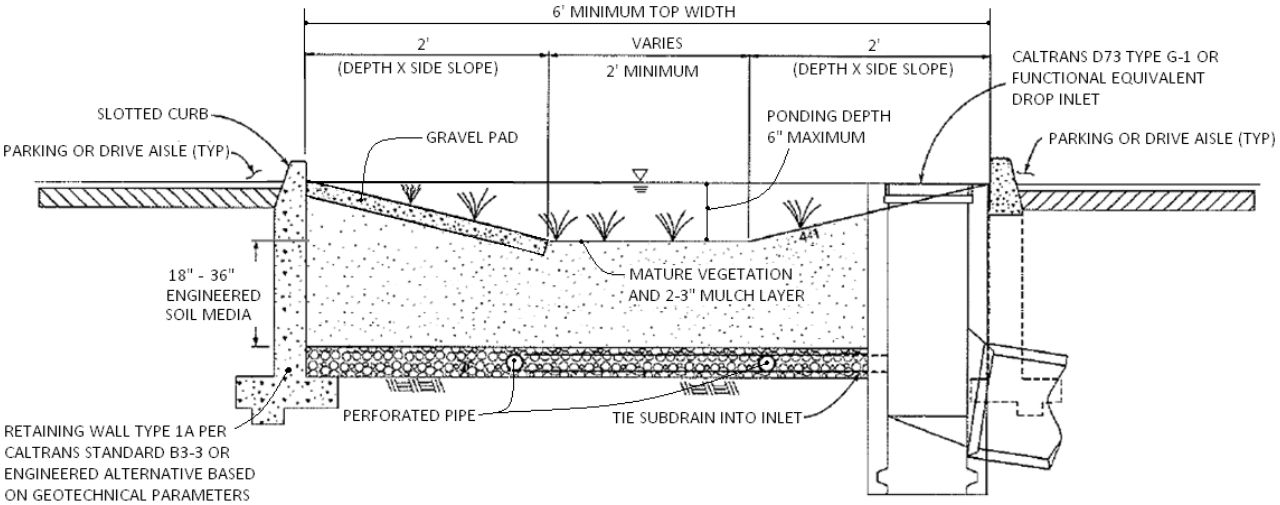
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

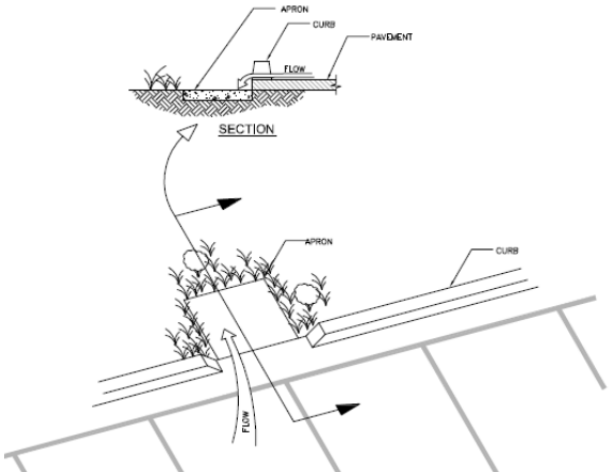


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

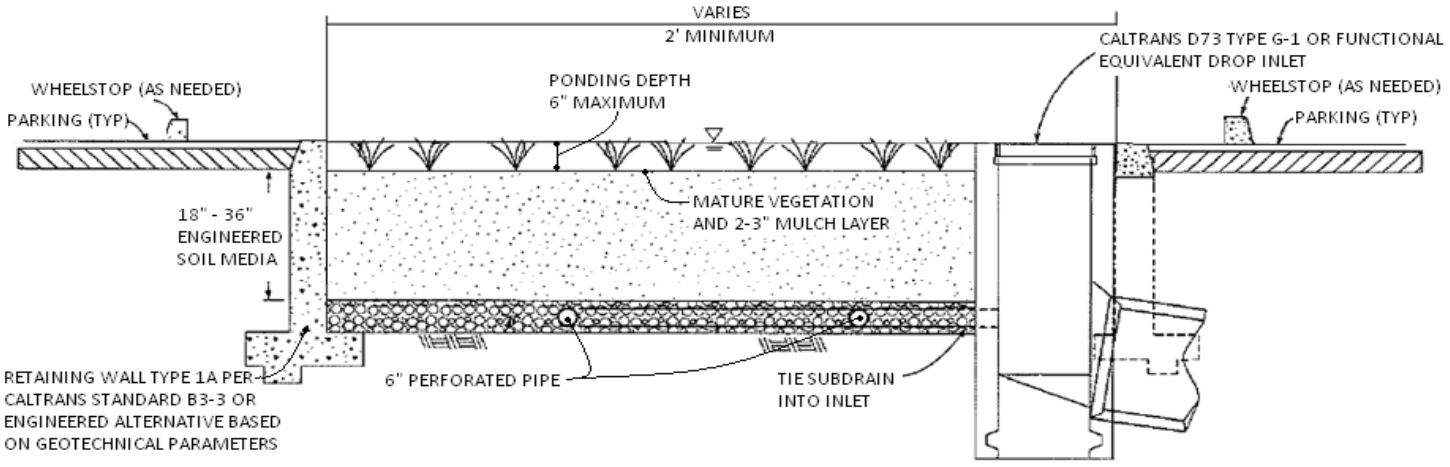
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

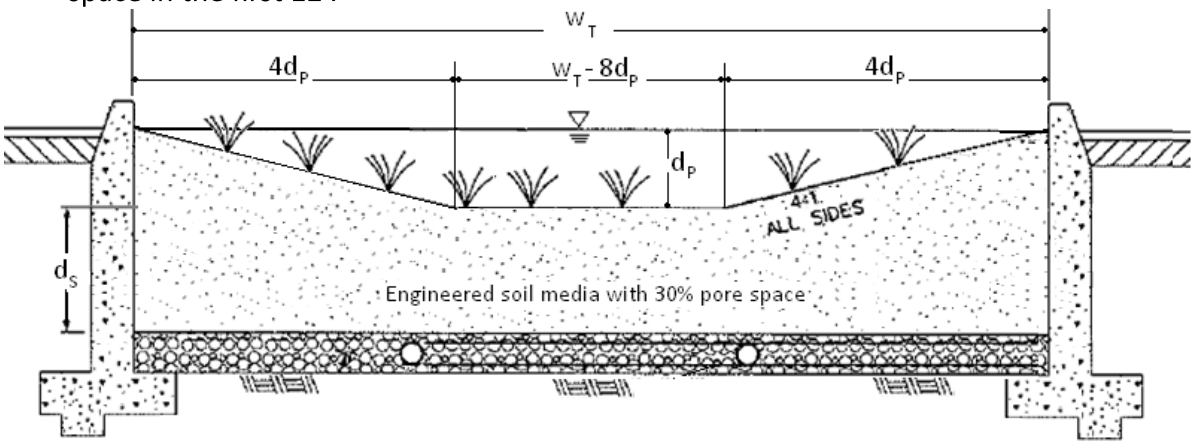
2) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(\text{ft}) = d_P(\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = 0.5\ (\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(\text{ft}^2) = \frac{V_{BMP}(\text{ft}^3)}{d_E\ (\text{ft})}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

References Used to Develop this Fact Sheet

Anderson, Dale V. "Landscaped Filter Basin Soil Requirements." Riverside, May 2010.

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Camp Dresser and McKee Inc.; Larry Walker Associates. California Stormwater Best Management Practice Handbook for New Development and Redevelopment. California Stormwater Quality Association (CASQA), 2004.

Contra Costa Clean Water Program. Stormwater Quality Requirements for Development Applications. 3rd Edition. Contra Costa, 2006.

County of Los Angeles Public Works. Stormwater Best Management Practice Design and Maintenance Manual. Los Angeles, 2009.

Kim, Hunho, Eric A. Seagren and Allen P. Davis. "Engineered Bioretention for Removal of Nitrate from Stormwater Runoff." Water Environment Research 75.4 (2003): 355-366.

LA Team Effort. LA Team Effort: FREE Planter Boxes for Businesses. 2 November 2009. May 2010 <http://lateameffort.blogspot.com/2009/11/free-planter-boxes-for-businesses-est.html>.

Montgomery County Maryland Department of Permitting Services Water Resources Section. Biofiltration (BF). Montgomery County, 2005.

Program, Ventura Countywide Stormwater Quality Management. Technical Guidance Manual for Stormwater Quality Control Measures. Ventura, 2002.

United States Environmental Protection Agency. Storm Water Technology Fact Sheet Bioretention. Washington D.C, 1999.

Urban Drainage and Flood Control District. Urban Storm Drainage Criteria Manual Volume 3 - Best Management Practices. Vol. 3. Denver, 2008. 3 vols.

Urbonas, Ben R. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach. Denver: Urban Drainage and Flood Control District, 2002.

Bioretention Facility - Design Procedure	BMP ID: A	Legend:	Required Entries / Calculated Cells

Company Name: Tait and Associates | Date: 1/15/2024

Designed by: Richard T | County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	5.95	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	10,262	ft^3

Type of Bioretention Facility Design

○ Side slopes required (parallel to parking spaces or adjacent to walkways)

◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	40.0	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.80	ft
Minimum Surface Area, A_m			
$A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	5,702	ft^2
Proposed Surface Area	A=	7,234	ft^2
Minimum Required Length of Bioretention Facility, L	L =	142.6	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	3	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0	%
6" Check Dam Spacing		0	feet
Describe Vegetation:			

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Tait and Associates | Date: 1/15/2024

Designed by: Richard T | Case No:

Company Project Number/Name: SP8997 Wildomar Cherry Outpost

BMP Identification

BMP NAME / ID: DMA-A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E — D_{85}= 0.68 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*158656*	*Concrete or Asphalt*	*1*	*0.89*	*141521.2*			
A	*38500*	*Natural (A Soil)*	*0.03*	*0.06*	*2407.8*			
A	*27121*	*Natural (C Soil)*	*0.3*	*0.23*	*6106.7*			
A	*34812*	*Roofs*	*1*	*0.89*	*31052.3*			
	259089	**Total**			**181088**	**0.68**	**10261.7**	**10262**

Notes:

Appendix 7: Hydromodification

Supporting Detail Relating to compliance with the Hydromodification Performance Standards

Examples of material to provide in Appendix 7 may include but are not limited to the following:

- Hydromodification Exemption Exhibit,
- Potential Critical Coarse Sediment Yield Area Mapping
- Hydromodification BMP sizing calculations,
- SMRHM report files,
- Site-Specific Critical Coarse Sediment Analysis,
- Design details/drawings from manufacturers for proprietary BMPs

This information should support the hydromodification exemption (if applicable) and hydrologic control BMP and Sediment Supply BMP sections of this Template. Refer to Section 2.4 and 3.6 of the SMR WQMP and Sections E of this Template.

```
_____________________________________________________________________________
*****************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                     (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                     (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1334

                         Analysis prepared by:

                          TAIT & ASSOCIATES INC.
                         701 N. PARKCENTER DRIVE
                        SANTA ANA, CALIFORNIA 92705


 ************************ DESCRIPTION OF STUDY ************************
* SP8997 - WILDOMAR CHERRY OUTPOST                                    *
* EXISTING CONDITION RATIONAL METHOD                                  *
* 100-YEAR STORM EVENT                                                *
 *********************************************************************

  FILE NAME: WIL100EX.DAT
  TIME/DATE OF STUDY: 10:25 03/21/2023
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  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
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  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.600
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.786
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.680
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.310
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.3967061
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.3994898
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.310
  SLOPE OF INTENSITY DURATION CURVE = 0.3995
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

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  FLOW PROCESS FROM NODE     10.00 TO NODE     20.00 IS CODE =  21
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         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   645.00
  UPSTREAM ELEVATION(FEET) =   1429.29
  DOWNSTREAM ELEVATION(FEET) =   1397.26
  ELEVATION DIFFERENCE(FEET) =     32.03
  TC = 0.533*[(  645.00**3)/(    32.03)]**.2 =   12.913
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.420
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4146
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      3.61
  TOTAL AREA(ACRES) =      3.60   TOTAL RUNOFF(CFS) =      3.61

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  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7214
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    2.24   SUBAREA RUNOFF(CFS) =    3.91
  TOTAL AREA(ACRES) =        5.8   TOTAL RUNOFF(CFS) =       7.52
  TC(MIN.) =   12.91

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=============================================================================
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  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8515
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.02   SUBAREA RUNOFF(CFS) =    0.04
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =       7.56
  TC(MIN.) =   12.91

*****************************************************************************
```

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  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.21   SUBAREA RUNOFF(CFS) =    0.45
  TOTAL AREA(ACRES) =        6.1   TOTAL RUNOFF(CFS) =       8.01
  TC(MIN.) =   12.91
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  TOTAL AREA(ACRES)     =        6.1  TC(MIN.) =     12.91
  PEAK FLOW RATE(CFS)   =       8.01
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1334

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SP8997 - WILDOMAR CHERRY OUTPOST                                      *
* PROPOSED CONDITION RATIONAL METHOD                                    *
* 100-YEAR STORM EVENT                                                  *
 ************************************************************************

  FILE NAME: 100YRPR.DAT
  TIME/DATE OF STUDY: 15:04 04/30/2024
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  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
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  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.01
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.600
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.786
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.680
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.310
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.3967061
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.3994898
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.310
  SLOPE OF INTENSITY DURATION CURVE = 0.3995
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     20.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   507.90
  UPSTREAM ELEVATION(FEET) =   1429.00
  DOWNSTREAM ELEVATION(FEET) =   1410.47
  ELEVATION DIFFERENCE(FEET) =     18.53
  TC = 0.303*[(  507.90**3)/(    18.53)]**.2 =    7.104
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.072
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8568
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      4.05
  TOTAL AREA(ACRES) =      1.54   TOTAL RUNOFF(CFS) =      4.05

************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     20.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.072
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4682
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.34   SUBAREA RUNOFF(CFS) =    0.49
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       4.54
  TC(MIN.) =    7.10

************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     20.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.072
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7532
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.01   SUBAREA RUNOFF(CFS) =    0.02
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       4.57
  TC(MIN.) =    7.10

************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     20.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.072
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8853
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.29   SUBAREA RUNOFF(CFS) =    0.79
  TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =       5.35
  TC(MIN.) =    7.10

************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     30.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1407.47  DOWNSTREAM(FEET) =  1406.75
```

```
  FLOW LENGTH(FEET) =   129.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   0.91
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.35
  PIPE TRAVEL TIME(MIN.) =   2.37    Tc(MIN.) =    9.47
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     30.00 =     637.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     60.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1406.75  DOWNSTREAM(FEET) =   1406.17
  CHANNEL LENGTH THRU SUBAREA(FEET) =   120.40   CHANNEL SLOPE =  0.0048
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       5.35
  FLOW VELOCITY(FEET/SEC.) =   1.76   FLOW DEPTH(FEET) =   0.43
  TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =   10.61
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     60.00 =     758.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     60.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.61
  RAINFALL INTENSITY(INCH/HR) =   2.62
  TOTAL STREAM AREA(ACRES) =     2.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.35

****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     50.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   705.90
  UPSTREAM ELEVATION(FEET) =   1423.23
  DOWNSTREAM ELEVATION(FEET) =   1408.85
  ELEVATION DIFFERENCE(FEET) =     14.38
  TC = 0.303*[(  705.90**3)/(    14.38)]**.2 =    9.105
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.782
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8546
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      1.60
  TOTAL AREA(ACRES) =      0.67   TOTAL RUNOFF(CFS) =      1.60

****************************************************************************
  FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.782
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8841
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.33   SUBAREA RUNOFF(CFS) =    0.80
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       2.40
  TC(MIN.) =    9.11

****************************************************************************
  FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.782
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4459
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.33   SUBAREA RUNOFF(CFS) =    0.41
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       2.81
  TC(MIN.) =    9.11

****************************************************************************
  FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.782
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7406
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.25   SUBAREA RUNOFF(CFS) =    0.52
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       3.33
  TC(MIN.) =    9.11

****************************************************************************
  FLOW PROCESS FROM NODE     50.00 TO NODE     60.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1406.77  DOWNSTREAM(FEET) =  1406.17
  FLOW LENGTH(FEET) =     7.10   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.33
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    9.16
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     60.00 =     713.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     60.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.16
  RAINFALL INTENSITY(INCH/HR) =   2.78
  TOTAL STREAM AREA(ACRES) =     1.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.33
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.35    10.61        2.617          2.18
      2        3.33     9.16        2.776          1.58

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        7.95     9.16       2.776
      2        8.50    10.61       2.617

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.50   Tc(MIN.) =   10.61
  TOTAL AREA(ACRES) =        3.8
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     60.00 =     758.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE    140.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1406.14  DOWNSTREAM(FEET) =   1396.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   160.10   CHANNEL SLOPE =  0.0633
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =       8.50
  FLOW VELOCITY(FEET/SEC.) =   4.74   FLOW DEPTH(FEET) =   0.26
  TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =   11.18
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE    140.00 =     918.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  5
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.18
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =     3.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.50

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE    140.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH FAIR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   160.10
  UPSTREAM ELEVATION(FEET) =   1406.14
  DOWNSTREAM ELEVATION(FEET) =   1396.00
  ELEVATION DIFFERENCE(FEET) =     10.14
  TC = 0.709*[(  160.10**3)/(    10.14)]**.2 =    9.382
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.749
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7390
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      0.88
  TOTAL AREA(ACRES) =      0.43   TOTAL RUNOFF(CFS) =      0.88

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.749
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4432
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.11   SUBAREA RUNOFF(CFS) =    0.13
  TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       1.01
  TC(MIN.) =    9.38

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  5
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.38
  RAINFALL INTENSITY(INCH/HR) =   2.75
  TOTAL STREAM AREA(ACRES) =     0.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE     80.00 TO NODE     90.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   423.50
  UPSTREAM ELEVATION(FEET) =   1420.08
  DOWNSTREAM ELEVATION(FEET) =   1407.79
  ELEVATION DIFFERENCE(FEET) =     12.29
  TC = 0.303*[(  423.50**3)/(    12.29)]**.2 =    6.915
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.106
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8854
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      1.96
  TOTAL AREA(ACRES) =      0.71   TOTAL RUNOFF(CFS) =      1.96

****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE     90.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.106
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8571
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.16   SUBAREA RUNOFF(CFS) =    0.42
  TOTAL AREA(ACRES) =        0.9   TOTAL RUNOFF(CFS) =       2.38
  TC(MIN.) =    6.91

****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE     90.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.106
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4706
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.01   SUBAREA RUNOFF(CFS) =    0.01
  TOTAL AREA(ACRES) =        0.9   TOTAL RUNOFF(CFS) =       2.39
  TC(MIN.) =    6.91

****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE     90.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.106
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7545
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.01   SUBAREA RUNOFF(CFS) =    0.04
  TOTAL AREA(ACRES) =        0.9   TOTAL RUNOFF(CFS) =       2.42
  TC(MIN.) =    6.91

****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE    140.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1406.14  DOWNSTREAM(FEET) =   1396.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   150.08   CHANNEL SLOPE =  0.0676
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =       2.42
  FLOW VELOCITY(FEET/SEC.) =   3.04   FLOW DEPTH(FEET) =   0.12
  TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =    7.74
  LONGEST FLOWPATH FROM NODE     80.00 TO NODE    140.00 =     573.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  5
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.74
  RAINFALL INTENSITY(INCH/HR) =   2.97
  TOTAL STREAM AREA(ACRES) =     0.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.42

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   125.70
  UPSTREAM ELEVATION(FEET) =   1408.84
  DOWNSTREAM ELEVATION(FEET) =   1406.98
  ELEVATION DIFFERENCE(FEET) =      1.86
  TC = 0.303*[(  125.70**3)/(     1.86)]**.2 =    4.867
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.06   SUBAREA RUNOFF(CFS) =    0.20
  TOTAL AREA(ACRES) =        0.2   TOTAL RUNOFF(CFS) =       0.49
  TC(MIN.) =    5.00

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4996
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.03   SUBAREA RUNOFF(CFS) =    0.04
  TOTAL AREA(ACRES) =        0.2   TOTAL RUNOFF(CFS) =       0.54
  TC(MIN.) =    5.00

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    140.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1403.98  DOWNSTREAM(FEET) =  1396.00
  FLOW LENGTH(FEET) =    22.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.50
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.54
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    5.15
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    140.00 =     148.60 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  5
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  4 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.15
  RAINFALL INTENSITY(INCH/HR) =   3.49
  TOTAL STREAM AREA(ACRES) =     0.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.54

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   186.90
  UPSTREAM ELEVATION(FEET) =   1416.64
  DOWNSTREAM ELEVATION(FEET) =   1407.59
  ELEVATION DIFFERENCE(FEET) =      9.05
  TC = 0.303*[(  186.90**3)/(     9.05)]**.2 =    4.500
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      0.90
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.90

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.17   SUBAREA RUNOFF(CFS) =    0.50
  TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       1.40
  TC(MIN.) =    5.00

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4996
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.06   SUBAREA RUNOFF(CFS) =    0.11
  TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       1.52
  TC(MIN.) =    5.00

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7696
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.06   SUBAREA RUNOFF(CFS) =    0.16
  TOTAL AREA(ACRES) =        0.6   TOTAL RUNOFF(CFS) =       1.68
  TC(MIN.) =    5.00

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1405.62  DOWNSTREAM(FEET) =  1396.00
  FLOW LENGTH(FEET) =    30.20   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.19
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.68
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    5.16
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    140.00 =     217.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  5
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  5 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.16
  RAINFALL INTENSITY(INCH/HR) =   3.49
  TOTAL STREAM AREA(ACRES) =     0.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.50    11.18        2.563          3.76
      2        1.01     9.38        2.749          0.54
      3        2.42     7.74        2.969          0.89
      4        0.54     5.15        3.493          0.19
      5        1.68     5.16        3.491          0.58

 ******************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***********************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  5 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
      1        8.30     5.15       3.493
      2        8.30     5.16       3.491
      3       11.02     7.74       2.969
      4       12.13     9.38       2.749
      5       13.15    11.18       2.563

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.15   Tc(MIN.) =   11.18
  TOTAL AREA(ACRES) =        6.0
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE    140.00 =     918.10 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        6.0  TC(MIN.) =     11.18
  PEAK FLOW RATE(CFS)   =      13.15
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
             USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
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             Ver. 23.0  Release Date: 07/01/2016  License ID 1334

                         Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* CHERRY OUTPOST                                                        *
* 100 YR - EXISTING CONDITION                                           *
* SMALL AREA UNIT HYDROGRAPH                                            *
 ************************************************************************

  FILE NAME: 100YREXH.DAT
  TIME/DATE OF STUDY: 07:41 01/16/2024

   The Small Area Unit Hydrograph Procedures in Section J
   of the Hydrology Manual provides estimates of runoff
   hydrograph and runoff volume for watersheds whose time of
   concentration is less than 25 minutes. The PROGRAM User
   should check the applicability of using the small area unit
   hydrograph procedures, and follow the guidelines in
   Sections J and K.5 in complex watershed modeling.


******************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     20.00 IS CODE = 1.2
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
==============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    6.07
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.467
    LOW LOSS FRACTION = 0.445
    TIME OF CONCENTRATION(MIN.) = 12.91
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) = 100
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.31
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.85
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.31
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.13
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.96
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.87

------------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.54
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     1.43
```

```
------------------------------------------------------------------------------
♠
==============================================================================

                      2 4 - H O U R    S T O R M
                   R U N O F F    H Y D R O G R A P H

==============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        2.7       5.4       8.2      10.9
------------------------------------------------------------------------------
   0.017      0.0000      0.00  Q        .         .         .         .
   0.033      0.0000      0.00  Q        .         .         .         .
   0.050      0.0000      0.00  Q        .         .         .         .
   0.067      0.0000      0.00  Q        .         .         .         .
   0.083      0.0000      0.00  Q        .         .         .         .
   0.100      0.0000      0.02  Q        .         .         .         .
   0.117      0.0001      0.05  Q        .         .         .         .
   0.133      0.0002      0.08  Q        .         .         .         .
   0.150      0.0004      0.11  Q        .         .         .         .
   0.167      0.0006      0.14  Q        .         .         .         .
   0.183      0.0008      0.17  Q        .         .         .         .
   0.200      0.0011      0.19  Q        .         .         .         .
   0.217      0.0014      0.22  Q        .         .         .         .
   0.233      0.0017      0.25  Q        .         .         .         .
   0.250      0.0021      0.28  VQ       .         .         .         .
   0.267      0.0025      0.31  VQ       .         .         .         .
   0.283      0.0030      0.34  VQ       .         .         .         .
   0.300      0.0035      0.36  VQ       .         .         .         .
   0.317      0.0040      0.37  VQ       .         .         .         .
   0.333      0.0045      0.37  VQ       .         .         .         .
   0.350      0.0050      0.37  VQ       .         .         .         .
   0.367      0.0055      0.37  VQ       .         .         .         .
   0.383      0.0060      0.37  VQ       .         .         .         .
   0.400      0.0065      0.37  VQ       .         .         .         .
   0.417      0.0070      0.37  VQ       .         .         .         .
   0.433      0.0076      0.37  VQ       .         .         .         .
   0.450      0.0081      0.37  VQ       .         .         .         .
   0.467      0.0086      0.37  VQ       .         .         .         .
   0.483      0.0091      0.37  VQ       .         .         .         .
   0.500      0.0096      0.37  VQ       .         .         .         .
   0.517      0.0101      0.37  VQ       .         .         .         .
   0.533      0.0106      0.37  VQ       .         .         .         .
   0.550      0.0111      0.37  VQ       .         .         .         .
   0.567      0.0116      0.37  VQ       .         .         .         .
   0.583      0.0121      0.37  VQ       .         .         .         .
   0.600      0.0126      0.37  VQ       .         .         .         .
   0.617      0.0132      0.37  VQ       .         .         .         .
   0.633      0.0137      0.37  VQ       .         .         .         .
   0.650      0.0142      0.37  VQ       .         .         .         .
   0.667      0.0147      0.37  VQ       .         .         .         .
   0.683      0.0152      0.37  VQ       .         .         .         .
   0.700      0.0157      0.37  VQ       .         .         .         .
   0.717      0.0162      0.37  VQ       .         .         .         .
```

0.733	0.0167	0.37	VQ	.	.	.	.
0.750	0.0173	0.37	VQ	.	.	.	.
0.767	0.0178	0.37	VQ	.	.	.	.
0.783	0.0183	0.37	VQ	.	.	.	.
0.800	0.0188	0.37	VQ	.	.	.	.
0.817	0.0193	0.37	VQ	.	.	.	.
0.833	0.0198	0.37	VQ	.	.	.	.
0.850	0.0204	0.37	VQ	.	.	.	.
0.867	0.0209	0.37	VQ	.	.	.	.
0.883	0.0214	0.37	VQ	.	.	.	.
0.900	0.0219	0.37	VQ	.	.	.	.
0.917	0.0224	0.37	VQ	.	.	.	.
0.933	0.0229	0.37	VQ	.	.	.	.
0.950	0.0234	0.37	VQ	.	.	.	.
0.967	0.0240	0.38	VQ	.	.	.	.
0.983	0.0245	0.38	VQ	.	.	.	.
1.000	0.0250	0.38	VQ	.	.	.	.
1.017	0.0255	0.38	VQ	.	.	.	.
1.033	0.0260	0.38	VQ	.	.	.	.
1.050	0.0266	0.38	VQ	.	.	.	.
1.067	0.0271	0.38	VQ	.	.	.	.
1.083	0.0276	0.38	VQ	.	.	.	.
1.100	0.0281	0.38	VQ	.	.	.	.
1.117	0.0286	0.38	VQ	.	.	.	.
1.133	0.0292	0.38	VQ	.	.	.	.
1.150	0.0297	0.38	VQ	.	.	.	.
1.167	0.0302	0.38	VQ	.	.	.	.
1.183	0.0307	0.38	VQ	.	.	.	.
1.200	0.0312	0.38	VQ	.	.	.	.
1.217	0.0318	0.38	VQ	.	.	.	.
1.233	0.0323	0.38	VQ	.	.	.	.
1.250	0.0328	0.38	VQ	.	.	.	.
1.267	0.0333	0.38	VQ	.	.	.	.
1.283	0.0339	0.38	VQ	.	.	.	.
1.300	0.0344	0.38	VQ	.	.	.	.
1.317	0.0349	0.38	VQ	.	.	.	.
1.333	0.0354	0.38	VQ	.	.	.	.
1.350	0.0359	0.38	VQ	.	.	.	.
1.367	0.0365	0.38	VQ	.	.	.	.
1.383	0.0370	0.38	VQ	.	.	.	.
1.400	0.0375	0.38	VQ	.	.	.	.
1.417	0.0380	0.38	VQ	.	.	.	.
1.433	0.0386	0.38	.Q	.	.	.	.
1.450	0.0391	0.38	.Q	.	.	.	.
1.467	0.0396	0.38	.Q	.	.	.	.
1.483	0.0401	0.38	.Q	.	.	.	.
1.500	0.0407	0.38	.Q	.	.	.	.
1.517	0.0412	0.38	.Q	.	.	.	.
1.533	0.0417	0.38	.Q	.	.	.	.
1.550	0.0423	0.38	.Q	.	.	.	.
1.567	0.0428	0.38	.Q	.	.	.	.
1.583	0.0433	0.38	.Q	.	.	.	.
1.600	0.0438	0.38	.Q	.	.	.	.
1.617	0.0444	0.38	.Q	.	.	.	.
1.633	0.0449	0.38	.Q	.	.	.	.
1.650	0.0454	0.38	.Q	.	.	.	.
1.667	0.0460	0.38	.Q	.	.	.	.
1.683	0.0465	0.38	.Q	.	.	.	.
1.700	0.0470	0.39	.Q	.	.	.	.
1.717	0.0476	0.39	.Q	.	.	.	.
1.733	0.0481	0.39	.Q	.	.	.	.
1.750	0.0486	0.39	.Q	.	.	.	.
1.767	0.0491	0.39	.Q	.	.	.	.
1.783	0.0497	0.39	.Q	.	.	.	.
1.800	0.0502	0.39	.Q	.	.	.	.
1.817	0.0507	0.39	.Q	.	.	.	.
1.833	0.0513	0.39	.Q	.	.	.	.
1.850	0.0518	0.39	.Q	.	.	.	.
1.867	0.0523	0.39	.Q	.	.	.	.
1.883	0.0529	0.39	.Q	.	.	.	.
1.900	0.0534	0.39	.Q	.	.	.	.
1.917	0.0539	0.39	.Q	.	.	.	.
1.933	0.0545	0.39	.Q	.	.	.	.
1.950	0.0550	0.39	.Q	.	.	.	.
1.967	0.0556	0.39	.Q	.	.	.	.
1.983	0.0561	0.39	.Q	.	.	.	.
2.000	0.0566	0.39	.Q	.	.	.	.
2.017	0.0572	0.39	.Q	.	.	.	.
2.033	0.0577	0.39	.Q	.	.	.	.
2.050	0.0582	0.39	.Q	.	.	.	.
2.067	0.0588	0.39	.Q	.	.	.	.
2.083	0.0593	0.39	.Q	.	.	.	.
2.100	0.0599	0.39	.Q	.	.	.	.
2.117	0.0604	0.39	.Q	.	.	.	.
2.133	0.0609	0.39	.Q	.	.	.	.
2.150	0.0615	0.39	.Q	.	.	.	.
2.167	0.0620	0.39	.Q	.	.	.	.
2.183	0.0625	0.39	.Q	.	.	.	.
2.200	0.0631	0.39	.Q	.	.	.	.
2.217	0.0636	0.39	.Q	.	.	.	.
2.233	0.0642	0.39	.Q	.	.	.	.
2.250	0.0647	0.39	.Q	.	.	.	.
2.267	0.0652	0.39	.Q	.	.	.	.
2.283	0.0658	0.39	.Q	.	.	.	.
2.300	0.0663	0.39	.Q	.	.	.	.
2.317	0.0669	0.39	.Q	.	.	.	.
2.333	0.0674	0.39	.Q	.	.	.	.
2.350	0.0680	0.39	.Q	.	.	.	.
2.367	0.0685	0.39	.Q	.	.	.	.
2.383	0.0690	0.39	.Q	.	.	.	.
2.400	0.0696	0.40	.Q	.	.	.	.
2.417	0.0701	0.40	.Q	.	.	.	.
2.433	0.0707	0.40	.Q	.	.	.	.
2.450	0.0712	0.40	.Q	.	.	.	.
2.467	0.0718	0.40	.Q	.	.	.	.
2.483	0.0723	0.40	.Q	.	.	.	.
2.500	0.0729	0.40	.Q	.	.	.	.
2.517	0.0734	0.40	.Q	.	.	.	.
2.533	0.0740	0.40	.Q	.	.	.	.
2.550	0.0745	0.40	.Q	.	.	.	.
2.567	0.0750	0.40	.Q	.	.	.	.
2.583	0.0756	0.40	.Q	.	.	.	.
2.600	0.0761	0.40	.Q	.	.	.	.
2.617	0.0767	0.40	.Q	.	.	.	.
2.633	0.0772	0.40	.QV	.	.	.	.
2.650	0.0778	0.40	.QV	.	.	.	.
2.667	0.0783	0.40	.QV	.	.	.	.
2.683	0.0789	0.40	.QV	.	.	.	.

2.700	0.0794	0.40	.QV	.	.	.	.
2.717	0.0800	0.40	.QV	.	.	.	.
2.733	0.0805	0.40	.QV	.	.	.	.
2.750	0.0811	0.40	.QV	.	.	.	.
2.767	0.0816	0.40	.QV	.	.	.	.
2.783	0.0822	0.40	.QV	.	.	.	.
2.800	0.0827	0.40	.QV	.	.	.	.
2.817	0.0833	0.40	.QV	.	.	.	.
2.833	0.0838	0.40	.QV	.	.	.	.
2.850	0.0844	0.40	.QV	.	.	.	.
2.867	0.0850	0.40	.QV	.	.	.	.
2.883	0.0855	0.40	.QV	.	.	.	.
2.900	0.0861	0.40	.QV	.	.	.	.
2.917	0.0866	0.40	.QV	.	.	.	.
2.933	0.0872	0.40	.QV	.	.	.	.
2.950	0.0877	0.40	.QV	.	.	.	.
2.967	0.0883	0.40	.QV	.	.	.	.
2.983	0.0888	0.40	.QV	.	.	.	.
3.000	0.0894	0.40	.QV	.	.	.	.
3.017	0.0900	0.40	.QV	.	.	.	.
3.033	0.0905	0.40	.QV	.	.	.	.
3.050	0.0911	0.40	.QV	.	.	.	.
3.067	0.0916	0.40	.QV	.	.	.	.
3.083	0.0922	0.40	.QV	.	.	.	.
3.100	0.0927	0.40	.QV	.	.	.	.
3.117	0.0933	0.41	.QV	.	.	.	.
3.133	0.0939	0.41	.QV	.	.	.	.
3.150	0.0944	0.41	.QV	.	.	.	.
3.167	0.0950	0.41	.QV	.	.	.	.
3.183	0.0955	0.41	.QV	.	.	.	.
3.200	0.0961	0.41	.QV	.	.	.	.
3.217	0.0967	0.41	.QV	.	.	.	.
3.233	0.0972	0.41	.QV	.	.	.	.
3.250	0.0978	0.41	.QV	.	.	.	.
3.267	0.0983	0.41	.QV	.	.	.	.
3.283	0.0989	0.41	.QV	.	.	.	.
3.300	0.0995	0.41	.QV	.	.	.	.
3.317	0.1000	0.41	.QV	.	.	.	.
3.333	0.1006	0.41	.QV	.	.	.	.
3.350	0.1012	0.41	.QV	.	.	.	.
3.367	0.1017	0.41	.QV	.	.	.	.
3.383	0.1023	0.41	.QV	.	.	.	.
3.400	0.1029	0.41	.QV	.	.	.	.
3.417	0.1034	0.41	.QV	.	.	.	.
3.433	0.1040	0.41	.QV	.	.	.	.
3.450	0.1046	0.41	.QV	.	.	.	.
3.467	0.1051	0.41	.QV	.	.	.	.
3.483	0.1057	0.41	.QV	.	.	.	.
3.500	0.1063	0.41	.QV	.	.	.	.
3.517	0.1068	0.41	.QV	.	.	.	.
3.533	0.1074	0.41	.QV	.	.	.	.
3.550	0.1080	0.41	.QV	.	.	.	.
3.567	0.1085	0.41	.QV	.	.	.	.
3.583	0.1091	0.41	.QV	.	.	.	.
3.600	0.1097	0.41	.QV	.	.	.	.
3.617	0.1102	0.41	.QV	.	.	.	.
3.633	0.1108	0.41	.QV	.	.	.	.
3.650	0.1114	0.41	.QV	.	.	.	.
3.667	0.1119	0.41	.QV	.	.	.	.
3.683	0.1125	0.42	.QV	.	.	.	.
3.700	0.1131	0.42	.QV	.	.	.	.
3.717	0.1137	0.42	.QV	.	.	.	.
3.733	0.1142	0.42	.QV	.	.	.	.
3.750	0.1148	0.42	.QV	.	.	.	.
3.767	0.1154	0.42	.QV	.	.	.	.
3.783	0.1160	0.42	.Q V	.	.	.	.
3.800	0.1165	0.42	.Q V	.	.	.	.
3.817	0.1171	0.42	.Q V	.	.	.	.
3.833	0.1177	0.42	.Q V	.	.	.	.
3.850	0.1183	0.42	.Q V	.	.	.	.
3.867	0.1188	0.42	.Q V	.	.	.	.
3.883	0.1194	0.42	.Q V	.	.	.	.
3.900	0.1200	0.42	.Q V	.	.	.	.
3.917	0.1206	0.42	.Q V	.	.	.	.
3.933	0.1211	0.42	.Q V	.	.	.	.
3.950	0.1217	0.42	.Q V	.	.	.	.
3.967	0.1223	0.42	.Q V	.	.	.	.
3.983	0.1229	0.42	.Q V	.	.	.	.
4.000	0.1235	0.42	.Q V	.	.	.	.
4.017	0.1240	0.42	.Q V	.	.	.	.
4.033	0.1246	0.42	.Q V	.	.	.	.
4.050	0.1252	0.42	.Q V	.	.	.	.
4.067	0.1258	0.42	.Q V	.	.	.	.
4.083	0.1264	0.42	.Q V	.	.	.	.
4.100	0.1269	0.42	.Q V	.	.	.	.
4.117	0.1275	0.42	.Q V	.	.	.	.
4.133	0.1281	0.42	.Q V	.	.	.	.
4.150	0.1287	0.42	.Q V	.	.	.	.
4.167	0.1293	0.42	.Q V	.	.	.	.
4.183	0.1299	0.42	.Q V	.	.	.	.
4.200	0.1304	0.42	.Q V	.	.	.	.
4.217	0.1310	0.42	.Q V	.	.	.	.
4.233	0.1316	0.42	.Q V	.	.	.	.
4.250	0.1322	0.42	.Q V	.	.	.	.
4.267	0.1328	0.43	.Q V	.	.	.	.
4.283	0.1334	0.43	.Q V	.	.	.	.
4.300	0.1340	0.43	.Q V	.	.	.	.
4.317	0.1345	0.43	.Q V	.	.	.	.
4.333	0.1351	0.43	.Q V	.	.	.	.
4.350	0.1357	0.43	.Q V	.	.	.	.
4.367	0.1363	0.43	.Q V	.	.	.	.
4.383	0.1369	0.43	.Q V	.	.	.	.
4.400	0.1375	0.43	.Q V	.	.	.	.
4.417	0.1381	0.43	.Q V	.	.	.	.
4.433	0.1387	0.43	.Q V	.	.	.	.
4.450	0.1392	0.43	.Q V	.	.	.	.
4.467	0.1398	0.43	.Q V	.	.	.	.
4.483	0.1404	0.43	.Q V	.	.	.	.
4.500	0.1410	0.43	.Q V	.	.	.	.
4.517	0.1416	0.43	.Q V	.	.	.	.
4.533	0.1422	0.43	.Q V	.	.	.	.
4.550	0.1428	0.43	.Q V	.	.	.	.
4.567	0.1434	0.43	.Q V	.	.	.	.
4.583	0.1440	0.43	.Q V	.	.	.	.
4.600	0.1446	0.43	.Q V	.	.	.	.
4.617	0.1452	0.43	.Q V	.	.	.	.
4.633	0.1458	0.43	.Q V	.	.	.	.
4.650	0.1464	0.43	.Q V	.	.	.	.

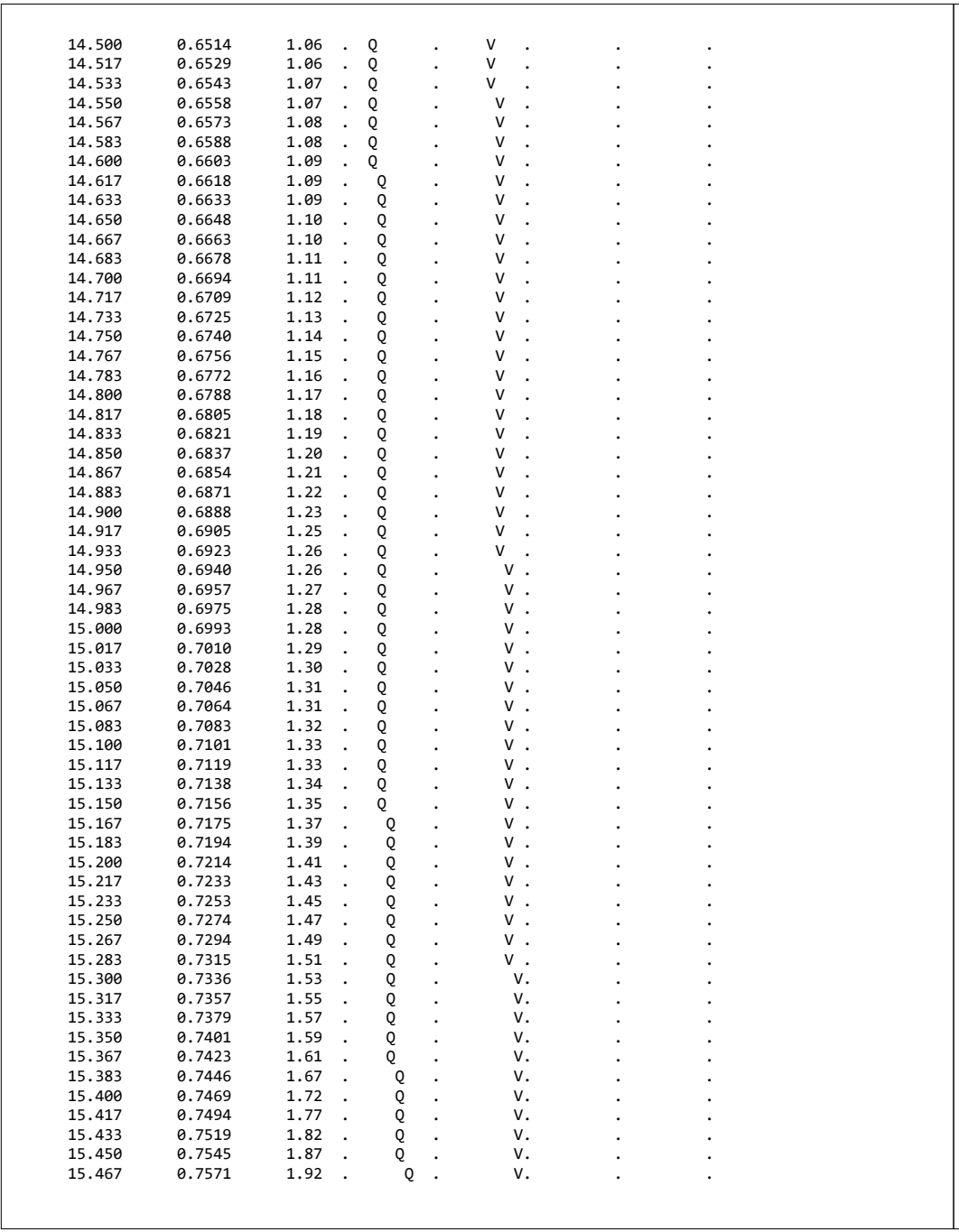
4.667	0.1470	0.43	.Q	V	.	.	.	.
4.683	0.1476	0.43	.Q	V	.	.	.	.
4.700	0.1481	0.43	.Q	V	.	.	.	.
4.717	0.1487	0.43	.Q	V	.	.	.	.
4.733	0.1493	0.43	.Q	V	.	.	.	.
4.750	0.1499	0.43	.Q	V	.	.	.	.
4.767	0.1505	0.43	.Q	V	.	.	.	.
4.783	0.1511	0.43	.Q	V	.	.	.	.
4.800	0.1517	0.43	.Q	V	.	.	.	.
4.817	0.1523	0.43	.Q	V	.	.	.	.
4.833	0.1529	0.44	.Q	V	.	.	.	.
4.850	0.1535	0.44	.Q	V	.	.	.	.
4.867	0.1541	0.44	.Q	V	.	.	.	.
4.883	0.1547	0.44	.Q	V	.	.	.	.
4.900	0.1553	0.44	.Q	V	.	.	.	.
4.917	0.1559	0.44	.Q	V	.	.	.	.
4.933	0.1565	0.44	.Q	V	.	.	.	.
4.950	0.1571	0.44	.Q	V	.	.	.	.
4.967	0.1577	0.44	.Q	V	.	.	.	.
4.983	0.1584	0.44	.Q	V	.	.	.	.
5.000	0.1590	0.44	.Q	V	.	.	.	.
5.017	0.1596	0.44	.Q	V	.	.	.	.
5.033	0.1602	0.44	.Q	V	.	.	.	.
5.050	0.1608	0.44	.Q	V	.	.	.	.
5.067	0.1614	0.44	.Q	V	.	.	.	.
5.083	0.1620	0.44	.Q	V	.	.	.	.
5.100	0.1626	0.44	.Q	V	.	.	.	.
5.117	0.1632	0.44	.Q	V	.	.	.	.
5.133	0.1638	0.44	.Q	V	.	.	.	.
5.150	0.1644	0.44	.Q	V	.	.	.	.
5.167	0.1650	0.44	.Q	V	.	.	.	.
5.183	0.1656	0.44	.Q	V	.	.	.	.
5.200	0.1663	0.44	.Q	V	.	.	.	.
5.217	0.1669	0.44	.Q	V	.	.	.	.
5.233	0.1675	0.44	.Q	V	.	.	.	.
5.250	0.1681	0.44	.Q	V	.	.	.	.
5.267	0.1687	0.44	.Q	V	.	.	.	.
5.283	0.1693	0.44	.Q	V	.	.	.	.
5.300	0.1699	0.44	.Q	V	.	.	.	.
5.317	0.1705	0.45	.Q	V	.	.	.	.
5.333	0.1711	0.45	.Q	V	.	.	.	.
5.350	0.1718	0.45	.Q	V	.	.	.	.
5.367	0.1724	0.45	.Q	V	.	.	.	.
5.383	0.1730	0.45	.Q	V	.	.	.	.
5.400	0.1736	0.45	.Q	V	.	.	.	.
5.417	0.1742	0.45	.Q	V	.	.	.	.
5.433	0.1748	0.45	.Q	V	.	.	.	.
5.450	0.1755	0.45	.Q	V	.	.	.	.
5.467	0.1761	0.45	.Q	V	.	.	.	.
5.483	0.1767	0.45	.Q	V	.	.	.	.
5.500	0.1773	0.45	.Q	V	.	.	.	.
5.517	0.1779	0.45	.Q	V	.	.	.	.
5.533	0.1786	0.45	.Q	V	.	.	.	.
5.550	0.1792	0.45	.Q	V	.	.	.	.
5.567	0.1798	0.45	.Q	V	.	.	.	.
5.583	0.1804	0.45	.Q	V	.	.	.	.
5.600	0.1810	0.45	.Q	V	.	.	.	.
5.617	0.1817	0.45	.Q	V	.	.	.	.
5.633	0.1823	0.45	.Q	V	.	.	.	.
5.650	0.1829	0.45	.Q	V	.	.	.	.
5.667	0.1835	0.45	.Q	V	.	.	.	.
5.683	0.1842	0.45	.Q	V	.	.	.	.
5.700	0.1848	0.45	.Q	V	.	.	.	.
5.717	0.1854	0.45	.Q	V	.	.	.	.
5.733	0.1860	0.45	.Q	V	.	.	.	.
5.750	0.1867	0.45	.Q	V	.	.	.	.
5.767	0.1873	0.45	.Q	V	.	.	.	.
5.783	0.1879	0.46	.Q	V	.	.	.	.
5.800	0.1885	0.46	.Q	V	.	.	.	.
5.817	0.1892	0.46	.Q	V	.	.	.	.
5.833	0.1898	0.46	.Q	V	.	.	.	.
5.850	0.1904	0.46	.Q	V	.	.	.	.
5.867	0.1911	0.46	.Q	V	.	.	.	.
5.883	0.1917	0.46	.Q	V	.	.	.	.
5.900	0.1923	0.46	.Q	V	.	.	.	.
5.917	0.1930	0.46	.Q	V	.	.	.	.
5.933	0.1936	0.46	.Q	V	.	.	.	.
5.950	0.1942	0.46	.Q	V	.	.	.	.
5.967	0.1948	0.46	.Q	V	.	.	.	.
5.983	0.1955	0.46	.Q	V	.	.	.	.
6.000	0.1961	0.46	.Q	V	.	.	.	.
6.017	0.1968	0.46	.Q	V	.	.	.	.
6.033	0.1974	0.46	.Q	V	.	.	.	.
6.050	0.1980	0.46	.Q	V	.	.	.	.
6.067	0.1987	0.46	.Q	V	.	.	.	.
6.083	0.1993	0.46	.Q	V	.	.	.	.
6.100	0.1999	0.46	.Q	V	.	.	.	.
6.117	0.2006	0.46	.Q	V	.	.	.	.
6.133	0.2012	0.46	.Q	V	.	.	.	.
6.150	0.2018	0.46	.Q	V	.	.	.	.
6.167	0.2025	0.46	.Q	V	.	.	.	.
6.183	0.2031	0.46	.Q	V	.	.	.	.
6.200	0.2038	0.46	.Q	V	.	.	.	.
6.217	0.2044	0.47	.Q	V	.	.	.	.
6.233	0.2050	0.47	.Q	V	.	.	.	.
6.250	0.2057	0.47	.Q	V	.	.	.	.
6.267	0.2063	0.47	.Q	V	.	.	.	.
6.283	0.2070	0.47	.Q	V	.	.	.	.
6.300	0.2076	0.47	.Q	V	.	.	.	.
6.317	0.2083	0.47	.Q	V	.	.	.	.
6.333	0.2089	0.47	.Q	V	.	.	.	.
6.350	0.2096	0.47	.Q	V	.	.	.	.
6.367	0.2102	0.47	.Q	V	.	.	.	.
6.383	0.2108	0.47	.Q	V	.	.	.	.
6.400	0.2115	0.47	.Q	V	.	.	.	.
6.417	0.2121	0.47	.Q	V	.	.	.	.
6.433	0.2128	0.47	.Q	V	.	.	.	.
6.450	0.2134	0.47	.Q	V	.	.	.	.
6.467	0.2141	0.47	.Q	V	.	.	.	.
6.483	0.2147	0.47	.Q	V	.	.	.	.
6.500	0.2154	0.47	.Q	V	.	.	.	.
6.517	0.2160	0.47	.Q	V	.	.	.	.
6.533	0.2167	0.47	.Q	V	.	.	.	.
6.550	0.2173	0.47	.Q	V	.	.	.	.
6.567	0.2180	0.47	.Q	V	.	.	.	.
6.583	0.2186	0.47	.Q	V	.	.	.	.
6.600	0.2193	0.47	.Q	V	.	.	.	.
6.617	0.2199	0.47	.Q	V	.	.	.	.

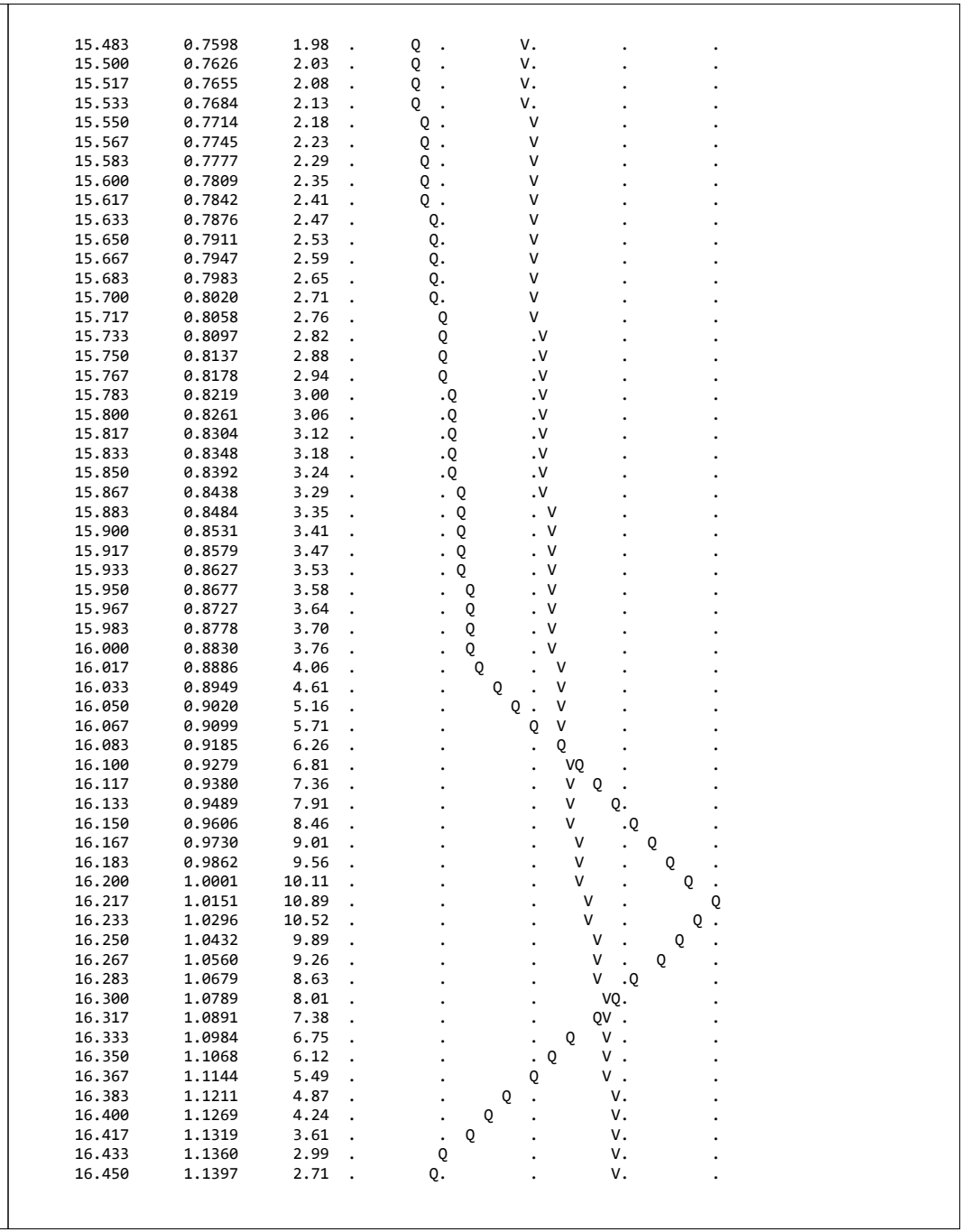
6.633	0.2206	0.48	.Q	V	.	.	.	.
6.650	0.2213	0.48	.Q	V	.	.	.	.
6.667	0.2219	0.48	.Q	V	.	.	.	.
6.683	0.2226	0.48	.Q	V	.	.	.	.
6.700	0.2232	0.48	.Q	V	.	.	.	.
6.717	0.2239	0.48	.Q	V	.	.	.	.
6.733	0.2245	0.48	.Q	V	.	.	.	.
6.750	0.2252	0.48	.Q	V	.	.	.	.
6.767	0.2259	0.48	.Q	V	.	.	.	.
6.783	0.2265	0.48	.Q	V	.	.	.	.
6.800	0.2272	0.48	.Q	V	.	.	.	.
6.817	0.2279	0.48	.Q	V	.	.	.	.
6.833	0.2285	0.48	.Q	V	.	.	.	.
6.850	0.2292	0.48	.Q	V	.	.	.	.
6.867	0.2298	0.48	.Q	V	.	.	.	.
6.883	0.2305	0.48	.Q	V	.	.	.	.
6.900	0.2312	0.48	.Q	V	.	.	.	.
6.917	0.2318	0.48	.Q	V	.	.	.	.
6.933	0.2325	0.48	.Q	V	.	.	.	.
6.950	0.2332	0.48	.Q	V	.	.	.	.
6.967	0.2338	0.48	.Q	V	.	.	.	.
6.983	0.2345	0.48	.Q	V	.	.	.	.
7.000	0.2352	0.48	.Q	V	.	.	.	.
7.017	0.2358	0.48	.Q	V	.	.	.	.
7.033	0.2365	0.49	.Q	V	.	.	.	.
7.050	0.2372	0.49	.Q	V	.	.	.	.
7.067	0.2378	0.49	.Q	V	.	.	.	.
7.083	0.2385	0.49	.Q	V	.	.	.	.
7.100	0.2392	0.49	.Q	V	.	.	.	.
7.117	0.2399	0.49	.Q	V	.	.	.	.
7.133	0.2405	0.49	.Q	V	.	.	.	.
7.150	0.2412	0.49	.Q	V	.	.	.	.
7.167	0.2419	0.49	.Q	V	.	.	.	.
7.183	0.2426	0.49	.Q	V	.	.	.	.
7.200	0.2432	0.49	.Q	V	.	.	.	.
7.217	0.2439	0.49	.Q	V	.	.	.	.
7.233	0.2446	0.49	.Q	V	.	.	.	.
7.250	0.2453	0.49	.Q	V	.	.	.	.
7.267	0.2459	0.49	.Q	V	.	.	.	.
7.283	0.2466	0.49	.Q	V	.	.	.	.
7.300	0.2473	0.49	.Q	V	.	.	.	.
7.317	0.2480	0.49	.Q	V	.	.	.	.
7.333	0.2487	0.49	.Q	V	.	.	.	.
7.350	0.2493	0.49	.Q	V	.	.	.	.
7.367	0.2500	0.49	.Q	V	.	.	.	.
7.383	0.2507	0.49	.Q	V	.	.	.	.
7.400	0.2514	0.50	.Q	V	.	.	.	.
7.417	0.2521	0.50	.Q	V	.	.	.	.
7.433	0.2528	0.50	.Q	V	.	.	.	.
7.450	0.2534	0.50	.Q	V	.	.	.	.
7.467	0.2541	0.50	.Q	V	.	.	.	.
7.483	0.2548	0.50	.Q	V	.	.	.	.
7.500	0.2555	0.50	.Q	V	.	.	.	.
7.517	0.2562	0.50	.Q	V	.	.	.	.
7.533	0.2569	0.50	.Q	V	.	.	.	.
7.550	0.2576	0.50	.Q	V	.	.	.	.
7.567	0.2583	0.50	.Q	V	.	.	.	.
7.583	0.2589	0.50	.Q	V	.	.	.	.
7.600	0.2596	0.50	.Q	V	.	.	.	.
7.617	0.2603	0.50	.Q	V	.	.	.	.
7.633	0.2610	0.50	.Q	V	.	.	.	.
7.650	0.2617	0.50	.Q	V	.	.	.	.
7.667	0.2624	0.50	.Q	V	.	.	.	.
7.683	0.2631	0.50	.Q	V	.	.	.	.
7.700	0.2638	0.51	.Q	V	.	.	.	.
7.717	0.2645	0.51	.Q	V	.	.	.	.
7.733	0.2652	0.51	.Q	V	.	.	.	.
7.750	0.2659	0.51	.Q	V	.	.	.	.
7.767	0.2666	0.51	.Q	V	.	.	.	.
7.783	0.2673	0.51	.Q	V	.	.	.	.
7.800	0.2680	0.51	.Q	V	.	.	.	.
7.817	0.2687	0.51	.Q	V	.	.	.	.
7.833	0.2694	0.51	.Q	V	.	.	.	.
7.850	0.2701	0.51	.Q	V	.	.	.	.
7.867	0.2708	0.51	.Q	V	.	.	.	.
7.883	0.2715	0.51	.Q	V	.	.	.	.
7.900	0.2722	0.51	.Q	V	.	.	.	.
7.917	0.2729	0.51	.Q	V	.	.	.	.
7.933	0.2736	0.51	.Q	V	.	.	.	.
7.950	0.2743	0.51	.Q	V	.	.	.	.
7.967	0.2750	0.51	.Q	V	.	.	.	.
7.983	0.2757	0.51	.Q	V	.	.	.	.
8.000	0.2764	0.51	.Q	V	.	.	.	.
8.017	0.2771	0.52	.Q	V	.	.	.	.
8.033	0.2779	0.52	.Q	V	.	.	.	.
8.050	0.2786	0.52	.Q	V	.	.	.	.
8.067	0.2793	0.52	.Q	V	.	.	.	.
8.083	0.2800	0.52	.Q	V	.	.	.	.
8.100	0.2807	0.52	.Q	V	.	.	.	.
8.117	0.2814	0.52	.Q	V	.	.	.	.
8.133	0.2821	0.52	.Q	V	.	.	.	.
8.150	0.2828	0.52	.Q	V	.	.	.	.
8.167	0.2836	0.52	.Q	V	.	.	.	.
8.183	0.2843	0.52	.Q	V	.	.	.	.
8.200	0.2850	0.52	.Q	V	.	.	.	.
8.217	0.2857	0.52	.Q	V	.	.	.	.
8.233	0.2864	0.52	.Q	V	.	.	.	.
8.250	0.2871	0.52	.Q	V	.	.	.	.
8.267	0.2879	0.52	.Q	V	.	.	.	.
8.283	0.2886	0.52	.Q	V	.	.	.	.
8.300	0.2893	0.52	.Q	V	.	.	.	.
8.317	0.2900	0.52	.Q	V	.	.	.	.
8.333	0.2907	0.52	.Q	V	.	.	.	.
8.350	0.2915	0.53	.Q	V	.	.	.	.
8.367	0.2922	0.53	.Q	V	.	.	.	.
8.383	0.2929	0.53	.Q	V	.	.	.	.
8.400	0.2936	0.53	.Q	V	.	.	.	.
8.417	0.2944	0.53	.Q	V	.	.	.	.
8.433	0.2951	0.53	.Q	V	.	.	.	.
8.450	0.2958	0.53	.Q	V	.	.	.	.
8.467	0.2966	0.53	.Q	V	.	.	.	.
8.483	0.2973	0.53	.Q	V	.	.	.	.
8.500	0.2980	0.53	.Q	V	.	.	.	.
8.517	0.2988	0.53	.Q	V	.	.	.	.
8.533	0.2995	0.53	.Q	V	.	.	.	.
8.550	0.3002	0.53	.Q	V	.	.	.	.
8.567	0.3010	0.53	.Q	V	.	.	.	.
8.583	0.3017	0.53	.Q	V	.	.	.	.

8.600	0.3024	0.53	.Q	V	.	.	.	.
8.617	0.3032	0.53	.Q	V	.	.	.	.
8.633	0.3039	0.53	.Q	V	.	.	.	.
8.650	0.3046	0.54	.Q	V	.	.	.	.
8.667	0.3054	0.54	.Q	V	.	.	.	.
8.683	0.3061	0.54	.Q	V	.	.	.	.
8.700	0.3069	0.54	.Q	V	.	.	.	.
8.717	0.3076	0.54	.Q	V	.	.	.	.
8.733	0.3083	0.54	.Q	V	.	.	.	.
8.750	0.3091	0.54	.Q	V	.	.	.	.
8.767	0.3098	0.54	.Q	V	.	.	.	.
8.783	0.3106	0.54	.Q	V	.	.	.	.
8.800	0.3113	0.54	.Q	V	.	.	.	.
8.817	0.3121	0.54	.Q	V	.	.	.	.
8.833	0.3128	0.54	.Q	V	.	.	.	.
8.850	0.3136	0.54	.Q	V	.	.	.	.
8.867	0.3143	0.54	. Q	V	.	.	.	.
8.883	0.3151	0.55	. Q	V	.	.	.	.
8.900	0.3158	0.55	. Q	V	.	.	.	.
8.917	0.3166	0.55	. Q	V	.	.	.	.
8.933	0.3173	0.55	. Q	V	.	.	.	.
8.950	0.3181	0.55	. Q	V	.	.	.	.
8.967	0.3188	0.55	. Q	V	.	.	.	.
8.983	0.3196	0.55	. Q	V	.	.	.	.
9.000	0.3204	0.55	. Q	V	.	.	.	.
9.017	0.3211	0.55	. Q	V	.	.	.	.
9.033	0.3219	0.55	. Q	V	.	.	.	.
9.050	0.3226	0.55	. Q	V	.	.	.	.
9.067	0.3234	0.55	. Q	V	.	.	.	.
9.083	0.3241	0.55	. Q	V	.	.	.	.
9.100	0.3249	0.55	. Q	V	.	.	.	.
9.117	0.3257	0.55	. Q	V	.	.	.	.
9.133	0.3264	0.55	. Q	V	.	.	.	.
9.150	0.3272	0.55	. Q	V	.	.	.	.
9.167	0.3280	0.55	. Q	V	.	.	.	.
9.183	0.3287	0.56	. Q	V	.	.	.	.
9.200	0.3295	0.56	. Q	V	.	.	.	.
9.217	0.3303	0.56	. Q	V	.	.	.	.
9.233	0.3310	0.56	. Q	V	.	.	.	.
9.250	0.3318	0.56	. Q	V	.	.	.	.
9.267	0.3326	0.56	. Q	V	.	.	.	.
9.283	0.3333	0.56	. Q	V	.	.	.	.
9.300	0.3341	0.56	. Q	V	.	.	.	.
9.317	0.3349	0.56	. Q	V	.	.	.	.
9.333	0.3357	0.56	. Q	V	.	.	.	.
9.350	0.3364	0.56	. Q	V	.	.	.	.
9.367	0.3372	0.56	. Q	V	.	.	.	.
9.383	0.3380	0.57	. Q	V	.	.	.	.
9.400	0.3388	0.57	. Q	V	.	.	.	.
9.417	0.3396	0.57	. Q	V	.	.	.	.
9.433	0.3403	0.57	. Q	V	.	.	.	.
9.450	0.3411	0.57	. Q	V	.	.	.	.
9.467	0.3419	0.57	. Q	V	.	.	.	.
9.483	0.3427	0.57	. Q	V	.	.	.	.
9.500	0.3435	0.57	. Q	V	.	.	.	.
9.517	0.3443	0.57	. Q	V	.	.	.	.
9.533	0.3450	0.57	. Q	V	.	.	.	.
9.550	0.3458	0.57	. Q	V	.	.	.	.
9.567	0.3466	0.57	. Q	V	.	.	.	.
9.583	0.3474	0.57	. Q	V	.	.	.	.
9.600	0.3482	0.57	. Q	V	.	.	.	.
9.617	0.3490	0.57	. Q	V	.	.	.	.
9.633	0.3498	0.58	. Q	V	.	.	.	.
9.650	0.3506	0.58	. Q	V	.	.	.	.
9.667	0.3514	0.58	. Q	V	.	.	.	.
9.683	0.3522	0.58	. Q	V	.	.	.	.
9.700	0.3530	0.58	. Q	V	.	.	.	.
9.717	0.3538	0.58	. Q	V	.	.	.	.
9.733	0.3546	0.58	. Q	V	.	.	.	.
9.750	0.3554	0.58	. Q	V	.	.	.	.
9.767	0.3562	0.58	. Q	V	.	.	.	.
9.783	0.3570	0.58	. Q	V	.	.	.	.
9.800	0.3578	0.58	. Q	V	.	.	.	.
9.817	0.3586	0.58	. Q	V	.	.	.	.
9.833	0.3594	0.59	. Q	V	.	.	.	.
9.850	0.3602	0.59	. Q	V	.	.	.	.
9.867	0.3610	0.59	. Q	V	.	.	.	.
9.883	0.3618	0.59	. Q	V	.	.	.	.
9.900	0.3626	0.59	. Q	V	.	.	.	.
9.917	0.3634	0.59	. Q	V	.	.	.	.
9.933	0.3642	0.59	. Q	V	.	.	.	.
9.950	0.3650	0.59	. Q	V	.	.	.	.
9.967	0.3659	0.59	. Q	V	.	.	.	.
9.983	0.3667	0.59	. Q	V	.	.	.	.
10.000	0.3675	0.59	. Q	V	.	.	.	.
10.017	0.3683	0.59	. Q	V	.	.	.	.
10.033	0.3691	0.59	. Q	V	.	.	.	.
10.050	0.3699	0.59	. Q	V	.	.	.	.
10.067	0.3708	0.60	. Q	V	.	.	.	.
10.083	0.3716	0.60	. Q	V	.	.	.	.
10.100	0.3724	0.60	. Q	V	.	.	.	.
10.117	0.3732	0.60	. Q	V	.	.	.	.
10.133	0.3740	0.60	. Q	V	.	.	.	.
10.150	0.3749	0.60	. Q	V	.	.	.	.
10.167	0.3757	0.60	. Q	V	.	.	.	.
10.183	0.3765	0.60	. Q	V	.	.	.	.
10.200	0.3774	0.60	. Q	V	.	.	.	.
10.217	0.3782	0.60	. Q	V	.	.	.	.
10.233	0.3790	0.61	. Q	V	.	.	.	.
10.250	0.3799	0.61	. Q	V	.	.	.	.
10.267	0.3807	0.61	. Q	V	.	.	.	.
10.283	0.3815	0.61	. Q	V	.	.	.	.
10.300	0.3824	0.61	. Q	V	.	.	.	.
10.317	0.3832	0.61	. Q	V	.	.	.	.
10.333	0.3841	0.61	. Q	V	.	.	.	.
10.350	0.3849	0.61	. Q	V	.	.	.	.
10.367	0.3857	0.61	. Q	V	.	.	.	.
10.383	0.3866	0.61	. Q	V	.	.	.	.
10.400	0.3874	0.61	. Q	V	.	.	.	.
10.417	0.3883	0.61	. Q	V	.	.	.	.
10.433	0.3891	0.61	. Q	V	.	.	.	.
10.450	0.3899	0.61	. Q	V	.	.	.	.
10.467	0.3908	0.62	. Q	V	.	.	.	.
10.483	0.3916	0.62	. Q	V	.	.	.	.
10.500	0.3925	0.62	. Q	V	.	.	.	.
10.517	0.3933	0.62	. Q	V	.	.	.	.
10.533	0.3942	0.62	. Q	V	.	.	.	.
10.550	0.3951	0.62	. Q	V	.	.	.	.

10.567	0.3959	0.62	. Q	V	.	.	.
10.583	0.3968	0.62	. Q	V	.	.	.
10.600	0.3976	0.63	. Q	V	.	.	.
10.617	0.3985	0.63	. Q	V	.	.	.
10.633	0.3994	0.63	. Q	V	.	.	.
10.650	0.4002	0.63	. Q	V	.	.	.
10.667	0.4011	0.63	. Q	V	.	.	.
10.683	0.4020	0.63	. Q	V	.	.	.
10.700	0.4028	0.63	. Q	V	.	.	.
10.717	0.4037	0.63	. Q	V	.	.	.
10.733	0.4046	0.63	. Q	V	.	.	.
10.750	0.4054	0.63	. Q	V	.	.	.
10.767	0.4063	0.63	. Q	V	.	.	.
10.783	0.4072	0.63	. Q	V	.	.	.
10.800	0.4081	0.63	. Q	V	.	.	.
10.817	0.4089	0.63	. Q	V	.	.	.
10.833	0.4098	0.64	. Q	V	.	.	.
10.850	0.4107	0.64	. Q	V	.	.	.
10.867	0.4116	0.64	. Q	V	.	.	.
10.883	0.4124	0.64	. Q	V	.	.	.
10.900	0.4133	0.64	. Q	V	.	.	.
10.917	0.4142	0.64	. Q	V	.	.	.
10.933	0.4151	0.64	. Q	V	.	.	.
10.950	0.4160	0.64	. Q	V	.	.	.
10.967	0.4169	0.65	. Q	V	.	.	.
10.983	0.4178	0.65	. Q	V	.	.	.
11.000	0.4187	0.65	. Q	V	.	.	.
11.017	0.4196	0.65	. Q	V	.	.	.
11.033	0.4205	0.65	. Q	V	.	.	.
11.050	0.4214	0.65	. Q	V	.	.	.
11.067	0.4223	0.65	. Q	V	.	.	.
11.083	0.4232	0.65	. Q	V	.	.	.
11.100	0.4241	0.66	. Q	.V	.	.	.
11.117	0.4250	0.66	. Q	.V	.	.	.
11.133	0.4259	0.66	. Q	.V	.	.	.
11.150	0.4268	0.66	. Q	.V	.	.	.
11.167	0.4277	0.66	. Q	.V	.	.	.
11.183	0.4286	0.66	. Q	.V	.	.	.
11.200	0.4295	0.66	. Q	.V	.	.	.
11.217	0.4304	0.66	. Q	.V	.	.	.
11.233	0.4313	0.66	. Q	.V	.	.	.
11.250	0.4322	0.66	. Q	.V	.	.	.
11.267	0.4331	0.66	. Q	.V	.	.	.
11.283	0.4341	0.66	. Q	.V	.	.	.
11.300	0.4350	0.67	. Q	.V	.	.	.
11.317	0.4359	0.67	. Q	.V	.	.	.
11.333	0.4368	0.67	. Q	.V	.	.	.
11.350	0.4377	0.67	. Q	.V	.	.	.
11.367	0.4387	0.67	. Q	.V	.	.	.
11.383	0.4396	0.67	. Q	.V	.	.	.
11.400	0.4405	0.68	. Q	.V	.	.	.
11.417	0.4415	0.68	. Q	.V	.	.	.
11.433	0.4424	0.68	. Q	.V	.	.	.
11.450	0.4433	0.68	. Q	.V	.	.	.
11.467	0.4443	0.68	. Q	.V	.	.	.
11.483	0.4452	0.68	. Q	.V	.	.	.
11.500	0.4461	0.68	. Q	.V	.	.	.
11.517	0.4471	0.69	. Q	.V	.	.	.
11.533	0.4480	0.69	. Q	.V	.	.	.
11.550	0.4490	0.69	. Q	.V	.	.	.
11.567	0.4499	0.69	. Q	.V	.	.	.
11.583	0.4509	0.69	. Q	.V	.	.	.
11.600	0.4518	0.69	. Q	.V	.	.	.
11.617	0.4528	0.69	. Q	.V	.	.	.
11.633	0.4537	0.69	. Q	.V	.	.	.
11.650	0.4547	0.69	. Q	.V	.	.	.
11.667	0.4556	0.69	. Q	.V	.	.	.
11.683	0.4566	0.69	. Q	.V	.	.	.
11.700	0.4575	0.69	. Q	.V	.	.	.
11.717	0.4585	0.70	. Q	.V	.	.	.
11.733	0.4595	0.70	. Q	.V	.	.	.
11.750	0.4604	0.70	. Q	.V	.	.	.
11.767	0.4614	0.70	. Q	.V	.	.	.
11.783	0.4624	0.70	. Q	. V	.	.	.
11.800	0.4633	0.70	. Q	. V	.	.	.
11.817	0.4643	0.71	. Q	. V	.	.	.
11.833	0.4653	0.71	. Q	. V	.	.	.
11.850	0.4663	0.71	. Q	. V	.	.	.
11.867	0.4672	0.71	. Q	. V	.	.	.
11.883	0.4682	0.71	. Q	. V	.	.	.
11.900	0.4692	0.72	. Q	. V	.	.	.
11.917	0.4702	0.72	. Q	. V	.	.	.
11.933	0.4712	0.72	. Q	. V	.	.	.
11.950	0.4722	0.72	. Q	. V	.	.	.
11.967	0.4732	0.72	. Q	. V	.	.	.
11.983	0.4742	0.72	. Q	. V	.	.	.
12.000	0.4752	0.72	. Q	. V	.	.	.
12.017	0.4762	0.72	. Q	. V	.	.	.
12.033	0.4772	0.72	. Q	. V	.	.	.
12.050	0.4782	0.73	. Q	. V	.	.	.
12.067	0.4792	0.73	. Q	. V	.	.	.
12.083	0.4802	0.73	. Q	. V	.	.	.
12.100	0.4812	0.73	. Q	. V	.	.	.
12.117	0.4822	0.73	. Q	. V	.	.	.
12.133	0.4832	0.73	. Q	. V	.	.	.
12.150	0.4842	0.73	. Q	. V	.	.	.
12.167	0.4852	0.73	. Q	. V	.	.	.
12.183	0.4862	0.73	. Q	. V	.	.	.
12.200	0.4872	0.73	. Q	. V	.	.	.
12.217	0.4882	0.73	. Q	. V	.	.	.
12.233	0.4892	0.73	. Q	. V	.	.	.
12.250	0.4902	0.73	. Q	. V	.	.	.
12.267	0.4912	0.73	. Q	. V	.	.	.
12.283	0.4922	0.73	. Q	. V	.	.	.
12.300	0.4932	0.73	. Q	. V	.	.	.
12.317	0.4942	0.73	. Q	. V	.	.	.
12.333	0.4952	0.73	. Q	. V	.	.	.
12.350	0.4963	0.73	. Q	. V	.	.	.
12.367	0.4973	0.73	. Q	. V	.	.	.
12.383	0.4983	0.73	. Q	. V	.	.	.
12.400	0.4993	0.73	. Q	. V	.	.	.
12.417	0.5003	0.73	. Q	. V	.	.	.
12.433	0.5013	0.74	. Q	. V	.	.	.
12.450	0.5023	0.74	. Q	. V	.	.	.
12.467	0.5033	0.74	. Q	. V	.	.	.
12.483	0.5043	0.74	. Q	. V	.	.	.
12.500	0.5054	0.74	. Q	. V	.	.	.
12.517	0.5064	0.74	. Q	. V	.	.	.

12.533	0.5074	0.74	. Q	. V	.	.	.	
12.550	0.5084	0.74	. Q	. V	.	.	.	
12.567	0.5095	0.74	. Q	. V	.	.	.	
12.583	0.5105	0.75	. Q	. V	.	.	.	
12.600	0.5115	0.75	. Q	. V	.	.	.	
12.617	0.5126	0.75	. Q	. V	.	.	.	
12.633	0.5136	0.75	. Q	. V	.	.	.	
12.650	0.5146	0.76	. Q	. V	.	.	.	
12.667	0.5157	0.76	. Q	. V	.	.	.	
12.683	0.5167	0.76	. Q	. V	.	.	.	
12.700	0.5178	0.76	. Q	. V	.	.	.	
12.717	0.5188	0.77	. Q	. V	.	.	.	
12.733	0.5199	0.77	. Q	. V	.	.	.	
12.750	0.5210	0.77	. Q	. V	.	.	.	
12.767	0.5220	0.77	. Q	. V	.	.	.	
12.783	0.5231	0.78	. Q	. V	.	.	.	
12.800	0.5242	0.78	. Q	. V	.	.	.	
12.817	0.5253	0.78	. Q	. V	.	.	.	
12.833	0.5263	0.78	. Q	. V	.	.	.	
12.850	0.5274	0.78	. Q	. V	.	.	.	
12.867	0.5285	0.78	. Q	. V	.	.	.	
12.883	0.5296	0.79	. Q	. V	.	.	.	
12.900	0.5307	0.79	. Q	. V	.	.	.	
12.917	0.5317	0.79	. Q	. V	.	.	.	
12.933	0.5328	0.79	. Q	. V	.	.	.	
12.950	0.5339	0.79	. Q	. V	.	.	.	
12.967	0.5350	0.79	. Q	. V	.	.	.	
12.983	0.5361	0.79	. Q	. V	.	.	.	
13.000	0.5372	0.80	. Q	. V	.	.	.	
13.017	0.5383	0.80	. Q	. V	.	.	.	
13.033	0.5394	0.80	. Q	. V	.	.	.	
13.050	0.5405	0.80	. Q	. V	.	.	.	
13.067	0.5416	0.81	. Q	. V	.	.	.	
13.083	0.5427	0.81	. Q	. V	.	.	.	
13.100	0.5439	0.81	. Q	. V	.	.	.	
13.117	0.5450	0.82	. Q	. V	.	.	.	
13.133	0.5461	0.82	. Q	. V	.	.	.	
13.150	0.5472	0.82	. Q	. V	.	.	.	
13.167	0.5484	0.83	. Q	. V	.	.	.	
13.183	0.5495	0.83	. Q	. V	.	.	.	
13.200	0.5507	0.83	. Q	. V	.	.	.	
13.217	0.5518	0.84	. Q	. V	.	.	.	
13.233	0.5530	0.84	. Q	. V	.	.	.	
13.250	0.5541	0.84	. Q	. V	.	.	.	
13.267	0.5553	0.84	. Q	. V	.	.	.	
13.283	0.5565	0.84	. Q	. V	.	.	.	
13.300	0.5576	0.84	. Q	. V	.	.	.	
13.317	0.5588	0.85	. Q	. V	.	.	.	
13.333	0.5599	0.85	. Q	. V	.	.	.	
13.350	0.5611	0.85	. Q	. V	.	.	.	
13.367	0.5623	0.85	. Q	. V	.	.	.	
13.383	0.5635	0.85	. Q	. V	.	.	.	
13.400	0.5646	0.85	. Q	. V	.	.	.	
13.417	0.5658	0.86	. Q	. V	.	.	.	
13.433	0.5670	0.86	. Q	. V	.	.	.	
13.450	0.5682	0.86	. Q	. V	.	.	.	
13.467	0.5694	0.87	. Q	. V	.	.	.	
13.483	0.5706	0.87	. Q	. V	.	.	.	
13.500	0.5718	0.87	. Q	. V	.	.	.	
13.517	0.5730	0.88	. Q	. V	.	.	.	
13.533	0.5742	0.88	. Q	. V	.	.	.	
13.550	0.5754	0.89	. Q	. V	.	.	.	
13.567	0.5767	0.89	. Q	. V	.	.	.	
13.583	0.5779	0.89	. Q	. V	.	.	.	
13.600	0.5791	0.90	. Q	. V	.	.	.	
13.617	0.5804	0.90	. Q	. V	.	.	.	
13.633	0.5816	0.91	. Q	. V	.	.	.	
13.650	0.5829	0.91	. Q	. V	.	.	.	
13.667	0.5841	0.91	. Q	. V	.	.	.	
13.683	0.5854	0.91	. Q	. V	.	.	.	
13.700	0.5866	0.91	. Q	. V	.	.	.	
13.717	0.5879	0.92	. Q	. V	.	.	.	
13.733	0.5892	0.92	. Q	. V	.	.	.	
13.750	0.5904	0.92	. Q	. V	.	.	.	
13.767	0.5917	0.92	. Q	. V	.	.	.	
13.783	0.5930	0.93	. Q	. V	.	.	.	
13.800	0.5943	0.93	. Q	. V	.	.	.	
13.817	0.5955	0.93	. Q	. V	.	.	.	
13.833	0.5968	0.93	. Q	. V	.	.	.	
13.850	0.5981	0.93	. Q	. V	.	.	.	
13.867	0.5994	0.94	. Q	. V	.	.	.	
13.883	0.6007	0.94	. Q	. V	.	.	.	
13.900	0.6020	0.95	. Q	. V	.	.	.	
13.917	0.6033	0.95	. Q	. V	.	.	.	
13.933	0.6046	0.96	. Q	. V	.	.	.	
13.950	0.6060	0.96	. Q	. V	.	.	.	
13.967	0.6073	0.97	. Q	. V	.	.	.	
13.983	0.6086	0.97	. Q	. V	.	.	.	
14.000	0.6100	0.98	. Q	. V	.	.	.	
14.017	0.6114	0.98	. Q	. V	.	.	.	
14.033	0.6127	0.99	. Q	. V	.	.	.	
14.050	0.6141	0.99	. Q	. V	.	.	.	
14.067	0.6155	1.00	. Q	. V	.	.	.	
14.083	0.6168	1.00	. Q	. V	.	.	.	
14.100	0.6182	1.00	. Q	. V	.	.	.	
14.117	0.6196	1.00	. Q	. V	.	.	.	
14.133	0.6210	0.99	. Q	. V	.	.	.	
14.150	0.6223	0.99	. Q	. V	.	.	.	
14.167	0.6237	0.99	. Q	. V	.	.	.	
14.183	0.6250	0.99	. Q	. V	.	.	.	
14.200	0.6264	0.99	. Q	. V	.	.	.	
14.217	0.6278	0.98	. Q	. V	.	.	.	
14.233	0.6291	0.98	. Q	. V	.	.	.	
14.250	0.6305	0.98	. Q	. V	.	.	.	
14.267	0.6318	0.98	. Q	. V	.	.	.	
14.283	0.6331	0.97	. Q	. V	.	.	.	
14.300	0.6345	0.98	. Q	. V	.	.	.	
14.317	0.6358	0.99	. Q	. V	.	.	.	
14.333	0.6372	0.99	. Q	. V	.	.	.	
14.350	0.6386	1.00	. Q	. V	.	.	.	
14.367	0.6400	1.01	. Q	. V	.	.	.	
14.383	0.6414	1.01	. Q	. V	.	.	.	
14.400	0.6428	1.02	. Q	. V	.	.	.	
14.417	0.6442	1.03	. Q	. V	.	.	.	
14.433	0.6456	1.03	. Q	. V	.	.	.	
14.450	0.6470	1.04	. Q	. V	.	.	.	
14.467	0.6485	1.05	. Q	. V	.	.	.	
14.483	0.6499	1.05	. Q	. V	.	.	.	


14.500 0.6514 1.06 . Q . V . . .
14.517 0.6529 1.06 . Q . V . . .
14.533 0.6543 1.07 . Q . V . . .
14.550 0.6558 1.07 . Q . V . . .
14.567 0.6573 1.08 . Q . V . . .
14.583 0.6588 1.08 . Q . V . . .
14.600 0.6603 1.09 . Q . V . . .
14.617 0.6618 1.09 . Q . V . . .
14.633 0.6633 1.09 . Q . V . . .
14.650 0.6648 1.10 . Q . V . . .
14.667 0.6663 1.10 . Q . V . . .
14.683 0.6678 1.11 . Q . V . . .
14.700 0.6694 1.11 . Q . V . . .
14.717 0.6709 1.12 . Q . V . . .
14.733 0.6725 1.13 . Q . V . . .
14.750 0.6740 1.14 . Q . V . . .
14.767 0.6756 1.15 . Q . V . . .
14.783 0.6772 1.16 . Q . V . . .
14.800 0.6788 1.17 . Q . V . . .
14.817 0.6805 1.18 . Q . V . . .
14.833 0.6821 1.19 . Q . V . . .
14.850 0.6837 1.20 . Q . V . . .
14.867 0.6854 1.21 . Q . V . . .
14.883 0.6871 1.22 . Q . V . . .
14.900 0.6888 1.23 . Q . V . . .
14.917 0.6905 1.25 . Q . V . . .
14.933 0.6923 1.26 . Q . V . . .
14.950 0.6940 1.26 . Q . V . . .
14.967 0.6957 1.27 . Q . V . . .
14.983 0.6975 1.28 . Q . V . . .
15.000 0.6993 1.28 . Q . V . . .
15.017 0.7010 1.29 . Q . V . . .
15.033 0.7028 1.30 . Q . V . . .
15.050 0.7046 1.31 . Q . V . . .
15.067 0.7064 1.31 . Q . V . . .
15.083 0.7083 1.32 . Q . V . . .
15.100 0.7101 1.33 . Q . V . . .
15.117 0.7119 1.33 . Q . V . . .
15.133 0.7138 1.34 . Q . V . . .
15.150 0.7156 1.35 . Q . V . . .
15.167 0.7175 1.37 . Q . V . . .
15.183 0.7194 1.39 . Q . V . . .
15.200 0.7214 1.41 . Q . V . . .
15.217 0.7233 1.43 . Q . V . . .
15.233 0.7253 1.45 . Q . V . . .
15.250 0.7274 1.47 . Q . V . . .
15.267 0.7294 1.49 . Q . V . . .
15.283 0.7315 1.51 . Q . V . . .
15.300 0.7336 1.53 . Q . V. . .
15.317 0.7357 1.55 . Q . V. . .
15.333 0.7379 1.57 . Q . V. . .
15.350 0.7401 1.59 . Q . V. . .
15.367 0.7423 1.61 . Q . V. . .
15.383 0.7446 1.67 . Q . V. . .
15.400 0.7469 1.72 . Q . V. . .
15.417 0.7494 1.77 . Q . V. . .
15.433 0.7519 1.82 . Q . V. . .
15.450 0.7545 1.87 . Q . V. . .
15.467 0.7571 1.92 . Q . V. . .


15.483 0.7598 1.98 . Q . V. . .
15.500 0.7626 2.03 . Q . V. . .
15.517 0.7655 2.08 . Q . V. . .
15.533 0.7684 2.13 . Q . V. . .
15.550 0.7714 2.18 . Q . V . . .
15.567 0.7745 2.23 . Q . V . . .
15.583 0.7777 2.29 . Q . V . . .
15.600 0.7809 2.35 . Q . V . . .
15.617 0.7842 2.41 . Q . V . . .
15.633 0.7876 2.47 . Q. V . . .
15.650 0.7911 2.53 . Q. V . . .
15.667 0.7947 2.59 . Q. V . . .
15.683 0.7983 2.65 . Q. V . . .
15.700 0.8020 2.71 . Q. V . . .
15.717 0.8058 2.76 . Q V . . .
15.733 0.8097 2.82 . Q .V . . .
15.750 0.8137 2.88 . Q .V . . .
15.767 0.8178 2.94 . Q .V . . .
15.783 0.8219 3.00 . .Q .V . . .
15.800 0.8261 3.06 . .Q .V . . .
15.817 0.8304 3.12 . .Q .V . . .
15.833 0.8348 3.18 . .Q .V . . .
15.850 0.8392 3.24 . .Q .V . . .
15.867 0.8438 3.29 . . Q .V . . .
15.883 0.8484 3.35 . . Q . V . . .
15.900 0.8531 3.41 . . Q . V . . .
15.917 0.8579 3.47 . . Q . V . . .
15.933 0.8627 3.53 . . Q . V . . .
15.950 0.8677 3.58 . . Q . V . . .
15.967 0.8727 3.64 . . Q . V . . .
15.983 0.8778 3.70 . . Q . V . . .
16.000 0.8830 3.76 . . Q . V . . .
16.017 0.8886 4.06 . . Q . V . . .
16.033 0.8949 4.61 . . Q . V . . .
16.050 0.9020 5.16 . . Q . V . . .
16.067 0.9099 5.71 . . Q V . . .
16.083 0.9185 6.26 . . . Q . . .
16.100 0.9279 6.81 . . . VQ . . .
16.117 0.9380 7.36 . . . V Q . . .
16.133 0.9489 7.91 . . . V Q. . .
16.150 0.9606 8.46 . . . V .Q . .
16.167 0.9730 9.01 . . . V . Q . .
16.183 0.9862 9.56 . . . V . Q . .
16.200 1.0001 10.11 . . . V . Q . .
16.217 1.0151 10.89 . . . V . Q
16.233 1.0296 10.52 . . . V . Q .
16.250 1.0432 9.89 . . . V . Q .
16.267 1.0560 9.26 . . . V . Q .
16.283 1.0679 8.63 . . . V .Q .
16.300 1.0789 8.01 . . . VQ. .
16.317 1.0891 7.38 . . . QV . .
16.333 1.0984 6.75 . . . Q V . .
16.350 1.1068 6.12 . . . Q V . .
16.367 1.1144 5.49 . . Q V . .
16.383 1.1211 4.87 . . Q . V. .
16.400 1.1269 4.24 . . Q . V. .
16.417 1.1319 3.61 . . Q . V. .
16.433 1.1360 2.99 . . Q . V. .
16.450 1.1397 2.71 . . Q. . V. .

16.467	1.1433	2.61	.	Q.	.	V.	.		
16.483	1.1468	2.51	.	Q.	.	V.	.		
16.500	1.1501	2.40	.	Q	.	V.	.		
16.517	1.1533	2.30	.	Q	.	V.	.		
16.533	1.1563	2.20	.	Q	.	V	.		
16.550	1.1592	2.10	.	Q	.	V	.		
16.567	1.1619	1.99	.	Q	.	V	.		
16.583	1.1645	1.89	.	Q	.	V	.		
16.600	1.1670	1.79	.	Q	.	V	.		
16.617	1.1693	1.69	.	Q	.	V	.		
16.633	1.1715	1.58	.	Q	.	V	.		
16.650	1.1736	1.49	.	Q	.	V	.		
16.667	1.1755	1.44	.	Q	.	V	.		
16.683	1.1775	1.42	.	Q	.	V	.		
16.700	1.1794	1.40	.	Q	.	V	.		
16.717	1.1813	1.38	.	Q	.	V	.		
16.733	1.1832	1.36	.	Q	.	V	.		
16.750	1.1850	1.33	.	Q	.	V	.		
16.767	1.1868	1.31	.	Q	.	V	.		
16.783	1.1886	1.29	.	Q	.	V	.		
16.800	1.1904	1.27	.	Q	.	V	.		
16.817	1.1921	1.25	.	Q	.	V	.		
16.833	1.1938	1.23	.	Q	.	.V	.		
16.850	1.1954	1.20	.	Q	.	.V	.		
16.867	1.1971	1.18	.	Q	.	.V	.		
16.883	1.1987	1.17	.	Q	.	.V	.		
16.900	1.2003	1.16	.	Q	.	.V	.		
16.917	1.2018	1.14	.	Q	.	.V	.		
16.933	1.2034	1.13	.	Q	.	.V	.		
16.950	1.2049	1.12	.	Q	.	.V	.		
16.967	1.2065	1.10	.	Q	.	.V	.		
16.983	1.2080	1.09	.	Q	.	.V	.		
17.000	1.2094	1.08	.	Q	.	.V	.		
17.017	1.2109	1.07	.	Q	.	.V	.		
17.033	1.2124	1.05	.	Q	.	.V	.		
17.050	1.2138	1.04	.	Q	.	.V	.		
17.067	1.2152	1.03	.	Q	.	.V	.		
17.083	1.2166	1.01	.	Q	.	.V	.		
17.100	1.2180	1.01	.	Q	.	.V	.		
17.117	1.2194	1.01	.	Q	.	.V	.		
17.133	1.2208	1.00	.	Q	.	.V	.		
17.150	1.2221	1.00	.	Q	.	.V	.		
17.167	1.2235	1.00	.	Q	.	.V	.		
17.183	1.2249	0.99	.	Q	.	.V	.		
17.200	1.2262	0.99	.	Q	.	.V	.		
17.217	1.2276	0.98	.	Q	.	.V	.		
17.233	1.2289	0.98	.	Q	.	.V	.		
17.250	1.2303	0.98	.	Q	.	.V	.		
17.267	1.2316	0.97	.	Q	.	.V	.		
17.283	1.2330	0.97	.	Q	.	. V	.		
17.300	1.2343	0.97	.	Q	.	. V	.		
17.317	1.2356	0.96	.	Q	.	. V	.		
17.333	1.2369	0.95	.	Q	.	. V	.		
17.350	1.2382	0.95	.	Q	.	. V	.		
17.367	1.2395	0.94	.	Q	.	. V	.		
17.383	1.2408	0.93	.	Q	.	. V	.		
17.400	1.2421	0.93	.	Q	.	. V	.		
17.417	1.2434	0.92	.	Q	.	. V	.		
17.433	1.2446	0.91	.	Q	.	. V	.		
17.450	1.2459	0.91	.	Q	.	.	. V	.	
17.467	1.2471	0.90	.	Q	.	.	. V	.	
17.483	1.2483	0.89	.	Q	.	.	. V	.	
17.500	1.2496	0.89	.	Q	.	.	. V	.	
17.517	1.2508	0.88	.	Q	.	.	. V	.	
17.533	1.2520	0.88	.	Q	.	.	. V	.	
17.550	1.2532	0.87	.	Q	.	.	. V	.	
17.567	1.2544	0.86	.	Q	.	.	. V	.	
17.583	1.2555	0.86	.	Q	.	.	. V	.	
17.600	1.2567	0.85	.	Q	.	.	. V	.	
17.617	1.2579	0.85	.	Q	.	.	. V	.	
17.633	1.2591	0.84	.	Q	.	.	. V	.	
17.650	1.2602	0.84	.	Q	.	.	. V	.	
17.667	1.2614	0.83	.	Q	.	.	. V	.	
17.683	1.2625	0.83	.	Q	.	.	. V	.	
17.700	1.2636	0.82	.	Q	.	.	. V	.	
17.717	1.2648	0.82	.	Q	.	.	. V	.	
17.733	1.2659	0.81	.	Q	.	.	. V	.	
17.750	1.2670	0.81	.	Q	.	.	. V	.	
17.767	1.2681	0.80	.	Q	.	.	. V	.	
17.783	1.2692	0.80	.	Q	.	.	. V	.	
17.800	1.2703	0.80	.	Q	.	.	. V	.	
17.817	1.2714	0.79	.	Q	.	.	. V	.	
17.833	1.2725	0.79	.	Q	.	.	. V	.	
17.850	1.2736	0.78	.	Q	.	.	. V	.	
17.867	1.2746	0.78	.	Q	.	.	. V	.	
17.883	1.2757	0.78	.	Q	.	.	. V	.	
17.900	1.2768	0.77	.	Q	.	.	. V	.	
17.917	1.2778	0.77	.	Q	.	.	. V	.	
17.933	1.2789	0.76	.	Q	.	.	. V	.	
17.950	1.2799	0.76	.	Q	.	.	. V	.	
17.967	1.2810	0.76	.	Q	.	.	. V	.	
17.983	1.2820	0.75	.	Q	.	.	. V	.	
18.000	1.2830	0.75	.	Q	.	.	. V	.	
18.017	1.2841	0.75	.	Q	.	.	. V	.	
18.033	1.2851	0.74	.	Q	.	.	. V	.	
18.050	1.2861	0.74	.	Q	.	.	. V	.	
18.067	1.2871	0.74	.	Q	.	.	. V	.	
18.083	1.2881	0.73	.	Q	.	.	. V	.	
18.100	1.2891	0.73	.	Q	.	.	. V	.	
18.117	1.2901	0.73	.	Q	.	.	. V	.	
18.133	1.2911	0.72	.	Q	.	.	. V	.	
18.150	1.2921	0.72	.	Q	.	.	. V	.	
18.167	1.2931	0.72	.	Q	.	.	. V	.	
18.183	1.2941	0.72	.	Q	.	.	. V	.	
18.200	1.2951	0.72	.	Q	.	.	. V	.	
18.217	1.2961	0.72	.	Q	.	.	. V	.	
18.233	1.2971	0.71	.	Q	.	.	. V	.	
18.250	1.2980	0.71	.	Q	.	.	. V	.	
18.267	1.2990	0.71	.	Q	.	.	. V	.	
18.283	1.3000	0.71	.	Q	.	.	. V	.	
18.300	1.3010	0.71	.	Q	.	.	. V	.	
18.317	1.3019	0.71	.	Q	.	.	. V	.	
18.333	1.3029	0.71	.	Q	.	.	. V	.	
18.350	1.3039	0.71	.	Q	.	.	. V	.	
18.367	1.3049	0.71	.	Q	.	.	. V	.	
18.383	1.3058	0.70	.	Q	.	.	. V	.	
18.400	1.3068	0.70	.	Q	.	.	. V	.	
18.417	1.3078	0.70	.	Q	.	.	. V	.	

18.433	1.3087	0.70	.	Q	.	.	.	V	.	
18.450	1.3097	0.69	.	Q	.	.	.	V	.	
18.467	1.3106	0.69	.	Q	.	.	.	V	.	
18.483	1.3116	0.69	.	Q	.	.	.	V	.	
18.500	1.3125	0.69	.	Q	.	.	.	V	.	
18.517	1.3135	0.68	.	Q	.	.	.	V	.	
18.533	1.3144	0.68	.	Q	.	.	.	V	.	
18.550	1.3154	0.68	.	Q	.	.	.	V	.	
18.567	1.3163	0.68	.	Q	.	.	.	V	.	
18.583	1.3172	0.67	.	Q	.	.	.	V	.	
18.600	1.3181	0.67	.	Q	.	.	.	V	.	
18.617	1.3191	0.67	.	Q	.	.	.	V	.	
18.633	1.3200	0.67	.	Q	.	.	.	V	.	
18.650	1.3209	0.67	.	Q	.	.	.	V	.	
18.667	1.3218	0.66	.	Q	.	.	.	V	.	
18.683	1.3227	0.66	.	Q	.	.	.	V	.	
18.700	1.3236	0.66	.	Q	.	.	.	V	.	
18.717	1.3245	0.66	.	Q	.	.	.	V	.	
18.733	1.3254	0.65	.	Q	.	.	.	V	.	
18.750	1.3263	0.65	.	Q	.	.	.	V	.	
18.767	1.3272	0.65	.	Q	.	.	.	V	.	
18.783	1.3281	0.65	.	Q	.	.	.	V	.	
18.800	1.3290	0.65	.	Q	.	.	.	V	.	
18.817	1.3299	0.64	.	Q	.	.	.	V	.	
18.833	1.3308	0.64	.	Q	.	.	.	V	.	
18.850	1.3317	0.64	.	Q	.	.	.	V	.	
18.867	1.3325	0.64	.	Q	.	.	.	V	.	
18.883	1.3334	0.64	.	Q	.	.	.	V	.	
18.900	1.3343	0.63	.	Q	.	.	.	V	.	
18.917	1.3352	0.63	.	Q	.	.	.	V	.	
18.933	1.3360	0.63	.	Q	.	.	.	V	.	
18.950	1.3369	0.63	.	Q	.	.	.	V	.	
18.967	1.3378	0.63	.	Q	.	.	.	V	.	
18.983	1.3386	0.62	.	Q	.	.	.	V	.	
19.000	1.3395	0.62	.	Q	.	.	.	V	.	
19.017	1.3403	0.62	.	Q	.	.	.	V	.	
19.033	1.3412	0.62	.	Q	.	.	.	V	.	
19.050	1.3420	0.62	.	Q	.	.	.	V	.	
19.067	1.3429	0.61	.	Q	.	.	.	V	.	
19.083	1.3437	0.61	.	Q	.	.	.	V	.	
19.100	1.3446	0.61	.	Q	.	.	.	V	.	
19.117	1.3454	0.61	.	Q	.	.	.	V	.	
19.133	1.3462	0.61	.	Q	.	.	.	V	.	
19.150	1.3471	0.61	.	Q	.	.	.	V	.	
19.167	1.3479	0.60	.	Q	.	.	.	V	.	
19.183	1.3487	0.60	.	Q	.	.	.	V	.	
19.200	1.3496	0.60	.	Q	.	.	.	V	.	
19.217	1.3504	0.60	.	Q	.	.	.	V	.	
19.233	1.3512	0.60	.	Q	.	.	.	V	.	
19.250	1.3520	0.60	.	Q	.	.	.	V	.	
19.267	1.3528	0.59	.	Q	.	.	.	V	.	
19.283	1.3537	0.59	.	Q	.	.	.	V	.	
19.300	1.3545	0.59	.	Q	.	.	.	V	.	
19.317	1.3553	0.59	.	Q	.	.	.	V	.	
19.333	1.3561	0.59	.	Q	.	.	.	V	.	
19.350	1.3569	0.59	.	Q	.	.	.	V	.	
19.367	1.3577	0.58	.	Q	.	.	.	V	.	
19.383	1.3585	0.58	.	Q	.	.	.	V	.	
19.400	1.3593	0.58	.	Q	.	.	.	V	.	
19.417	1.3601	0.58	.	Q	.	.	.	V	.	
19.433	1.3609	0.58	.	Q	.	.	.	V	.	
19.450	1.3617	0.58	.	Q	.	.	.	V	.	
19.467	1.3625	0.58	.	Q	.	.	.	V	.	
19.483	1.3633	0.57	.	Q	.	.	.	V	.	
19.500	1.3641	0.57	.	Q	.	.	.	V	.	
19.517	1.3649	0.57	.	Q	.	.	.	V	.	
19.533	1.3656	0.57	.	Q	.	.	.	V	.	
19.550	1.3664	0.57	.	Q	.	.	.	V	.	
19.567	1.3672	0.57	.	Q	.	.	.	V	.	
19.583	1.3680	0.57	.	Q	.	.	.	V	.	
19.600	1.3688	0.56	.	Q	.	.	.	V	.	
19.617	1.3695	0.56	.	Q	.	.	.	V	.	
19.633	1.3703	0.56	.	Q	.	.	.	V	.	
19.650	1.3711	0.56	.	Q	.	.	.	V	.	
19.667	1.3718	0.56	.	Q	.	.	.	V	.	
19.683	1.3726	0.56	.	Q	.	.	.	V	.	
19.700	1.3734	0.56	.	Q	.	.	.	V	.	
19.717	1.3741	0.55	.	Q	.	.	.	V	.	
19.733	1.3749	0.55	.	Q	.	.	.	V	.	
19.750	1.3757	0.55	.	Q	.	.	.	V	.	
19.767	1.3764	0.55	.	Q	.	.	.	V	.	
19.783	1.3772	0.55	.	Q	.	.	.	V	.	
19.800	1.3779	0.55	.	Q	.	.	.	V	.	
19.817	1.3787	0.55	.	Q	.	.	.	V	.	
19.833	1.3794	0.55	.	Q	.	.	.	V	.	
19.850	1.3802	0.54	.	Q	.	.	.	V	.	
19.867	1.3809	0.54	.	Q	.	.	.	V	.	
19.883	1.3817	0.54	.	Q	.	.	.	V	.	
19.900	1.3824	0.54	.	Q	.	.	.	V	.	
19.917	1.3832	0.54	.	Q	.	.	.	V	.	
19.933	1.3839	0.54	.	Q	.	.	.	V	.	
19.950	1.3846	0.54	.	Q	.	.	.	V	.	
19.967	1.3854	0.54	.	Q	.	.	.	V	.	
19.983	1.3861	0.53	.	Q	.	.	.	V	.	
20.000	1.3869	0.53	.	Q	.	.	.	V	.	
20.017	1.3876	0.53	.	Q	.	.	.	V	.	
20.033	1.3883	0.53	.	Q	.	.	.	V	.	
20.050	1.3890	0.53	.	Q	.	.	.	V	.	
20.067	1.3898	0.53	.	Q	.	.	.	V	.	
20.083	1.3905	0.53	.	Q	.	.	.	V	.	
20.100	1.3912	0.53	.	Q	.	.	.	V	.	
20.117	1.3919	0.52	.	Q	.	.	.	V	.	
20.133	1.3927	0.52	.	Q	.	.	.	V	.	
20.150	1.3934	0.52	.	Q	.	.	.	V	.	
20.167	1.3941	0.52	.	Q	.	.	.	V	.	
20.183	1.3948	0.52	.	Q	.	.	.	V	.	
20.200	1.3955	0.52	.	Q	.	.	.	V	.	
20.217	1.3963	0.52	.	Q	.	.	.	V	.	
20.233	1.3970	0.52	.	Q	.	.	.	V	.	
20.250	1.3977	0.52	.	Q	.	.	.	V	.	
20.267	1.3984	0.52	.	Q	.	.	.	V	.	
20.283	1.3991	0.51	.	Q	.	.	.	V	.	
20.300	1.3998	0.51	.	Q	.	.	.	V	.	
20.317	1.4005	0.51	.	Q	.	.	.	V	.	
20.333	1.4012	0.51	.	Q	.	.	.	V	.	
20.350	1.4019	0.51	.	Q	.	.	.	V	.	
20.367	1.4026	0.51	.	Q	.	.	.	V	.	
20.383	1.4033	0.51	.	Q	.	.	.	V	.	

20.400	1.4040	0.51	.Q	.	.	.	V	.
20.417	1.4047	0.51	.Q	.	.	.	V	.
20.433	1.4054	0.50	.Q	.	.	.	V	.
20.450	1.4061	0.50	.Q	.	.	.	V	.
20.467	1.4068	0.50	.Q	.	.	.	V	.
20.483	1.4075	0.50	.Q	.	.	.	V	.
20.500	1.4082	0.50	.Q	.	.	.	V	.
20.517	1.4089	0.50	.Q	.	.	.	V	.
20.533	1.4095	0.50	.Q	.	.	.	V	.
20.550	1.4102	0.50	.Q	.	.	.	V	.
20.567	1.4109	0.50	.Q	.	.	.	V	.
20.583	1.4116	0.50	.Q	.	.	.	V	.
20.600	1.4123	0.50	.Q	.	.	.	V	.
20.617	1.4130	0.49	.Q	.	.	.	V	.
20.633	1.4136	0.49	.Q	.	.	.	V	.
20.650	1.4143	0.49	.Q	.	.	.	V	.
20.667	1.4150	0.49	.Q	.	.	.	V	.
20.683	1.4157	0.49	.Q	.	.	.	V	.
20.700	1.4163	0.49	.Q	.	.	.	V	.
20.717	1.4170	0.49	.Q	.	.	.	V	.
20.733	1.4177	0.49	.Q	.	.	.	V	.
20.750	1.4184	0.49	.Q	.	.	.	V	.
20.767	1.4190	0.49	.Q	.	.	.	V	.
20.783	1.4197	0.48	.Q	.	.	.	V	.
20.800	1.4204	0.48	.Q	.	.	.	V	.
20.817	1.4210	0.48	.Q	.	.	.	V	.
20.833	1.4217	0.48	.Q	.	.	.	V	.
20.850	1.4224	0.48	.Q	.	.	.	V	.
20.867	1.4230	0.48	.Q	.	.	.	V	.
20.883	1.4237	0.48	.Q	.	.	.	V	.
20.900	1.4243	0.48	.Q	.	.	.	V	.
20.917	1.4250	0.48	.Q	.	.	.	V	.
20.933	1.4257	0.48	.Q	.	.	.	V	.
20.950	1.4263	0.48	.Q	.	.	.	V	.
20.967	1.4270	0.48	.Q	.	.	.	V	.
20.983	1.4276	0.47	.Q	.	.	.	V	.
21.000	1.4283	0.47	.Q	.	.	.	V	.
21.017	1.4289	0.47	.Q	.	.	.	V	.
21.033	1.4296	0.47	.Q	.	.	.	V	.
21.050	1.4302	0.47	.Q	.	.	.	V	.
21.067	1.4309	0.47	.Q	.	.	.	V	.
21.083	1.4315	0.47	.Q	.	.	.	V	.
21.100	1.4322	0.47	.Q	.	.	.	V	.
21.117	1.4328	0.47	.Q	.	.	.	V	.
21.133	1.4335	0.47	.Q	.	.	.	V	.
21.150	1.4341	0.47	.Q	.	.	.	V	.
21.167	1.4347	0.47	.Q	.	.	.	V	.
21.183	1.4354	0.46	.Q	.	.	.	V	.
21.200	1.4360	0.46	.Q	.	.	.	V	.
21.217	1.4367	0.46	.Q	.	.	.	V	.
21.233	1.4373	0.46	.Q	.	.	.	V	.
21.250	1.4379	0.46	.Q	.	.	.	V	.
21.267	1.4386	0.46	.Q	.	.	.	V	.
21.283	1.4392	0.46	.Q	.	.	.	V	.
21.300	1.4398	0.46	.Q	.	.	.	V	.
21.317	1.4405	0.46	.Q	.	.	.	V	.
21.333	1.4411	0.46	.Q	.	.	.	V	.
21.350	1.4417	0.46	.Q	.	.	.	V	.
21.367	1.4424	0.46	.Q	.	.	.	V	.
21.383	1.4430	0.46	.Q	.	.	.	V	.
21.400	1.4436	0.45	.Q	.	.	.	V	.
21.417	1.4442	0.45	.Q	.	.	.	V	.
21.433	1.4449	0.45	.Q	.	.	.	V	.
21.450	1.4455	0.45	.Q	.	.	.	V	.
21.467	1.4461	0.45	.Q	.	.	.	V	.
21.483	1.4467	0.45	.Q	.	.	.	V	.
21.500	1.4473	0.45	.Q	.	.	.	V	.
21.517	1.4480	0.45	.Q	.	.	.	V	.
21.533	1.4486	0.45	.Q	.	.	.	V	.
21.550	1.4492	0.45	.Q	.	.	.	V	.
21.567	1.4498	0.45	.Q	.	.	.	V	.
21.583	1.4504	0.45	.Q	.	.	.	V	.
21.600	1.4510	0.45	.Q	.	.	.	V	.
21.617	1.4517	0.45	.Q	.	.	.	V	.
21.633	1.4523	0.44	.Q	.	.	.	V	.
21.650	1.4529	0.44	.Q	.	.	.	V	.
21.667	1.4535	0.44	.Q	.	.	.	V	.
21.683	1.4541	0.44	.Q	.	.	.	V	.
21.700	1.4547	0.44	.Q	.	.	.	V	.
21.717	1.4553	0.44	.Q	.	.	.	V	.
21.733	1.4559	0.44	.Q	.	.	.	V	.
21.750	1.4565	0.44	.Q	.	.	.	V	.
21.767	1.4571	0.44	.Q	.	.	.	V	.
21.783	1.4578	0.44	.Q	.	.	.	V	.
21.800	1.4584	0.44	.Q	.	.	.	V	.
21.817	1.4590	0.44	.Q	.	.	.	V	.
21.833	1.4596	0.44	.Q	.	.	.	V	.
21.850	1.4602	0.44	.Q	.	.	.	V	.
21.867	1.4608	0.44	.Q	.	.	.	V	.
21.883	1.4614	0.44	.Q	.	.	.	V	.
21.900	1.4620	0.43	.Q	.	.	.	V	.
21.917	1.4626	0.43	.Q	.	.	.	V	.
21.933	1.4632	0.43	.Q	.	.	.	V	.
21.950	1.4637	0.43	.Q	.	.	.	V	.
21.967	1.4643	0.43	.Q	.	.	.	V	.
21.983	1.4649	0.43	.Q	.	.	.	V	.
22.000	1.4655	0.43	.Q	.	.	.	V	.
22.017	1.4661	0.43	.Q	.	.	.	V	.
22.033	1.4667	0.43	.Q	.	.	.	V	.
22.050	1.4673	0.43	.Q	.	.	.	V	.
22.067	1.4679	0.43	.Q	.	.	.	V	.
22.083	1.4685	0.43	.Q	.	.	.	V	.
22.100	1.4691	0.43	.Q	.	.	.	V	.
22.117	1.4697	0.43	.Q	.	.	.	V	.
22.133	1.4702	0.43	.Q	.	.	.	V	.
22.150	1.4708	0.43	.Q	.	.	.	V	.
22.167	1.4714	0.42	.Q	.	.	.	V	.
22.183	1.4720	0.42	.Q	.	.	.	V	.
22.200	1.4726	0.42	.Q	.	.	.	V	.
22.217	1.4732	0.42	.Q	.	.	.	V	.
22.233	1.4737	0.42	.Q	.	.	.	V	.
22.250	1.4743	0.42	.Q	.	.	.	V	.
22.267	1.4749	0.42	.Q	.	.	.	V	.
22.283	1.4755	0.42	.Q	.	.	.	V	.
22.300	1.4761	0.42	.Q	.	.	.	V	.
22.317	1.4766	0.42	.Q	.	.	.	V	.
22.333	1.4772	0.42	.Q	.	.	.	V	.
22.350	1.4778	0.42	.Q	.	.	.	V	.

22.367	1.4784	0.42	.Q	.	.	.	V .
22.383	1.4789	0.42	.Q	.	.	.	V .
22.400	1.4795	0.42	.Q	.	.	.	V .
22.417	1.4801	0.42	.Q	.	.	.	V .
22.433	1.4807	0.42	.Q	.	.	.	V .
22.450	1.4812	0.41	.Q	.	.	.	V .
22.467	1.4818	0.41	.Q	.	.	.	V .
22.483	1.4824	0.41	.Q	.	.	.	V .
22.500	1.4829	0.41	.Q	.	.	.	V .
22.517	1.4835	0.41	.Q	.	.	.	V .
22.533	1.4841	0.41	.Q	.	.	.	V .
22.550	1.4846	0.41	.Q	.	.	.	V .
22.567	1.4852	0.41	.Q	.	.	.	V .
22.583	1.4858	0.41	.Q	.	.	.	V .
22.600	1.4863	0.41	.Q	.	.	.	V .
22.617	1.4869	0.41	.Q	.	.	.	V .
22.633	1.4875	0.41	.Q	.	.	.	V .
22.650	1.4880	0.41	.Q	.	.	.	V .
22.667	1.4886	0.41	.Q	.	.	.	V .
22.683	1.4891	0.41	.Q	.	.	.	V .
22.700	1.4897	0.41	.Q	.	.	.	V .
22.717	1.4903	0.41	.Q	.	.	.	V .
22.733	1.4908	0.41	.Q	.	.	.	V .
22.750	1.4914	0.40	.Q	.	.	.	V .
22.767	1.4919	0.40	.Q	.	.	.	V .
22.783	1.4925	0.40	.Q	.	.	.	V .
22.800	1.4930	0.40	.Q	.	.	.	V .
22.817	1.4936	0.40	.Q	.	.	.	V .
22.833	1.4942	0.40	.Q	.	.	.	V .
22.850	1.4947	0.40	.Q	.	.	.	V .
22.867	1.4953	0.40	.Q	.	.	.	V .
22.883	1.4958	0.40	.Q	.	.	.	V .
22.900	1.4964	0.40	.Q	.	.	.	V .
22.917	1.4969	0.40	.Q	.	.	.	V .
22.933	1.4975	0.40	.Q	.	.	.	V .
22.950	1.4980	0.40	.Q	.	.	.	V .
22.967	1.4986	0.40	.Q	.	.	.	V .
22.983	1.4991	0.40	.Q	.	.	.	V .
23.000	1.4997	0.40	.Q	.	.	.	V .
23.017	1.5002	0.40	.Q	.	.	.	V .
23.033	1.5008	0.40	.Q	.	.	.	V .
23.050	1.5013	0.40	.Q	.	.	.	V .
23.067	1.5018	0.40	.Q	.	.	.	V.
23.083	1.5024	0.39	.Q	.	.	.	V.
23.100	1.5029	0.39	.Q	.	.	.	V.
23.117	1.5035	0.39	.Q	.	.	.	V.
23.133	1.5040	0.39	.Q	.	.	.	V.
23.150	1.5046	0.39	.Q	.	.	.	V.
23.167	1.5051	0.39	.Q	.	.	.	V.
23.183	1.5056	0.39	.Q	.	.	.	V.
23.200	1.5062	0.39	.Q	.	.	.	V.
23.217	1.5067	0.39	.Q	.	.	.	V.
23.233	1.5073	0.39	.Q	.	.	.	V.
23.250	1.5078	0.39	.Q	.	.	.	V.
23.267	1.5083	0.39	.Q	.	.	.	V.
23.283	1.5089	0.39	.Q	.	.	.	V.
23.300	1.5094	0.39	.Q	.	.	.	V.
23.317	1.5099	0.39	.Q	.	.	.	V.
23.333	1.5105	0.39	.Q	.	.	.	V.
23.350	1.5110	0.39	.Q	.	.	.	V.
23.367	1.5115	0.39	.Q	.	.	.	V.
23.383	1.5121	0.39	.Q	.	.	.	V.
23.400	1.5126	0.39	.Q	.	.	.	V.
23.417	1.5131	0.39	.Q	.	.	.	V.
23.433	1.5137	0.39	.Q	.	.	.	V.
23.450	1.5142	0.38	.Q	.	.	.	V.
23.467	1.5147	0.38	.Q	.	.	.	V.
23.483	1.5152	0.38	.Q	.	.	.	V.
23.500	1.5158	0.38	.Q	.	.	.	V.
23.517	1.5163	0.38	.Q	.	.	.	V.
23.533	1.5168	0.38	.Q	.	.	.	V.
23.550	1.5174	0.38	.Q	.	.	.	V.
23.567	1.5179	0.38	.Q	.	.	.	V.
23.583	1.5184	0.38	.Q	.	.	.	V.
23.600	1.5189	0.38	.Q	.	.	.	V.
23.617	1.5195	0.38	.Q	.	.	.	V.
23.633	1.5200	0.38	.Q	.	.	.	V.
23.650	1.5205	0.38	.Q	.	.	.	V.
23.667	1.5210	0.38	.Q	.	.	.	V.
23.683	1.5215	0.38	.Q	.	.	.	V.
23.700	1.5221	0.38	.Q	.	.	.	V.
23.717	1.5226	0.38	.Q	.	.	.	V.
23.733	1.5231	0.38	.Q	.	.	.	V.
23.750	1.5236	0.38	.Q	.	.	.	V.
23.767	1.5241	0.38	.Q	.	.	.	V.
23.783	1.5247	0.38	.Q	.	.	.	V.
23.800	1.5252	0.38	.Q	.	.	.	V.
23.817	1.5257	0.38	.Q	.	.	.	V.
23.833	1.5262	0.37	.Q	.	.	.	V.
23.850	1.5267	0.37	.Q	.	.	.	V.
23.867	1.5272	0.37	.Q	.	.	.	V.
23.883	1.5278	0.37	.Q	.	.	.	V.
23.900	1.5283	0.37	.Q	.	.	.	V.
23.917	1.5288	0.37	.Q	.	.	.	V.
23.933	1.5293	0.37	.Q	.	.	.	V.
23.950	1.5298	0.37	.Q	.	.	.	V.
23.967	1.5303	0.37	.Q	.	.	.	V.
23.983	1.5308	0.37	.Q	.	.	.	V.
24.000	1.5313	0.37	.Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1441.0
10%	715.0
20%	300.0
30%	170.0
40%	110.0
50%	95.0
60%	75.0
70%	55.0
80%	35.0
90%	20.0

```
****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================

           STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
       (Notes: Time indicated is at END of Each Unit Intervals.
               Peak 5-minute rainfall intensity is modeled as
               a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
   0.017      0.0000      0.00  Q        .         .         .         .
   0.033      0.0000      0.00  Q        .         .         .         .
   0.050      0.0000      0.00  Q        .         .         .         .
   0.067      0.0000      0.00  Q        .         .         .         .
   0.083      0.0000      0.00  Q        .         .         .         .
   0.100      0.0000      0.02  Q        .         .         .         .
   0.117      0.0001      0.05  Q        .         .         .         .
   0.133      0.0002      0.08  Q        .         .         .         .
   0.150      0.0004      0.11  Q        .         .         .         .
   0.167      0.0006      0.14  Q        .         .         .         .
   0.183      0.0008      0.17  Q        .         .         .         .
   0.200      0.0011      0.19  Q        .         .         .         .
   0.217      0.0014      0.22  Q        .         .         .         .
   0.233      0.0017      0.25  Q        .         .         .         .
   0.250      0.0021      0.28  Q        .         .         .         .
   0.267      0.0025      0.31  Q        .         .         .         .
   0.283      0.0030      0.34  Q        .         .         .         .
   0.300      0.0035      0.36  Q        .         .         .         .
   0.317      0.0040      0.37  Q        .         .         .         .
   0.333      0.0045      0.37  Q        .         .         .         .
   0.350      0.0050      0.37  Q        .         .         .         .
   0.367      0.0055      0.37  Q        .         .         .         .
   0.383      0.0060      0.37  Q        .         .         .         .
   0.400      0.0065      0.37  Q        .         .         .         .
   0.417      0.0070      0.37  Q        .         .         .         .
   0.433      0.0076      0.37  Q        .         .         .         .
   0.450      0.0081      0.37  Q        .         .         .         .
   0.467      0.0086      0.37  Q        .         .         .         .
   0.483      0.0091      0.37  Q        .         .         .         .
   0.500      0.0096      0.37  Q        .         .         .         .
   0.517      0.0101      0.37  Q        .         .         .         .
   0.533      0.0106      0.37  Q        .         .         .         .
   0.550      0.0111      0.37  Q        .         .         .         .
   0.567      0.0116      0.37  Q        .         .         .         .
   0.583      0.0121      0.37  Q        .         .         .         .
   0.600      0.0126      0.37  Q        .         .         .         .
   0.617      0.0132      0.37  Q        .         .         .         .
   0.633      0.0137      0.37  Q        .         .         .         .
   0.650      0.0142      0.37  Q        .         .         .         .
   0.667      0.0147      0.37  Q        .         .         .         .
   0.683      0.0152      0.37  Q        .         .         .         .
   0.700      0.0157      0.37  Q        .         .         .         .
   0.717      0.0162      0.37  Q        .         .         .         .
   0.733      0.0167      0.37  Q        .         .         .         .
   0.750      0.0173      0.37  Q        .         .         .         .
   0.767      0.0178      0.37  Q        .         .         .         .
   0.783      0.0183      0.37  Q        .         .         .         .
   0.800      0.0188      0.37  Q        .         .         .         .
   0.817      0.0193      0.37  Q        .         .         .         .
   0.833      0.0198      0.37  Q        .         .         .         .
   0.850      0.0204      0.37  Q        .         .         .         .
   0.867      0.0209      0.37  Q        .         .         .         .
   0.883      0.0214      0.37  Q        .         .         .         .
   0.900      0.0219      0.37  Q        .         .         .         .
   0.917      0.0224      0.37  Q        .         .         .         .
   0.933      0.0229      0.37  Q        .         .         .         .
   0.950      0.0234      0.37  Q        .         .         .         .
   0.967      0.0240      0.38  Q        .         .         .         .
   0.983      0.0245      0.38  Q        .         .         .         .
   1.000      0.0250      0.38  Q        .         .         .         .
   1.017      0.0255      0.38  Q        .         .         .         .
   1.033      0.0260      0.38  Q        .         .         .         .
   1.050      0.0266      0.38  Q        .         .         .         .
   1.067      0.0271      0.38  Q        .         .         .         .
   1.083      0.0276      0.38  Q        .         .         .         .
   1.100      0.0281      0.38  Q        .         .         .         .
   1.117      0.0286      0.38  Q        .         .         .         .
   1.133      0.0292      0.38  Q        .         .         .         .
   1.150      0.0297      0.38  Q        .         .         .         .
   1.167      0.0302      0.38  Q        .         .         .         .
   1.183      0.0307      0.38  Q        .         .         .         .
   1.200      0.0312      0.38  Q        .         .         .         .
   1.217      0.0318      0.38  Q        .         .         .         .
   1.233      0.0323      0.38  Q        .         .         .         .
   1.250      0.0328      0.38  Q        .         .         .         .
   1.267      0.0333      0.38  Q        .         .         .         .
   1.283      0.0339      0.38  Q        .         .         .         .
   1.300      0.0344      0.38  Q        .         .         .         .
   1.317      0.0349      0.38  Q        .         .         .         .
   1.333      0.0354      0.38  Q        .         .         .         .
   1.350      0.0359      0.38  Q        .         .         .         .
   1.367      0.0365      0.38  Q        .         .         .         .
   1.383      0.0370      0.38  Q        .         .         .         .
   1.400      0.0375      0.38  Q        .         .         .         .
   1.417      0.0380      0.38  Q        .         .         .         .
   1.433      0.0386      0.38  QV       .         .         .         .
   1.450      0.0391      0.38  QV       .         .         .         .
   1.467      0.0396      0.38  QV       .         .         .         .
   1.483      0.0401      0.38  QV       .         .         .         .
   1.500      0.0407      0.38  QV       .         .         .         .
   1.517      0.0412      0.38  QV       .         .         .         .
   1.533      0.0417      0.38  QV       .         .         .         .
   1.550      0.0423      0.38  QV       .         .         .         .
   1.567      0.0428      0.38  QV       .         .         .         .
   1.583      0.0433      0.38  QV       .         .         .         .
   1.600      0.0438      0.38  QV       .         .         .         .
   1.617      0.0444      0.38  QV       .         .         .         .
   1.633      0.0449      0.38  QV       .         .         .         .
   1.650      0.0454      0.38  QV       .         .         .         .
   1.667      0.0460      0.38  QV       .         .         .         .
   1.683      0.0465      0.38  QV       .         .         .         .
   1.700      0.0470      0.39  QV       .         .         .         .
   1.717      0.0476      0.39  QV       .         .         .         .
   1.733      0.0481      0.39  QV       .         .         .         .
```

1.750	0.0486	0.39	QV	.	.	.	.
1.767	0.0491	0.39	QV	.	.	.	.
1.783	0.0497	0.39	QV	.	.	.	.
1.800	0.0502	0.39	QV	.	.	.	.
1.817	0.0507	0.39	QV	.	.	.	.
1.833	0.0513	0.39	QV	.	.	.	.
1.850	0.0518	0.39	QV	.	.	.	.
1.867	0.0523	0.39	QV	.	.	.	.
1.883	0.0529	0.39	QV	.	.	.	.
1.900	0.0534	0.39	QV	.	.	.	.
1.917	0.0539	0.39	QV	.	.	.	.
1.933	0.0545	0.39	QV	.	.	.	.
1.950	0.0550	0.39	QV	.	.	.	.
1.967	0.0556	0.39	QV	.	.	.	.
1.983	0.0561	0.39	QV	.	.	.	.
2.000	0.0566	0.39	QV	.	.	.	.
2.017	0.0572	0.39	QV	.	.	.	.
2.033	0.0577	0.39	QV	.	.	.	.
2.050	0.0582	0.39	QV	.	.	.	.
2.067	0.0588	0.39	QV	.	.	.	.
2.083	0.0593	0.39	QV	.	.	.	.
2.100	0.0599	0.39	QV	.	.	.	.
2.117	0.0604	0.39	QV	.	.	.	.
2.133	0.0609	0.39	QV	.	.	.	.
2.150	0.0615	0.39	QV	.	.	.	.
2.167	0.0620	0.39	QV	.	.	.	.
2.183	0.0625	0.39	QV	.	.	.	.
2.200	0.0631	0.39	QV	.	.	.	.
2.217	0.0636	0.39	QV	.	.	.	.
2.233	0.0642	0.39	QV	.	.	.	.
2.250	0.0647	0.39	QV	.	.	.	.
2.267	0.0652	0.39	QV	.	.	.	.
2.283	0.0658	0.39	QV	.	.	.	.
2.300	0.0663	0.39	QV	.	.	.	.
2.317	0.0669	0.39	QV	.	.	.	.
2.333	0.0674	0.39	QV	.	.	.	.
2.350	0.0680	0.39	QV	.	.	.	.
2.367	0.0685	0.39	QV	.	.	.	.
2.383	0.0690	0.39	QV	.	.	.	.
2.400	0.0696	0.40	QV	.	.	.	.
2.417	0.0701	0.40	QV	.	.	.	.
2.433	0.0707	0.40	QV	.	.	.	.
2.450	0.0712	0.40	QV	.	.	.	.
2.467	0.0718	0.40	QV	.	.	.	.
2.483	0.0723	0.40	QV	.	.	.	.
2.500	0.0729	0.40	QV	.	.	.	.
2.517	0.0734	0.40	QV	.	.	.	.
2.533	0.0740	0.40	QV	.	.	.	.
2.550	0.0745	0.40	QV	.	.	.	.
2.567	0.0750	0.40	QV	.	.	.	.
2.583	0.0756	0.40	QV	.	.	.	.
2.600	0.0761	0.40	QV	.	.	.	.
2.617	0.0767	0.40	QV	.	.	.	.
2.633	0.0772	0.40	Q V	.	.	.	.
2.650	0.0778	0.40	Q V	.	.	.	.
2.667	0.0783	0.40	Q V	.	.	.	.
2.683	0.0789	0.40	Q V	.	.	.	.
2.700	0.0794	0.40	Q V	.	.	.	.
2.717	0.0800	0.40	Q V	.	.	.	.
2.733	0.0805	0.40	Q V	.	.	.	.
2.750	0.0811	0.40	Q V	.	.	.	.
2.767	0.0816	0.40	Q V	.	.	.	.
2.783	0.0822	0.40	Q V	.	.	.	.
2.800	0.0827	0.40	Q V	.	.	.	.
2.817	0.0833	0.40	Q V	.	.	.	.
2.833	0.0838	0.40	Q V	.	.	.	.
2.850	0.0844	0.40	Q V	.	.	.	.
2.867	0.0850	0.40	Q V	.	.	.	.
2.883	0.0855	0.40	Q V	.	.	.	.
2.900	0.0861	0.40	Q V	.	.	.	.
2.917	0.0866	0.40	Q V	.	.	.	.
2.933	0.0872	0.40	Q V	.	.	.	.
2.950	0.0877	0.40	Q V	.	.	.	.
2.967	0.0883	0.40	Q V	.	.	.	.
2.983	0.0888	0.40	Q V	.	.	.	.
3.000	0.0894	0.40	Q V	.	.	.	.
3.017	0.0900	0.40	Q V	.	.	.	.
3.033	0.0905	0.40	Q V	.	.	.	.
3.050	0.0911	0.40	Q V	.	.	.	.
3.067	0.0916	0.40	Q V	.	.	.	.
3.083	0.0922	0.40	Q V	.	.	.	.
3.100	0.0927	0.40	Q V	.	.	.	.
3.117	0.0933	0.41	Q V	.	.	.	.
3.133	0.0939	0.41	Q V	.	.	.	.
3.150	0.0944	0.41	Q V	.	.	.	.
3.167	0.0950	0.41	Q V	.	.	.	.
3.183	0.0955	0.41	Q V	.	.	.	.
3.200	0.0961	0.41	Q V	.	.	.	.
3.217	0.0967	0.41	Q V	.	.	.	.
3.233	0.0972	0.41	Q V	.	.	.	.
3.250	0.0978	0.41	Q V	.	.	.	.
3.267	0.0983	0.41	Q V	.	.	.	.
3.283	0.0989	0.41	Q V	.	.	.	.
3.300	0.0995	0.41	Q V	.	.	.	.
3.317	0.1000	0.41	Q V	.	.	.	.
3.333	0.1006	0.41	Q V	.	.	.	.
3.350	0.1012	0.41	Q V	.	.	.	.
3.367	0.1017	0.41	Q V	.	.	.	.
3.383	0.1023	0.41	Q V	.	.	.	.
3.400	0.1029	0.41	Q V	.	.	.	.
3.417	0.1034	0.41	Q V	.	.	.	.
3.433	0.1040	0.41	Q V	.	.	.	.
3.450	0.1046	0.41	Q V	.	.	.	.
3.467	0.1051	0.41	Q V	.	.	.	.
3.483	0.1057	0.41	Q V	.	.	.	.
3.500	0.1063	0.41	Q V	.	.	.	.
3.517	0.1068	0.41	Q V	.	.	.	.
3.533	0.1074	0.41	Q V	.	.	.	.
3.550	0.1080	0.41	Q V	.	.	.	.
3.567	0.1085	0.41	Q V	.	.	.	.
3.583	0.1091	0.41	Q V	.	.	.	.
3.600	0.1097	0.41	Q V	.	.	.	.
3.617	0.1102	0.41	Q V	.	.	.	.
3.633	0.1108	0.41	Q V	.	.	.	.
3.650	0.1114	0.41	Q V	.	.	.	.
3.667	0.1119	0.41	Q V	.	.	.	.
3.683	0.1125	0.42	Q V	.	.	.	.
3.700	0.1131	0.42	Q V	.	.	.	.

3.717	0.1137	0.42	Q	V	.	.	.	.
3.733	0.1142	0.42	Q	V	.	.	.	.
3.750	0.1148	0.42	Q	V	.	.	.	.
3.767	0.1154	0.42	Q	V	.	.	.	.
3.783	0.1160	0.42	Q	V	.	.	.	.
3.800	0.1165	0.42	Q	V	.	.	.	.
3.817	0.1171	0.42	Q	V	.	.	.	.
3.833	0.1177	0.42	Q	V	.	.	.	.
3.850	0.1183	0.42	Q	V	.	.	.	.
3.867	0.1188	0.42	Q	V	.	.	.	.
3.883	0.1194	0.42	Q	V	.	.	.	.
3.900	0.1200	0.42	Q	V	.	.	.	.
3.917	0.1206	0.42	Q	V	.	.	.	.
3.933	0.1211	0.42	Q	V	.	.	.	.
3.950	0.1217	0.42	Q	V	.	.	.	.
3.967	0.1223	0.42	Q	V	.	.	.	.
3.983	0.1229	0.42	Q	V	.	.	.	.
4.000	0.1235	0.42	Q	V	.	.	.	.
4.017	0.1240	0.42	Q	V	.	.	.	.
4.033	0.1246	0.42	Q	V	.	.	.	.
4.050	0.1252	0.42	Q	V	.	.	.	.
4.067	0.1258	0.42	Q	V	.	.	.	.
4.083	0.1264	0.42	Q	V	.	.	.	.
4.100	0.1269	0.42	Q	V	.	.	.	.
4.117	0.1275	0.42	Q	V	.	.	.	.
4.133	0.1281	0.42	Q	V	.	.	.	.
4.150	0.1287	0.42	Q	V	.	.	.	.
4.167	0.1293	0.42	Q	V	.	.	.	.
4.183	0.1299	0.42	Q	V	.	.	.	.
4.200	0.1304	0.42	Q	V	.	.	.	.
4.217	0.1310	0.42	Q	V	.	.	.	.
4.233	0.1316	0.42	Q	V	.	.	.	.
4.250	0.1322	0.42	Q	V	.	.	.	.
4.267	0.1328	0.43	Q	V	.	.	.	.
4.283	0.1334	0.43	Q	V	.	.	.	.
4.300	0.1340	0.43	Q	V	.	.	.	.
4.317	0.1345	0.43	Q	V	.	.	.	.
4.333	0.1351	0.43	Q	V	.	.	.	.
4.350	0.1357	0.43	Q	V	.	.	.	.
4.367	0.1363	0.43	Q	V	.	.	.	.
4.383	0.1369	0.43	Q	V	.	.	.	.
4.400	0.1375	0.43	Q	V	.	.	.	.
4.417	0.1381	0.43	Q	V	.	.	.	.
4.433	0.1387	0.43	Q	V	.	.	.	.
4.450	0.1392	0.43	Q	V	.	.	.	.
4.467	0.1398	0.43	Q	V	.	.	.	.
4.483	0.1404	0.43	Q	V	.	.	.	.
4.500	0.1410	0.43	Q	V	.	.	.	.
4.517	0.1416	0.43	Q	V	.	.	.	.
4.533	0.1422	0.43	Q	V	.	.	.	.
4.550	0.1428	0.43	Q	V	.	.	.	.
4.567	0.1434	0.43	Q	V	.	.	.	.
4.583	0.1440	0.43	Q	V	.	.	.	.
4.600	0.1446	0.43	Q	V	.	.	.	.
4.617	0.1452	0.43	Q	V	.	.	.	.
4.633	0.1458	0.43	Q	V	.	.	.	.
4.650	0.1464	0.43	Q	V	.	.	.	.
4.667	0.1470	0.43	Q	V	.	.	.	.
4.683	0.1476	0.43	Q	V	.	.	.	.
4.700	0.1481	0.43	Q	V	.	.	.	.
4.717	0.1487	0.43	Q	V	.	.	.	.
4.733	0.1493	0.43	Q	V	.	.	.	.
4.750	0.1499	0.43	Q	V	.	.	.	.
4.767	0.1505	0.43	Q	V	.	.	.	.
4.783	0.1511	0.43	Q	V	.	.	.	.
4.800	0.1517	0.43	Q	V	.	.	.	.
4.817	0.1523	0.43	Q	V	.	.	.	.
4.833	0.1529	0.44	Q	V	.	.	.	.
4.850	0.1535	0.44	Q	V	.	.	.	.
4.867	0.1541	0.44	Q	V	.	.	.	.
4.883	0.1547	0.44	Q	V	.	.	.	.
4.900	0.1553	0.44	Q	V	.	.	.	.
4.917	0.1559	0.44	Q	V	.	.	.	.
4.933	0.1565	0.44	Q	V	.	.	.	.
4.950	0.1571	0.44	Q	V	.	.	.	.
4.967	0.1577	0.44	Q	V	.	.	.	.
4.983	0.1584	0.44	Q	V	.	.	.	.
5.000	0.1590	0.44	Q	V	.	.	.	.
5.017	0.1596	0.44	Q	V	.	.	.	.
5.033	0.1602	0.44	Q	V	.	.	.	.
5.050	0.1608	0.44	Q	V	.	.	.	.
5.067	0.1614	0.44	Q	V	.	.	.	.
5.083	0.1620	0.44	Q	V	.	.	.	.
5.100	0.1626	0.44	Q	V	.	.	.	.
5.117	0.1632	0.44	Q	V	.	.	.	.
5.133	0.1638	0.44	Q	V	.	.	.	.
5.150	0.1644	0.44	Q	V	.	.	.	.
5.167	0.1650	0.44	Q	V	.	.	.	.
5.183	0.1656	0.44	Q	V	.	.	.	.
5.200	0.1663	0.44	Q	V	.	.	.	.
5.217	0.1669	0.44	Q	V	.	.	.	.
5.233	0.1675	0.44	Q	V	.	.	.	.
5.250	0.1681	0.44	Q	V	.	.	.	.
5.267	0.1687	0.44	Q	V	.	.	.	.
5.283	0.1693	0.44	Q	V	.	.	.	.
5.300	0.1699	0.44	Q	V	.	.	.	.
5.317	0.1705	0.45	Q	V	.	.	.	.
5.333	0.1711	0.45	Q	V	.	.	.	.
5.350	0.1718	0.45	Q	V	.	.	.	.
5.367	0.1724	0.45	Q	V	.	.	.	.
5.383	0.1730	0.45	Q	V	.	.	.	.
5.400	0.1736	0.45	Q	V	.	.	.	.
5.417	0.1742	0.45	Q	V	.	.	.	.
5.433	0.1748	0.45	Q	V	.	.	.	.
5.450	0.1755	0.45	Q	V	.	.	.	.
5.467	0.1761	0.45	Q	V	.	.	.	.
5.483	0.1767	0.45	Q	V	.	.	.	.
5.500	0.1773	0.45	Q	V	.	.	.	.
5.517	0.1779	0.45	Q	V	.	.	.	.
5.533	0.1786	0.45	Q	V	.	.	.	.
5.550	0.1792	0.45	Q	V	.	.	.	.
5.567	0.1798	0.45	Q	V	.	.	.	.
5.583	0.1804	0.45	Q	V	.	.	.	.
5.600	0.1810	0.45	Q	V	.	.	.	.
5.617	0.1817	0.45	Q	V	.	.	.	.
5.633	0.1823	0.45	Q	V	.	.	.	.
5.650	0.1829	0.45	Q	V	.	.	.	.
5.667	0.1835	0.45	Q	V	.	.	.	.

5.683	0.1842	0.45	Q	V	.	.	.	.
5.700	0.1848	0.45	Q	V	.	.	.	.
5.717	0.1854	0.45	Q	V	.	.	.	.
5.733	0.1860	0.45	Q	V	.	.	.	.
5.750	0.1867	0.45	Q	V	.	.	.	.
5.767	0.1873	0.45	Q	V	.	.	.	.
5.783	0.1879	0.46	Q	V	.	.	.	.
5.800	0.1885	0.46	Q	V	.	.	.	.
5.817	0.1892	0.46	Q	V	.	.	.	.
5.833	0.1898	0.46	Q	V	.	.	.	.
5.850	0.1904	0.46	Q	V	.	.	.	.
5.867	0.1911	0.46	Q	V	.	.	.	.
5.883	0.1917	0.46	Q	V	.	.	.	.
5.900	0.1923	0.46	Q	V	.	.	.	.
5.917	0.1930	0.46	Q	V	.	.	.	.
5.933	0.1936	0.46	Q	V	.	.	.	.
5.950	0.1942	0.46	Q	V	.	.	.	.
5.967	0.1948	0.46	Q	V	.	.	.	.
5.983	0.1955	0.46	Q	V	.	.	.	.
6.000	0.1961	0.46	Q	V	.	.	.	.
6.017	0.1968	0.46	Q	V	.	.	.	.
6.033	0.1974	0.46	Q	V	.	.	.	.
6.050	0.1980	0.46	Q	V	.	.	.	.
6.067	0.1987	0.46	Q	V	.	.	.	.
6.083	0.1993	0.46	Q	V	.	.	.	.
6.100	0.1999	0.46	Q	V	.	.	.	.
6.117	0.2006	0.46	Q	V	.	.	.	.
6.133	0.2012	0.46	Q	V	.	.	.	.
6.150	0.2018	0.46	Q	V	.	.	.	.
6.167	0.2025	0.46	Q	V	.	.	.	.
6.183	0.2031	0.46	Q	V	.	.	.	.
6.200	0.2038	0.46	Q	V	.	.	.	.
6.217	0.2044	0.47	Q	V	.	.	.	.
6.233	0.2050	0.47	Q	V	.	.	.	.
6.250	0.2057	0.47	Q	V	.	.	.	.
6.267	0.2063	0.47	Q	V	.	.	.	.
6.283	0.2070	0.47	Q	V	.	.	.	.
6.300	0.2076	0.47	Q	V	.	.	.	.
6.317	0.2083	0.47	Q	V	.	.	.	.
6.333	0.2089	0.47	Q	V	.	.	.	.
6.350	0.2096	0.47	Q	V	.	.	.	.
6.367	0.2102	0.47	Q	V	.	.	.	.
6.383	0.2108	0.47	Q	V	.	.	.	.
6.400	0.2115	0.47	Q	V	.	.	.	.
6.417	0.2121	0.47	Q	V	.	.	.	.
6.433	0.2128	0.47	Q	V	.	.	.	.
6.450	0.2134	0.47	Q	V	.	.	.	.
6.467	0.2141	0.47	Q	V	.	.	.	.
6.483	0.2147	0.47	Q	V	.	.	.	.
6.500	0.2154	0.47	Q	V	.	.	.	.
6.517	0.2160	0.47	Q	V	.	.	.	.
6.533	0.2167	0.47	Q	V	.	.	.	.
6.550	0.2173	0.47	Q	V	.	.	.	.
6.567	0.2180	0.47	Q	V	.	.	.	.
6.583	0.2186	0.47	Q	V	.	.	.	.
6.600	0.2193	0.47	Q	V	.	.	.	.
6.617	0.2199	0.47	Q	V	.	.	.	.
6.633	0.2206	0.48	Q	V	.	.	.	.
6.650	0.2213	0.48	Q	V	.	.	.	.
6.667	0.2219	0.48	Q	V	.	.	.	.
6.683	0.2226	0.48	Q	V	.	.	.	.
6.700	0.2232	0.48	Q	V	.	.	.	.
6.717	0.2239	0.48	Q	V	.	.	.	.
6.733	0.2245	0.48	Q	V	.	.	.	.
6.750	0.2252	0.48	Q	V	.	.	.	.
6.767	0.2259	0.48	Q	V	.	.	.	.
6.783	0.2265	0.48	Q	V	.	.	.	.
6.800	0.2272	0.48	Q	V	.	.	.	.
6.817	0.2279	0.48	Q	V	.	.	.	.
6.833	0.2285	0.48	Q	V	.	.	.	.
6.850	0.2292	0.48	Q	V	.	.	.	.
6.867	0.2298	0.48	Q	V	.	.	.	.
6.883	0.2305	0.48	Q	V	.	.	.	.
6.900	0.2312	0.48	Q	V	.	.	.	.
6.917	0.2318	0.48	Q	V	.	.	.	.
6.933	0.2325	0.48	Q	V	.	.	.	.
6.950	0.2332	0.48	Q	V	.	.	.	.
6.967	0.2338	0.48	Q	V	.	.	.	.
6.983	0.2345	0.48	Q	V	.	.	.	.
7.000	0.2352	0.48	Q	V	.	.	.	.
7.017	0.2358	0.48	Q	V	.	.	.	.
7.033	0.2365	0.49	Q	V	.	.	.	.
7.050	0.2372	0.49	Q	V	.	.	.	.
7.067	0.2378	0.49	Q	V	.	.	.	.
7.083	0.2385	0.49	Q	V	.	.	.	.
7.100	0.2392	0.49	Q	V	.	.	.	.
7.117	0.2399	0.49	Q	V	.	.	.	.
7.133	0.2405	0.49	Q	V	.	.	.	.
7.150	0.2412	0.49	Q	V	.	.	.	.
7.167	0.2419	0.49	Q	V	.	.	.	.
7.183	0.2426	0.49	Q	V	.	.	.	.
7.200	0.2432	0.49	Q	V	.	.	.	.
7.217	0.2439	0.49	Q	V	.	.	.	.
7.233	0.2446	0.49	Q	V	.	.	.	.
7.250	0.2453	0.49	Q	V	.	.	.	.
7.267	0.2459	0.49	Q	V	.	.	.	.
7.283	0.2466	0.49	Q	V	.	.	.	.
7.300	0.2473	0.49	Q	V	.	.	.	.
7.317	0.2480	0.49	Q	V	.	.	.	.
7.333	0.2487	0.49	Q	V	.	.	.	.
7.350	0.2493	0.49	Q	V	.	.	.	.
7.367	0.2500	0.49	Q	V	.	.	.	.
7.383	0.2507	0.49	Q	V	.	.	.	.
7.400	0.2514	0.50	Q	V	.	.	.	.
7.417	0.2521	0.50	Q	V	.	.	.	.
7.433	0.2528	0.50	Q	V	.	.	.	.
7.450	0.2534	0.50	Q	V	.	.	.	.
7.467	0.2541	0.50	Q	V	.	.	.	.
7.483	0.2548	0.50	Q	V	.	.	.	.
7.500	0.2555	0.50	Q	V	.	.	.	.
7.517	0.2562	0.50	Q	V	.	.	.	.
7.533	0.2569	0.50	.Q	V	.	.	.	.
7.550	0.2576	0.50	.Q	V	.	.	.	.
7.567	0.2583	0.50	.Q	V	.	.	.	.
7.583	0.2589	0.50	.Q	V	.	.	.	.
7.600	0.2596	0.50	.Q	V	.	.	.	.
7.617	0.2603	0.50	.Q	V	.	.	.	.
7.633	0.2610	0.50	.Q	V	.	.	.	.

7.650	0.2617	0.50	.Q	V	.	.	.	.
7.667	0.2624	0.50	.Q	V	.	.	.	.
7.683	0.2631	0.50	.Q	V	.	.	.	.
7.700	0.2638	0.51	.Q	V	.	.	.	.
7.717	0.2645	0.51	.Q	V	.	.	.	.
7.733	0.2652	0.51	.Q	V	.	.	.	.
7.750	0.2659	0.51	.Q	V	.	.	.	.
7.767	0.2666	0.51	.Q	V	.	.	.	.
7.783	0.2673	0.51	.Q	V	.	.	.	.
7.800	0.2680	0.51	.Q	V	.	.	.	.
7.817	0.2687	0.51	.Q	V	.	.	.	.
7.833	0.2694	0.51	.Q	V	.	.	.	.
7.850	0.2701	0.51	.Q	V	.	.	.	.
7.867	0.2708	0.51	.Q	V	.	.	.	.
7.883	0.2715	0.51	.Q	V	.	.	.	.
7.900	0.2722	0.51	.Q	V	.	.	.	.
7.917	0.2729	0.51	.Q	V	.	.	.	.
7.933	0.2736	0.51	.Q	V	.	.	.	.
7.950	0.2743	0.51	.Q	V	.	.	.	.
7.967	0.2750	0.51	.Q	V	.	.	.	.
7.983	0.2757	0.51	.Q	V	.	.	.	.
8.000	0.2764	0.51	.Q	V	.	.	.	.
8.017	0.2771	0.52	.Q	V	.	.	.	.
8.033	0.2779	0.52	.Q	V	.	.	.	.
8.050	0.2786	0.52	.Q	V	.	.	.	.
8.067	0.2793	0.52	.Q	V	.	.	.	.
8.083	0.2800	0.52	.Q	V	.	.	.	.
8.100	0.2807	0.52	.Q	V	.	.	.	.
8.117	0.2814	0.52	.Q	V	.	.	.	.
8.133	0.2821	0.52	.Q	V	.	.	.	.
8.150	0.2828	0.52	.Q	V	.	.	.	.
8.167	0.2836	0.52	.Q	V	.	.	.	.
8.183	0.2843	0.52	.Q	V	.	.	.	.
8.200	0.2850	0.52	.Q	V	.	.	.	.
8.217	0.2857	0.52	.Q	V	.	.	.	.
8.233	0.2864	0.52	.Q	V	.	.	.	.
8.250	0.2871	0.52	.Q	V	.	.	.	.
8.267	0.2879	0.52	.Q	V	.	.	.	.
8.283	0.2886	0.52	.Q	V	.	.	.	.
8.300	0.2893	0.52	.Q	V	.	.	.	.
8.317	0.2900	0.52	.Q	V	.	.	.	.
8.333	0.2907	0.52	.Q	V	.	.	.	.
8.350	0.2915	0.53	.Q	V	.	.	.	.
8.367	0.2922	0.53	.Q	V	.	.	.	.
8.383	0.2929	0.53	.Q	V	.	.	.	.
8.400	0.2936	0.53	.Q	V	.	.	.	.
8.417	0.2944	0.53	.Q	V	.	.	.	.
8.433	0.2951	0.53	.Q	V	.	.	.	.
8.450	0.2958	0.53	.Q	V	.	.	.	.
8.467	0.2966	0.53	.Q	V	.	.	.	.
8.483	0.2973	0.53	.Q	V	.	.	.	.
8.500	0.2980	0.53	.Q	V	.	.	.	.
8.517	0.2988	0.53	.Q	V	.	.	.	.
8.533	0.2995	0.53	.Q	V	.	.	.	.
8.550	0.3002	0.53	.Q	V	.	.	.	.
8.567	0.3010	0.53	.Q	V	.	.	.	.
8.583	0.3017	0.53	.Q	V	.	.	.	.
8.600	0.3024	0.53	.Q	V	.	.	.	.
8.617	0.3032	0.53	.Q	V	.	.	.	.
8.633	0.3039	0.53	.Q	V	.	.	.	.
8.650	0.3046	0.54	.Q	V	.	.	.	.
8.667	0.3054	0.54	.Q	V	.	.	.	.
8.683	0.3061	0.54	.Q	V	.	.	.	.
8.700	0.3069	0.54	.Q	V	.	.	.	.
8.717	0.3076	0.54	.Q	V	.	.	.	.
8.733	0.3083	0.54	.Q	V	.	.	.	.
8.750	0.3091	0.54	.Q	V	.	.	.	.
8.767	0.3098	0.54	.Q	V	.	.	.	.
8.783	0.3106	0.54	.Q	V	.	.	.	.
8.800	0.3113	0.54	.Q	V	.	.	.	.
8.817	0.3121	0.54	.Q	V	.	.	.	.
8.833	0.3128	0.54	.Q	V	.	.	.	.
8.850	0.3136	0.54	.Q	V	.	.	.	.
8.867	0.3143	0.54	.Q	V	.	.	.	.
8.883	0.3151	0.55	.Q	V	.	.	.	.
8.900	0.3158	0.55	.Q	V	.	.	.	.
8.917	0.3166	0.55	.Q	V	.	.	.	.
8.933	0.3173	0.55	.Q	V	.	.	.	.
8.950	0.3181	0.55	.Q	V	.	.	.	.
8.967	0.3188	0.55	.Q	V	.	.	.	.
8.983	0.3196	0.55	.Q	V	.	.	.	.
9.000	0.3204	0.55	.Q	V	.	.	.	.
9.017	0.3211	0.55	.Q	V	.	.	.	.
9.033	0.3219	0.55	.Q	V	.	.	.	.
9.050	0.3226	0.55	.Q	V	.	.	.	.
9.067	0.3234	0.55	.Q	V	.	.	.	.
9.083	0.3241	0.55	.Q	V	.	.	.	.
9.100	0.3249	0.55	.Q	V	.	.	.	.
9.117	0.3257	0.55	.Q	V	.	.	.	.
9.133	0.3264	0.55	.Q	V	.	.	.	.
9.150	0.3272	0.55	.Q	V	.	.	.	.
9.167	0.3280	0.55	.Q	V	.	.	.	.
9.183	0.3287	0.56	.Q	V	.	.	.	.
9.200	0.3295	0.56	.Q	V	.	.	.	.
9.217	0.3303	0.56	.Q	V	.	.	.	.
9.233	0.3310	0.56	.Q	V	.	.	.	.
9.250	0.3318	0.56	.Q	V	.	.	.	.
9.267	0.3326	0.56	.Q	V	.	.	.	.
9.283	0.3333	0.56	.Q	V	.	.	.	.
9.300	0.3341	0.56	.Q	V	.	.	.	.
9.317	0.3349	0.56	.Q	V	.	.	.	.
9.333	0.3357	0.56	.Q	V	.	.	.	.
9.350	0.3364	0.56	.Q	V	.	.	.	.
9.367	0.3372	0.56	.Q	V	.	.	.	.
9.383	0.3380	0.57	.Q	V	.	.	.	.
9.400	0.3388	0.57	.Q	V	.	.	.	.
9.417	0.3396	0.57	.Q	V	.	.	.	.
9.433	0.3403	0.57	.Q	V	.	.	.	.
9.450	0.3411	0.57	.Q	V	.	.	.	.
9.467	0.3419	0.57	.Q	V	.	.	.	.
9.483	0.3427	0.57	.Q	V	.	.	.	.
9.500	0.3435	0.57	.Q	V	.	.	.	.
9.517	0.3443	0.57	.Q	V	.	.	.	.
9.533	0.3450	0.57	.Q	V	.	.	.	.
9.550	0.3458	0.57	.Q	V	.	.	.	.
9.567	0.3466	0.57	.Q	V.	.	.	.	.
9.583	0.3474	0.57	.Q	V.	.	.	.	.
9.600	0.3482	0.57	.Q	V.	.	.	.	.

9.617	0.3490	0.57	.Q	V.	.	.	.
9.633	0.3498	0.58	.Q	V.	.	.	.
9.650	0.3506	0.58	.Q	V.	.	.	.
9.667	0.3514	0.58	.Q	V.	.	.	.
9.683	0.3522	0.58	.Q	V.	.	.	.
9.700	0.3530	0.58	.Q	V.	.	.	.
9.717	0.3538	0.58	.Q	V.	.	.	.
9.733	0.3546	0.58	.Q	V.	.	.	.
9.750	0.3554	0.58	.Q	V.	.	.	.
9.767	0.3562	0.58	.Q	V.	.	.	.
9.783	0.3570	0.58	.Q	V.	.	.	.
9.800	0.3578	0.58	.Q	V.	.	.	.
9.817	0.3586	0.58	.Q	V.	.	.	.
9.833	0.3594	0.59	.Q	V.	.	.	.
9.850	0.3602	0.59	.Q	V.	.	.	.
9.867	0.3610	0.59	.Q	V.	.	.	.
9.883	0.3618	0.59	.Q	V.	.	.	.
9.900	0.3626	0.59	.Q	V.	.	.	.
9.917	0.3634	0.59	.Q	V.	.	.	.
9.933	0.3642	0.59	.Q	V.	.	.	.
9.950	0.3650	0.59	.Q	V.	.	.	.
9.967	0.3659	0.59	.Q	V.	.	.	.
9.983	0.3667	0.59	.Q	V.	.	.	.
10.000	0.3675	0.59	.Q	V.	.	.	.
10.017	0.3683	0.59	.Q	V.	.	.	.
10.033	0.3691	0.59	.Q	V.	.	.	.
10.050	0.3699	0.59	.Q	V.	.	.	.
10.067	0.3708	0.60	.Q	V.	.	.	.
10.083	0.3716	0.60	.Q	V.	.	.	.
10.100	0.3724	0.60	.Q	V.	.	.	.
10.117	0.3732	0.60	.Q	V.	.	.	.
10.133	0.3740	0.60	.Q	V.	.	.	.
10.150	0.3749	0.60	.Q	V.	.	.	.
10.167	0.3757	0.60	.Q	V.	.	.	.
10.183	0.3765	0.60	.Q	V.	.	.	.
10.200	0.3774	0.60	.Q	V.	.	.	.
10.217	0.3782	0.60	.Q	V.	.	.	.
10.233	0.3790	0.61	.Q	V.	.	.	.
10.250	0.3799	0.61	.Q	V.	.	.	.
10.267	0.3807	0.61	.Q	V.	.	.	.
10.283	0.3815	0.61	.Q	V.	.	.	.
10.300	0.3824	0.61	.Q	V.	.	.	.
10.317	0.3832	0.61	.Q	V.	.	.	.
10.333	0.3841	0.61	.Q	V.	.	.	.
10.350	0.3849	0.61	.Q	V.	.	.	.
10.367	0.3857	0.61	.Q	V	.	.	.
10.383	0.3866	0.61	.Q	V	.	.	.
10.400	0.3874	0.61	.Q	V	.	.	.
10.417	0.3883	0.61	.Q	V	.	.	.
10.433	0.3891	0.61	.Q	V	.	.	.
10.450	0.3899	0.61	.Q	V	.	.	.
10.467	0.3908	0.62	.Q	V	.	.	.
10.483	0.3916	0.62	.Q	V	.	.	.
10.500	0.3925	0.62	.Q	V	.	.	.
10.517	0.3933	0.62	.Q	V	.	.	.
10.533	0.3942	0.62	.Q	V	.	.	.
10.550	0.3951	0.62	.Q	V	.	.	.
10.567	0.3959	0.62	.Q	V	.	.	.
10.583	0.3968	0.62	.Q	V	.	.	.
10.600	0.3976	0.63	.Q	V	.	.	.
10.617	0.3985	0.63	.Q	V	.	.	.
10.633	0.3994	0.63	.Q	V	.	.	.
10.650	0.4002	0.63	.Q	V	.	.	.
10.667	0.4011	0.63	.Q	V	.	.	.
10.683	0.4020	0.63	.Q	V	.	.	.
10.700	0.4028	0.63	.Q	V	.	.	.
10.717	0.4037	0.63	.Q	V	.	.	.
10.733	0.4046	0.63	.Q	V	.	.	.
10.750	0.4054	0.63	.Q	V	.	.	.
10.767	0.4063	0.63	.Q	V	.	.	.
10.783	0.4072	0.63	.Q	V	.	.	.
10.800	0.4081	0.63	.Q	V	.	.	.
10.817	0.4089	0.63	.Q	V	.	.	.
10.833	0.4098	0.64	.Q	V	.	.	.
10.850	0.4107	0.64	.Q	V	.	.	.
10.867	0.4116	0.64	.Q	V	.	.	.
10.883	0.4124	0.64	.Q	V	.	.	.
10.900	0.4133	0.64	.Q	V	.	.	.
10.917	0.4142	0.64	.Q	V	.	.	.
10.933	0.4151	0.64	.Q	V	.	.	.
10.950	0.4160	0.64	.Q	V	.	.	.
10.967	0.4169	0.65	.Q	V	.	.	.
10.983	0.4178	0.65	.Q	V	.	.	.
11.000	0.4187	0.65	.Q	V	.	.	.
11.017	0.4196	0.65	.Q	V	.	.	.
11.033	0.4205	0.65	.Q	V	.	.	.
11.050	0.4214	0.65	.Q	V	.	.	.
11.067	0.4223	0.65	.Q	V	.	.	.
11.083	0.4232	0.65	.Q	V	.	.	.
11.100	0.4241	0.66	.Q	.V	.	.	.
11.117	0.4250	0.66	.Q	.V	.	.	.
11.133	0.4259	0.66	.Q	.V	.	.	.
11.150	0.4268	0.66	.Q	.V	.	.	.
11.167	0.4277	0.66	.Q	.V	.	.	.
11.183	0.4286	0.66	.Q	.V	.	.	.
11.200	0.4295	0.66	.Q	.V	.	.	.
11.217	0.4304	0.66	.Q	.V	.	.	.
11.233	0.4313	0.66	.Q	.V	.	.	.
11.250	0.4322	0.66	.Q	.V	.	.	.
11.267	0.4331	0.66	.Q	.V	.	.	.
11.283	0.4341	0.66	.Q	.V	.	.	.
11.300	0.4350	0.67	.Q	.V	.	.	.
11.317	0.4359	0.67	.Q	.V	.	.	.
11.333	0.4368	0.67	.Q	.V	.	.	.
11.350	0.4377	0.67	.Q	.V	.	.	.
11.367	0.4387	0.67	.Q	.V	.	.	.
11.383	0.4396	0.67	.Q	.V	.	.	.
11.400	0.4405	0.68	.Q	.V	.	.	.
11.417	0.4415	0.68	.Q	.V	.	.	.
11.433	0.4424	0.68	.Q	.V	.	.	.
11.450	0.4433	0.68	.Q	.V	.	.	.
11.467	0.4443	0.68	.Q	.V	.	.	.
11.483	0.4452	0.68	.Q	.V	.	.	.
11.500	0.4461	0.68	.Q	.V	.	.	.
11.517	0.4471	0.69	.Q	.V	.	.	.
11.533	0.4480	0.69	.Q	.V	.	.	.
11.550	0.4490	0.69	.Q	.V	.	.	.
11.567	0.4499	0.69	.Q	.V	.	.	.

11.583	0.4509	0.69	.Q	.V	.	.	.
11.600	0.4518	0.69	.Q	.V	.	.	.
11.617	0.4528	0.69	.Q	.V	.	.	.
11.633	0.4537	0.69	.Q	.V	.	.	.
11.650	0.4547	0.69	.Q	.V	.	.	.
11.667	0.4556	0.69	.Q	.V	.	.	.
11.683	0.4566	0.69	.Q	.V	.	.	.
11.700	0.4575	0.69	.Q	.V	.	.	.
11.717	0.4585	0.70	.Q	.V	.	.	.
11.733	0.4595	0.70	.Q	.V	.	.	.
11.750	0.4604	0.70	.Q	.V	.	.	.
11.767	0.4614	0.70	.Q	.V	.	.	.
11.783	0.4624	0.70	.Q	. V	.	.	.
11.800	0.4633	0.70	.Q	. V	.	.	.
11.817	0.4643	0.71	.Q	. V	.	.	.
11.833	0.4653	0.71	.Q	. V	.	.	.
11.850	0.4663	0.71	.Q	. V	.	.	.
11.867	0.4672	0.71	.Q	. V	.	.	.
11.883	0.4682	0.71	.Q	. V	.	.	.
11.900	0.4692	0.72	.Q	. V	.	.	.
11.917	0.4702	0.72	.Q	. V	.	.	.
11.933	0.4712	0.72	.Q	. V	.	.	.
11.950	0.4722	0.72	.Q	. V	.	.	.
11.967	0.4732	0.72	.Q	. V	.	.	.
11.983	0.4742	0.72	.Q	. V	.	.	.
12.000	0.4752	0.72	.Q	. V	.	.	.
12.017	0.4762	0.72	.Q	. V	.	.	.
12.033	0.4772	0.72	.Q	. V	.	.	.
12.050	0.4782	0.73	.Q	. V	.	.	.
12.067	0.4792	0.73	.Q	. V	.	.	.
12.083	0.4802	0.73	.Q	. V	.	.	.
12.100	0.4812	0.73	.Q	. V	.	.	.
12.117	0.4822	0.73	.Q	. V	.	.	.
12.133	0.4832	0.73	.Q	. V	.	.	.
12.150	0.4842	0.73	.Q	. V	.	.	.
12.167	0.4852	0.73	.Q	. V	.	.	.
12.183	0.4862	0.73	.Q	. V	.	.	.
12.200	0.4872	0.73	.Q	. V	.	.	.
12.217	0.4882	0.73	.Q	. V	.	.	.
12.233	0.4892	0.73	.Q	. V	.	.	.
12.250	0.4902	0.73	.Q	. V	.	.	.
12.267	0.4912	0.73	.Q	. V	.	.	.
12.283	0.4922	0.73	.Q	. V	.	.	.
12.300	0.4932	0.73	.Q	. V	.	.	.
12.317	0.4942	0.73	.Q	. V	.	.	.
12.333	0.4952	0.73	.Q	. V	.	.	.
12.350	0.4963	0.73	.Q	. V	.	.	.
12.367	0.4973	0.73	.Q	. V	.	.	.
12.383	0.4983	0.73	.Q	. V	.	.	.
12.400	0.4993	0.73	.Q	. V	.	.	.
12.417	0.5003	0.73	.Q	. V	.	.	.
12.433	0.5013	0.74	.Q	. V	.	.	.
12.450	0.5023	0.74	.Q	. V	.	.	.
12.467	0.5033	0.74	.Q	. V	.	.	.
12.483	0.5043	0.74	.Q	. V	.	.	.
12.500	0.5054	0.74	.Q	. V	.	.	.
12.517	0.5064	0.74	.Q	. V	.	.	.
12.533	0.5074	0.74	.Q	. V	.	.	.
12.550	0.5084	0.74	.Q	. V	.	.	.
12.567	0.5095	0.74	.Q	. V	.	.	.
12.583	0.5105	0.75	.Q	. V	.	.	.
12.600	0.5115	0.75	.Q	. V	.	.	.
12.617	0.5126	0.75	.Q	. V	.	.	.
12.633	0.5136	0.75	.Q	. V	.	.	.
12.650	0.5146	0.76	.Q	. V	.	.	.
12.667	0.5157	0.76	.Q	. V	.	.	.
12.683	0.5167	0.76	.Q	. V	.	.	.
12.700	0.5178	0.76	.Q	. V	.	.	.
12.717	0.5188	0.77	.Q	. V	.	.	.
12.733	0.5199	0.77	.Q	. V	.	.	.
12.750	0.5210	0.77	.Q	. V	.	.	.
12.767	0.5220	0.77	.Q	. V	.	.	.
12.783	0.5231	0.78	.Q	. V	.	.	.
12.800	0.5242	0.78	.Q	. V	.	.	.
12.817	0.5253	0.78	.Q	. V	.	.	.
12.833	0.5263	0.78	.Q	. V	.	.	.
12.850	0.5274	0.78	.Q	. V	.	.	.
12.867	0.5285	0.78	.Q	. V	.	.	.
12.883	0.5296	0.79	.Q	. V	.	.	.
12.900	0.5307	0.79	.Q	. V	.	.	.
12.917	0.5317	0.79	.Q	. V	.	.	.
12.933	0.5328	0.79	.Q	. V	.	.	.
12.950	0.5339	0.79	.Q	. V	.	.	.
12.967	0.5350	0.79	.Q	. V	.	.	.
12.983	0.5361	0.79	.Q	. V	.	.	.
13.000	0.5372	0.80	.Q	. V	.	.	.
13.017	0.5383	0.80	.Q	. V	.	.	.
13.033	0.5394	0.80	.Q	. V	.	.	.
13.050	0.5405	0.80	.Q	. V	.	.	.
13.067	0.5416	0.81	.Q	. V	.	.	.
13.083	0.5427	0.81	.Q	. V	.	.	.
13.100	0.5439	0.81	.Q	. V	.	.	.
13.117	0.5450	0.82	.Q	. V	.	.	.
13.133	0.5461	0.82	.Q	. V	.	.	.
13.150	0.5472	0.82	.Q	. V	.	.	.
13.167	0.5484	0.83	.Q	. V	.	.	.
13.183	0.5495	0.83	.Q	. V	.	.	.
13.200	0.5507	0.83	.Q	. V	.	.	.
13.217	0.5518	0.84	.Q	. V	.	.	.
13.233	0.5530	0.84	.Q	. V	.	.	.
13.250	0.5541	0.84	.Q	. V	.	.	.
13.267	0.5553	0.84	.Q	. V	.	.	.
13.283	0.5565	0.84	.Q	. V	.	.	.
13.300	0.5576	0.84	.Q	. V	.	.	.
13.317	0.5588	0.85	.Q	. V	.	.	.
13.333	0.5599	0.85	.Q	. V	.	.	.
13.350	0.5611	0.85	.Q	. V	.	.	.
13.367	0.5623	0.85	.Q	. V	.	.	.
13.383	0.5635	0.85	.Q	. V	.	.	.
13.400	0.5646	0.85	.Q	. V	.	.	.
13.417	0.5658	0.86	.Q	. V	.	.	.
13.433	0.5670	0.86	.Q	. V	.	.	.
13.450	0.5682	0.86	.Q	. V	.	.	.
13.467	0.5694	0.87	.Q	. V	.	.	.
13.483	0.5706	0.87	.Q	. V	.	.	.
13.500	0.5718	0.87	.Q	. V	.	.	.
13.517	0.5730	0.88	.Q	. V	.	.	.
13.533	0.5742	0.88	.Q	. V	.	.	.

13.550	0.5754	0.89	.Q	.	V	.	.	.
13.567	0.5767	0.89	.Q	.	V	.	.	.
13.583	0.5779	0.89	.Q	.	V	.	.	.
13.600	0.5791	0.90	.Q	.	V	.	.	.
13.617	0.5804	0.90	.Q	.	V	.	.	.
13.633	0.5816	0.91	.Q	.	V	.	.	.
13.650	0.5829	0.91	.Q	.	V	.	.	.
13.667	0.5841	0.91	.Q	.	V	.	.	.
13.683	0.5854	0.91	.Q	.	V	.	.	.
13.700	0.5866	0.91	.Q	.	V	.	.	.
13.717	0.5879	0.92	.Q	.	V	.	.	.
13.733	0.5892	0.92	.Q	.	V	.	.	.
13.750	0.5904	0.92	.Q	.	V	.	.	.
13.767	0.5917	0.92	.Q	.	V	.	.	.
13.783	0.5930	0.93	.Q	.	V	.	.	.
13.800	0.5943	0.93	.Q	.	V	.	.	.
13.817	0.5955	0.93	.Q	.	V	.	.	.
13.833	0.5968	0.93	.Q	.	V	.	.	.
13.850	0.5981	0.93	.Q	.	V	.	.	.
13.867	0.5994	0.94	.Q	.	V	.	.	.
13.883	0.6007	0.94	.Q	.	V	.	.	.
13.900	0.6020	0.95	.Q	.	V	.	.	.
13.917	0.6033	0.95	.Q	.	V	.	.	.
13.933	0.6046	0.96	.Q	.	V	.	.	.
13.950	0.6060	0.96	.Q	.	V	.	.	.
13.967	0.6073	0.97	.Q	.	V	.	.	.
13.983	0.6086	0.97	.Q	.	V	.	.	.
14.000	0.6100	0.98	.Q	.	V	.	.	.
14.017	0.6114	0.98	.Q	.	V	.	.	.
14.033	0.6127	0.99	.Q	.	V	.	.	.
14.050	0.6141	0.99	.Q	.	V	.	.	.
14.067	0.6155	1.00	.Q	.	V	.	.	.
14.083	0.6168	1.00	.Q	.	V	.	.	.
14.100	0.6182	1.00	.Q	.	V	.	.	.
14.117	0.6196	1.00	.Q	.	V	.	.	.
14.133	0.6210	0.99	.Q	.	V	.	.	.
14.150	0.6223	0.99	.Q	.	V	.	.	.
14.167	0.6237	0.99	.Q	.	V	.	.	.
14.183	0.6250	0.99	.Q	.	V	.	.	.
14.200	0.6264	0.99	.Q	.	V	.	.	.
14.217	0.6278	0.98	.Q	.	V	.	.	.
14.233	0.6291	0.98	.Q	.	V	.	.	.
14.250	0.6305	0.98	.Q	.	V	.	.	.
14.267	0.6318	0.98	.Q	.	V	.	.	.
14.283	0.6331	0.97	.Q	.	V	.	.	.
14.300	0.6345	0.98	.Q	.	V	.	.	.
14.317	0.6358	0.99	.Q	.	V	.	.	.
14.333	0.6372	0.99	.Q	.	V	.	.	.
14.350	0.6386	1.00	.Q	.	V	.	.	.
14.367	0.6400	1.01	. Q	.	V	.	.	.
14.383	0.6414	1.01	. Q	.	V	.	.	.
14.400	0.6428	1.02	. Q	.	V	.	.	.
14.417	0.6442	1.03	. Q	.	V	.	.	.
14.433	0.6456	1.03	. Q	.	V	.	.	.
14.450	0.6470	1.04	. Q	.	V	.	.	.
14.467	0.6485	1.05	. Q	.	V	.	.	.
14.483	0.6499	1.05	. Q	.	V	.	.	.
14.500	0.6514	1.06	. Q	.	V	.	.	.
14.517	0.6529	1.06	. Q	.	V	.	.	.
14.533	0.6543	1.07	. Q	.	V	.	.	.
14.550	0.6558	1.07	. Q	.	V	.	.	.
14.567	0.6573	1.08	. Q	.	V	.	.	.
14.583	0.6588	1.08	. Q	.	V	.	.	.
14.600	0.6603	1.09	. Q	.	V	.	.	.
14.617	0.6618	1.09	. Q	.	V	.	.	.
14.633	0.6633	1.09	. Q	.	V	.	.	.
14.650	0.6648	1.10	. Q	.	V	.	.	.
14.667	0.6663	1.10	. Q	.	V	.	.	.
14.683	0.6678	1.11	. Q	.	V	.	.	.
14.700	0.6694	1.11	. Q	.	V	.	.	.
14.717	0.6709	1.12	. Q	.	V	.	.	.
14.733	0.6725	1.13	. Q	.	V	.	.	.
14.750	0.6740	1.14	. Q	.	V	.	.	.
14.767	0.6756	1.15	. Q	.	V	.	.	.
14.783	0.6772	1.16	. Q	.	V	.	.	.
14.800	0.6788	1.17	. Q	.	V	.	.	.
14.817	0.6805	1.18	. Q	.	V	.	.	.
14.833	0.6821	1.19	. Q	.	V	.	.	.
14.850	0.6837	1.20	. Q	.	V	.	.	.
14.867	0.6854	1.21	. Q	.	V	.	.	.
14.883	0.6871	1.22	. Q	.	V	.	.	.
14.900	0.6888	1.23	. Q	.	V	.	.	.
14.917	0.6905	1.25	. Q	.	V	.	.	.
14.933	0.6923	1.26	. Q	.	V	.	.	.
14.950	0.6940	1.26	. Q	.	V	.	.	.
14.967	0.6957	1.27	. Q	.	V	.	.	.
14.983	0.6975	1.28	. Q	.	V	.	.	.
15.000	0.6993	1.28	. Q	.	V	.	.	.
15.017	0.7010	1.29	. Q	.	V	.	.	.
15.033	0.7028	1.30	. Q	.	V	.	.	.
15.050	0.7046	1.31	. Q	.	V	.	.	.
15.067	0.7064	1.31	. Q	.	V	.	.	.
15.083	0.7083	1.32	. Q	.	V	.	.	.
15.100	0.7101	1.33	. Q	.	V	.	.	.
15.117	0.7119	1.33	. Q	.	V	.	.	.
15.133	0.7138	1.34	. Q	.	V	.	.	.
15.150	0.7156	1.35	. Q	.	V	.	.	.
15.167	0.7175	1.37	. Q	.	V	.	.	.
15.183	0.7194	1.39	. Q	.	V	.	.	.
15.200	0.7214	1.41	. Q	.	V	.	.	.
15.217	0.7233	1.43	. Q	.	V	.	.	.
15.233	0.7253	1.45	. Q	.	V	.	.	.
15.250	0.7274	1.47	. Q	.	V	.	.	.
15.267	0.7294	1.49	. Q	.	V	.	.	.
15.283	0.7315	1.51	. Q	.	V	.	.	.
15.300	0.7336	1.53	. Q	.	V.	.	.	.
15.317	0.7357	1.55	. Q	.	V.	.	.	.
15.333	0.7379	1.57	. Q	.	V.	.	.	.
15.350	0.7401	1.59	. Q	.	V.	.	.	.
15.367	0.7423	1.61	. Q	.	V.	.	.	.
15.383	0.7446	1.67	. Q	.	V.	.	.	.
15.400	0.7469	1.72	. Q	.	V.	.	.	.
15.417	0.7494	1.77	. Q	.	V.	.	.	.
15.433	0.7519	1.82	. Q	.	V.	.	.	.
15.450	0.7545	1.87	. Q	.	V.	.	.	.
15.467	0.7571	1.92	. Q	.	V.	.	.	.
15.483	0.7598	1.98	. Q	.	V.	.	.	.
15.500	0.7626	2.03	. Q	.	V.	.	.	.

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15.517      0.7655      2.08  .   Q     .        V.         .         .
15.533      0.7684      2.13  .   Q     .        V.         .         .
15.550      0.7714      2.18  .   Q     .         V         .         .
15.567      0.7745      2.23  .   Q     .         V         .         .
15.583      0.7777      2.29  .   Q     .         V         .         .
15.600      0.7809      2.35  .   Q     .         V         .         .
15.617      0.7842      2.41  .   Q     .         V         .         .
15.633      0.7876      2.47  .   Q     .         V         .         .
15.650      0.7911      2.53  .    Q    .         V         .         .
15.667      0.7947      2.59  .    Q    .         V         .         .
15.683      0.7983      2.65  .    Q    .         V         .         .
15.700      0.8020      2.71  .    Q    .         V         .         .
15.717      0.8058      2.76  .    Q    .         V         .         .
15.733      0.8097      2.82  .    Q    .         .V        .         .
15.750      0.8137      2.88  .    Q    .         .V        .         .
15.767      0.8178      2.94  .    Q    .         .V        .         .
15.783      0.8219      3.00  .     Q   .         .V        .         .
15.800      0.8261      3.06  .     Q   .         .V        .         .
15.817      0.8304      3.12  .     Q   .         .V        .         .
15.833      0.8348      3.18  .     Q   .         .V        .         .
15.850      0.8392      3.24  .     Q   .         .V        .         .
15.867      0.8438      3.29  .     Q   .         .V        .         .
15.883      0.8484      3.35  .     Q   .         . V       .         .
15.900      0.8531      3.41  .     Q   .         . V       .         .
15.917      0.8579      3.47  .     Q   .         . V       .         .
15.933      0.8627      3.53  .      Q  .         . V       .         .
15.950      0.8677      3.58  .      Q  .         . V       .         .
15.967      0.8727      3.64  .      Q  .         . V       .         .
15.983      0.8778      3.70  .      Q  .         . V       .         .
16.000      0.8830      3.76  .      Q  .         . V       .         .
16.017      0.8886      4.06  .       Q .         .  V      .         .
16.033      0.8949      4.61  .        Q.         .  V      .         .
16.050      0.9020      5.16  .         Q        .  V      .         .
16.067      0.9099      5.71  .        .Q        .  V      .         .
16.083      0.9185      6.26  .        . Q       .  V      .         .
16.100      0.9279      6.81  .        .  Q      .   V     .         .
16.117      0.9380      7.36  .        .   Q     .   V     .         .
16.133      0.9489      7.91  .        .    Q    .   V     .         .
16.150      0.9606      8.46  .        .     Q   .   V     .         .
16.167      0.9730      9.01  .        .      Q .    V    .         .
16.183      0.9862      9.56  .        .       Q.    V    .         .
16.200      1.0001     10.11  .        .        Q    V    .         .
16.217      1.0151     10.89  .        .        .Q   V    .         .
16.233      1.0296     10.52  .        .        .Q   V    .         .
16.250      1.0432      9.89  .        .       Q.     V   .         .
16.267      1.0560      9.26  .        .      Q .     V   .         .
16.283      1.0679      8.63  .        .     Q  .     V   .         .
16.300      1.0789      8.01  .        .    Q   .      V  .         .
16.317      1.0891      7.38  .        .   Q    .      V  .         .
16.333      1.0984      6.75  .        .  Q     .      V  .         .
16.350      1.1068      6.12  .        . Q      .      V  .         .
16.367      1.1144      5.49  .        Q        .      V  .         .
16.383      1.1211      4.87  .       Q.        .       V.         .
16.400      1.1269      4.24  .      Q .        .       V.         .
16.417      1.1319      3.61  .     Q  .        .       V.         .
16.433      1.1360      2.99  .   Q    .        .       V.         .
16.450      1.1397      2.71  .   Q    .        .       V.         .
16.467      1.1433      2.61  .   Q    .        .       V.         .
16.483      1.1468      2.51  .   Q    .        .       V.         .
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16.500      1.1501      2.40  .   Q     .         .        V.         .
16.517      1.1533      2.30  .   Q     .         .        V.         .
16.533      1.1563      2.20  .   Q     .         .         V         .
16.550      1.1592      2.10  .   Q     .         .         V         .
16.567      1.1619      1.99  .  Q      .         .         V         .
16.583      1.1645      1.89  .  Q      .         .         V         .
16.600      1.1670      1.79  .  Q      .         .         V         .
16.617      1.1693      1.69  .  Q      .         .         V         .
16.633      1.1715      1.58  .  Q      .         .         V         .
16.650      1.1736      1.49  . Q       .         .         V         .
16.667      1.1755      1.44  . Q       .         .         V         .
16.683      1.1775      1.42  . Q       .         .         V         .
16.700      1.1794      1.40  . Q       .         .         V         .
16.717      1.1813      1.38  . Q       .         .         V         .
16.733      1.1832      1.36  . Q       .         .         V         .
16.750      1.1850      1.33  . Q       .         .         V         .
16.767      1.1868      1.31  . Q       .         .         V         .
16.783      1.1886      1.29  . Q       .         .         V         .
16.800      1.1904      1.27  . Q       .         .         V         .
16.817      1.1921      1.25  . Q       .         .         V         .
16.833      1.1938      1.23  . Q       .         .         .V        .
16.850      1.1954      1.20  . Q       .         .         .V        .
16.867      1.1971      1.18  . Q       .         .         .V        .
16.883      1.1987      1.17  . Q       .         .         .V        .
16.900      1.2003      1.16  . Q       .         .         .V        .
16.917      1.2018      1.14  . Q       .         .         .V        .
16.933      1.2034      1.13  . Q       .         .         .V        .
16.950      1.2049      1.12  . Q       .         .         .V        .
16.967      1.2065      1.10  . Q       .         .         .V        .
16.983      1.2080      1.09  . Q       .         .         .V        .
17.000      1.2094      1.08  . Q       .         .         .V        .
17.017      1.2109      1.07  . Q       .         .         .V        .
17.033      1.2124      1.05  . Q       .         .         .V        .
17.050      1.2138      1.04  . Q       .         .         .V        .
17.067      1.2152      1.03  . Q       .         .         .V        .
17.083      1.2166      1.01  . Q       .         .         .V        .
17.100      1.2180      1.01  . Q       .         .         .V        .
17.117      1.2194      1.01  . Q       .         .         .V        .
17.133      1.2208      1.00  . Q       .         .         .V        .
17.150      1.2221      1.00  .Q        .         .         .V        .
17.167      1.2235      1.00  .Q        .         .         .V        .
17.183      1.2249      0.99  .Q        .         .         .V        .
17.200      1.2262      0.99  .Q        .         .         .V        .
17.217      1.2276      0.98  .Q        .         .         .V        .
17.233      1.2289      0.98  .Q        .         .         .V        .
17.250      1.2303      0.98  .Q        .         .         .V        .
17.267      1.2316      0.97  .Q        .         .         .V        .
17.283      1.2330      0.97  .Q        .         .         . V       .
17.300      1.2343      0.97  .Q        .         .         . V       .
17.317      1.2356      0.96  .Q        .         .         . V       .
17.333      1.2369      0.95  .Q        .         .         . V       .
17.350      1.2382      0.95  .Q        .         .         . V       .
17.367      1.2395      0.94  .Q        .         .         . V       .
17.383      1.2408      0.93  .Q        .         .         . V       .
17.400      1.2421      0.93  .Q        .         .         . V       .
17.417      1.2434      0.92  .Q        .         .         . V       .
17.433      1.2446      0.91  .Q        .         .         . V       .
17.450      1.2459      0.91  .Q        .         .         . V       .
17.467      1.2471      0.90  .Q        .         .         . V       .
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17.483	1.2483	0.89	.Q	.	.	.	V	.	
17.500	1.2496	0.89	.Q	.	.	.	V	.	
17.517	1.2508	0.88	.Q	.	.	.	V	.	
17.533	1.2520	0.88	.Q	.	.	.	V	.	
17.550	1.2532	0.87	.Q	.	.	.	V	.	
17.567	1.2544	0.86	.Q	.	.	.	V	.	
17.583	1.2555	0.86	.Q	.	.	.	V	.	
17.600	1.2567	0.85	.Q	.	.	.	V	.	
17.617	1.2579	0.85	.Q	.	.	.	V	.	
17.633	1.2591	0.84	.Q	.	.	.	V	.	
17.650	1.2602	0.84	.Q	.	.	.	V	.	
17.667	1.2614	0.83	.Q	.	.	.	V	.	
17.683	1.2625	0.83	.Q	.	.	.	V	.	
17.700	1.2636	0.82	.Q	.	.	.	V	.	
17.717	1.2648	0.82	.Q	.	.	.	V	.	
17.733	1.2659	0.81	.Q	.	.	.	V	.	
17.750	1.2670	0.81	.Q	.	.	.	V	.	
17.767	1.2681	0.80	.Q	.	.	.	V	.	
17.783	1.2692	0.80	.Q	.	.	.	V	.	
17.800	1.2703	0.80	.Q	.	.	.	V	.	
17.817	1.2714	0.79	.Q	.	.	.	V	.	
17.833	1.2725	0.79	.Q	.	.	.	V	.	
17.850	1.2736	0.78	.Q	.	.	.	V	.	
17.867	1.2746	0.78	.Q	.	.	.	V	.	
17.883	1.2757	0.78	.Q	.	.	.	V	.	
17.900	1.2768	0.77	.Q	.	.	.	V	.	
17.917	1.2778	0.77	.Q	.	.	.	V	.	
17.933	1.2789	0.76	.Q	.	.	.	V	.	
17.950	1.2799	0.76	.Q	.	.	.	V	.	
17.967	1.2810	0.76	.Q	.	.	.	V	.	
17.983	1.2820	0.75	.Q	.	.	.	V	.	
18.000	1.2830	0.75	.Q	.	.	.	V	.	
18.017	1.2841	0.75	.Q	.	.	.	V	.	
18.033	1.2851	0.74	.Q	.	.	.	V	.	
18.050	1.2861	0.74	.Q	.	.	.	V	.	
18.067	1.2871	0.74	.Q	.	.	.	V	.	
18.083	1.2881	0.73	.Q	.	.	.	V	.	
18.100	1.2891	0.73	.Q	.	.	.	V	.	
18.117	1.2901	0.73	.Q	.	.	.	V	.	
18.133	1.2911	0.72	.Q	.	.	.	V	.	
18.150	1.2921	0.72	.Q	.	.	.	V	.	
18.167	1.2931	0.72	.Q	.	.	.	V	.	
18.183	1.2941	0.72	.Q	.	.	.	V	.	
18.200	1.2951	0.72	.Q	.	.	.	V	.	
18.217	1.2961	0.72	.Q	.	.	.	V	.	
18.233	1.2971	0.71	.Q	.	.	.	V	.	
18.250	1.2980	0.71	.Q	.	.	.	V	.	
18.267	1.2990	0.71	.Q	.	.	.	V	.	
18.283	1.3000	0.71	.Q	.	.	.	V	.	
18.300	1.3010	0.71	.Q	.	.	.	V	.	
18.317	1.3019	0.71	.Q	.	.	.	V	.	
18.333	1.3029	0.71	.Q	.	.	.	V	.	
18.350	1.3039	0.71	.Q	.	.	.	V	.	
18.367	1.3049	0.71	.Q	.	.	.	V	.	
18.383	1.3058	0.70	.Q	.	.	.	V	.	
18.400	1.3068	0.70	.Q	.	.	.	V	.	
18.417	1.3078	0.70	.Q	.	.	.	V	.	
18.433	1.3087	0.70	.Q	.	.	.	V	.	
18.450	1.3097	0.69	.Q	.	.	.	V	.	
18.467	1.3106	0.69	.Q	.	.	.	V	.	
18.483	1.3116	0.69	.Q	.	.	.	V	.	
18.500	1.3125	0.69	.Q	.	.	.	V	.	
18.517	1.3135	0.68	.Q	.	.	.	V	.	
18.533	1.3144	0.68	.Q	.	.	.	V	.	
18.550	1.3154	0.68	.Q	.	.	.	V	.	
18.567	1.3163	0.68	.Q	.	.	.	V	.	
18.583	1.3172	0.67	.Q	.	.	.	V	.	
18.600	1.3181	0.67	.Q	.	.	.	V	.	
18.617	1.3191	0.67	.Q	.	.	.	V	.	
18.633	1.3200	0.67	.Q	.	.	.	V	.	
18.650	1.3209	0.67	.Q	.	.	.	V	.	
18.667	1.3218	0.66	.Q	.	.	.	V	.	
18.683	1.3227	0.66	.Q	.	.	.	V	.	
18.700	1.3236	0.66	.Q	.	.	.	V	.	
18.717	1.3245	0.66	.Q	.	.	.	V	.	
18.733	1.3254	0.65	.Q	.	.	.	V	.	
18.750	1.3263	0.65	.Q	.	.	.	V	.	
18.767	1.3272	0.65	.Q	.	.	.	V	.	
18.783	1.3281	0.65	.Q	.	.	.	V	.	
18.800	1.3290	0.65	.Q	.	.	.	V	.	
18.817	1.3299	0.64	.Q	.	.	.	V	.	
18.833	1.3308	0.64	.Q	.	.	.	V	.	
18.850	1.3317	0.64	.Q	.	.	.	V	.	
18.867	1.3325	0.64	.Q	.	.	.	V	.	
18.883	1.3334	0.64	.Q	.	.	.	V	.	
18.900	1.3343	0.63	.Q	.	.	.	V	.	
18.917	1.3352	0.63	.Q	.	.	.	V	.	
18.933	1.3360	0.63	.Q	.	.	.	V	.	
18.950	1.3369	0.63	.Q	.	.	.	V	.	
18.967	1.3378	0.63	.Q	.	.	.	V	.	
18.983	1.3386	0.62	.Q	.	.	.	V	.	
19.000	1.3395	0.62	.Q	.	.	.	V	.	
19.017	1.3403	0.62	.Q	.	.	.	V	.	
19.033	1.3412	0.62	.Q	.	.	.	V	.	
19.050	1.3420	0.62	.Q	.	.	.	V	.	
19.067	1.3429	0.61	.Q	.	.	.	V	.	
19.083	1.3437	0.61	.Q	.	.	.	V	.	
19.100	1.3446	0.61	.Q	.	.	.	V	.	
19.117	1.3454	0.61	.Q	.	.	.	V	.	
19.133	1.3462	0.61	.Q	.	.	.	V	.	
19.150	1.3471	0.61	.Q	.	.	.	V	.	
19.167	1.3479	0.60	.Q	.	.	.	V	.	
19.183	1.3487	0.60	.Q	.	.	.	V	.	
19.200	1.3496	0.60	.Q	.	.	.	V	.	
19.217	1.3504	0.60	.Q	.	.	.	V	.	
19.233	1.3512	0.60	.Q	.	.	.	V	.	
19.250	1.3520	0.60	.Q	.	.	.	V	.	
19.267	1.3528	0.59	.Q	.	.	.	V	.	
19.283	1.3537	0.59	.Q	.	.	.	V	.	
19.300	1.3545	0.59	.Q	.	.	.	V	.	
19.317	1.3553	0.59	.Q	.	.	.	V	.	
19.333	1.3561	0.59	.Q	.	.	.	V	.	
19.350	1.3569	0.59	.Q	.	.	.	V	.	
19.367	1.3577	0.58	.Q	.	.	.	V	.	
19.383	1.3585	0.58	.Q	.	.	.	V	.	
19.400	1.3593	0.58	.Q	.	.	.	V	.	
19.417	1.3601	0.58	.Q	.	.	.	V	.	
19.433	1.3609	0.58	.Q	.	.	.	V	.	

19.450	1.3617	0.58	.Q	.	.	.	V	.
19.467	1.3625	0.58	.Q	.	.	.	V	.
19.483	1.3633	0.57	.Q	.	.	.	V	.
19.500	1.3641	0.57	.Q	.	.	.	V	.
19.517	1.3649	0.57	.Q	.	.	.	V	.
19.533	1.3656	0.57	.Q	.	.	.	V	.
19.550	1.3664	0.57	.Q	.	.	.	V	.
19.567	1.3672	0.57	.Q	.	.	.	V	.
19.583	1.3680	0.57	.Q	.	.	.	V	.
19.600	1.3688	0.56	.Q	.	.	.	V	.
19.617	1.3695	0.56	.Q	.	.	.	V	.
19.633	1.3703	0.56	.Q	.	.	.	V	.
19.650	1.3711	0.56	.Q	.	.	.	V	.
19.667	1.3718	0.56	.Q	.	.	.	V	.
19.683	1.3726	0.56	.Q	.	.	.	V	.
19.700	1.3734	0.56	.Q	.	.	.	V	.
19.717	1.3741	0.55	.Q	.	.	.	V	.
19.733	1.3749	0.55	.Q	.	.	.	V	.
19.750	1.3757	0.55	.Q	.	.	.	V	.
19.767	1.3764	0.55	.Q	.	.	.	V	.
19.783	1.3772	0.55	.Q	.	.	.	V	.
19.800	1.3779	0.55	.Q	.	.	.	V	.
19.817	1.3787	0.55	.Q	.	.	.	V	.
19.833	1.3794	0.55	.Q	.	.	.	V	.
19.850	1.3802	0.54	.Q	.	.	.	V	.
19.867	1.3809	0.54	.Q	.	.	.	V	.
19.883	1.3817	0.54	.Q	.	.	.	V	.
19.900	1.3824	0.54	.Q	.	.	.	V	.
19.917	1.3832	0.54	.Q	.	.	.	V	.
19.933	1.3839	0.54	.Q	.	.	.	V	.
19.950	1.3846	0.54	.Q	.	.	.	V	.
19.967	1.3854	0.54	.Q	.	.	.	V	.
19.983	1.3861	0.53	.Q	.	.	.	V	.
20.000	1.3869	0.53	.Q	.	.	.	V	.
20.017	1.3876	0.53	.Q	.	.	.	V	.
20.033	1.3883	0.53	.Q	.	.	.	V	.
20.050	1.3890	0.53	.Q	.	.	.	V	.
20.067	1.3898	0.53	.Q	.	.	.	V	.
20.083	1.3905	0.53	.Q	.	.	.	V	.
20.100	1.3912	0.53	.Q	.	.	.	V	.
20.117	1.3919	0.52	.Q	.	.	.	V	.
20.133	1.3927	0.52	.Q	.	.	.	V	.
20.150	1.3934	0.52	.Q	.	.	.	V	.
20.167	1.3941	0.52	.Q	.	.	.	V	.
20.183	1.3948	0.52	.Q	.	.	.	V	.
20.200	1.3955	0.52	.Q	.	.	.	V	.
20.217	1.3963	0.52	.Q	.	.	.	V	.
20.233	1.3970	0.52	.Q	.	.	.	V	.
20.250	1.3977	0.52	.Q	.	.	.	V	.
20.267	1.3984	0.52	.Q	.	.	.	V	.
20.283	1.3991	0.51	.Q	.	.	.	V	.
20.300	1.3998	0.51	.Q	.	.	.	V	.
20.317	1.4005	0.51	.Q	.	.	.	V	.
20.333	1.4012	0.51	.Q	.	.	.	V	.
20.350	1.4019	0.51	.Q	.	.	.	V	.
20.367	1.4026	0.51	.Q	.	.	.	V	.
20.383	1.4033	0.51	.Q	.	.	.	V	.
20.400	1.4040	0.51	.Q	.	.	.	V	.
20.417	1.4047	0.51	.Q	.	.	.	V	.
20.433	1.4054	0.50	.Q	.	.	.	V	.
20.450	1.4061	0.50	.Q	.	.	.	V	.
20.467	1.4068	0.50	.Q	.	.	.	V	.
20.483	1.4075	0.50	.Q	.	.	.	V	.
20.500	1.4082	0.50	.Q	.	.	.	V	.
20.517	1.4089	0.50	Q	.	.	.	V	.
20.533	1.4095	0.50	Q	.	.	.	V	.
20.550	1.4102	0.50	Q	.	.	.	V	.
20.567	1.4109	0.50	Q	.	.	.	V	.
20.583	1.4116	0.50	Q	.	.	.	V	.
20.600	1.4123	0.50	Q	.	.	.	V	.
20.617	1.4130	0.49	Q	.	.	.	V	.
20.633	1.4136	0.49	Q	.	.	.	V	.
20.650	1.4143	0.49	Q	.	.	.	V	.
20.667	1.4150	0.49	Q	.	.	.	V	.
20.683	1.4157	0.49	Q	.	.	.	V	.
20.700	1.4163	0.49	Q	.	.	.	V	.
20.717	1.4170	0.49	Q	.	.	.	V	.
20.733	1.4177	0.49	Q	.	.	.	V	.
20.750	1.4184	0.49	Q	.	.	.	V	.
20.767	1.4190	0.49	Q	.	.	.	V	.
20.783	1.4197	0.48	Q	.	.	.	V	.
20.800	1.4204	0.48	Q	.	.	.	V	.
20.817	1.4210	0.48	Q	.	.	.	V	.
20.833	1.4217	0.48	Q	.	.	.	V	.
20.850	1.4224	0.48	Q	.	.	.	V	.
20.867	1.4230	0.48	Q	.	.	.	V	.
20.883	1.4237	0.48	Q	.	.	.	V	.
20.900	1.4243	0.48	Q	.	.	.	V	.
20.917	1.4250	0.48	Q	.	.	.	V	.
20.933	1.4257	0.48	Q	.	.	.	V	.
20.950	1.4263	0.48	Q	.	.	.	V	.
20.967	1.4270	0.48	Q	.	.	.	V	.
20.983	1.4276	0.47	Q	.	.	.	V	.
21.000	1.4283	0.47	Q	.	.	.	V	.
21.017	1.4289	0.47	Q	.	.	.	V	.
21.033	1.4296	0.47	Q	.	.	.	V	.
21.050	1.4302	0.47	Q	.	.	.	V	.
21.067	1.4309	0.47	Q	.	.	.	V	.
21.083	1.4315	0.47	Q	.	.	.	V	.
21.100	1.4322	0.47	Q	.	.	.	V	.
21.117	1.4328	0.47	Q	.	.	.	V	.
21.133	1.4335	0.47	Q	.	.	.	V	.
21.150	1.4341	0.47	Q	.	.	.	V	.
21.167	1.4347	0.47	Q	.	.	.	V	.
21.183	1.4354	0.46	Q	.	.	.	V	.
21.200	1.4360	0.46	Q	.	.	.	V	.
21.217	1.4367	0.46	Q	.	.	.	V	.
21.233	1.4373	0.46	Q	.	.	.	V	.
21.250	1.4379	0.46	Q	.	.	.	V	.
21.267	1.4386	0.46	Q	.	.	.	V	.
21.283	1.4392	0.46	Q	.	.	.	V	.
21.300	1.4398	0.46	Q	.	.	.	V	.
21.317	1.4405	0.46	Q	.	.	.	V	.
21.333	1.4411	0.46	Q	.	.	.	V	.
21.350	1.4417	0.46	Q	.	.	.	V	.
21.367	1.4424	0.46	Q	.	.	.	V	.
21.383	1.4430	0.46	Q	.	.	.	V	.
21.400	1.4436	0.45	Q	.	.	.	V	.

21.417	1.4442	0.45	Q	.	.	.	V	.
21.433	1.4449	0.45	Q	.	.	.	V	.
21.450	1.4455	0.45	Q	.	.	.	V	.
21.467	1.4461	0.45	Q	.	.	.	V	.
21.483	1.4467	0.45	Q	.	.	.	V	.
21.500	1.4473	0.45	Q	.	.	.	V	.
21.517	1.4480	0.45	Q	.	.	.	V	.
21.533	1.4486	0.45	Q	.	.	.	V	.
21.550	1.4492	0.45	Q	.	.	.	V	.
21.567	1.4498	0.45	Q	.	.	.	V	.
21.583	1.4504	0.45	Q	.	.	.	V	.
21.600	1.4510	0.45	Q	.	.	.	V	.
21.617	1.4517	0.45	Q	.	.	.	V	.
21.633	1.4523	0.44	Q	.	.	.	V	.
21.650	1.4529	0.44	Q	.	.	.	V	.
21.667	1.4535	0.44	Q	.	.	.	V	.
21.683	1.4541	0.44	Q	.	.	.	V	.
21.700	1.4547	0.44	Q	.	.	.	V	.
21.717	1.4553	0.44	Q	.	.	.	V	.
21.733	1.4559	0.44	Q	.	.	.	V	.
21.750	1.4565	0.44	Q	.	.	.	V	.
21.767	1.4571	0.44	Q	.	.	.	V	.
21.783	1.4578	0.44	Q	.	.	.	V	.
21.800	1.4584	0.44	Q	.	.	.	V	.
21.817	1.4590	0.44	Q	.	.	.	V	.
21.833	1.4596	0.44	Q	.	.	.	V	.
21.850	1.4602	0.44	Q	.	.	.	V	.
21.867	1.4608	0.44	Q	.	.	.	V	.
21.883	1.4614	0.44	Q	.	.	.	V	.
21.900	1.4620	0.43	Q	.	.	.	V	.
21.917	1.4626	0.43	Q	.	.	.	V	.
21.933	1.4632	0.43	Q	.	.	.	V	.
21.950	1.4637	0.43	Q	.	.	.	V	.
21.967	1.4643	0.43	Q	.	.	.	V	.
21.983	1.4649	0.43	Q	.	.	.	V	.
22.000	1.4655	0.43	Q	.	.	.	V	.
22.017	1.4661	0.43	Q	.	.	.	V	.
22.033	1.4667	0.43	Q	.	.	.	V	.
22.050	1.4673	0.43	Q	.	.	.	V	.
22.067	1.4679	0.43	Q	.	.	.	V	.
22.083	1.4685	0.43	Q	.	.	.	V	.
22.100	1.4691	0.43	Q	.	.	.	V	.
22.117	1.4697	0.43	Q	.	.	.	V	.
22.133	1.4702	0.43	Q	.	.	.	V	.
22.150	1.4708	0.43	Q	.	.	.	V	.
22.167	1.4714	0.42	Q	.	.	.	V	.
22.183	1.4720	0.42	Q	.	.	.	V	.
22.200	1.4726	0.42	Q	.	.	.	V	.
22.217	1.4732	0.42	Q	.	.	.	V	.
22.233	1.4737	0.42	Q	.	.	.	V	.
22.250	1.4743	0.42	Q	.	.	.	V	.
22.267	1.4749	0.42	Q	.	.	.	V	.
22.283	1.4755	0.42	Q	.	.	.	V	.
22.300	1.4761	0.42	Q	.	.	.	V	.
22.317	1.4766	0.42	Q	.	.	.	V	.
22.333	1.4772	0.42	Q	.	.	.	V	.
22.350	1.4778	0.42	Q	.	.	.	V	.
22.367	1.4784	0.42	Q	.	.	.	V	.
22.383	1.4789	0.42	Q	.	.	.	V	.
22.400	1.4795	0.42	Q	.	.	.	V	.
22.417	1.4801	0.42	Q	.	.	.	V	.
22.433	1.4807	0.42	Q	.	.	.	V	.
22.450	1.4812	0.41	Q	.	.	.	V	.
22.467	1.4818	0.41	Q	.	.	.	V	.
22.483	1.4824	0.41	Q	.	.	.	V	.
22.500	1.4829	0.41	Q	.	.	.	V	.
22.517	1.4835	0.41	Q	.	.	.	V	.
22.533	1.4841	0.41	Q	.	.	.	V	.
22.550	1.4846	0.41	Q	.	.	.	V	.
22.567	1.4852	0.41	Q	.	.	.	V	.
22.583	1.4858	0.41	Q	.	.	.	V	.
22.600	1.4863	0.41	Q	.	.	.	V	.
22.617	1.4869	0.41	Q	.	.	.	V	.
22.633	1.4875	0.41	Q	.	.	.	V	.
22.650	1.4880	0.41	Q	.	.	.	V	.
22.667	1.4886	0.41	Q	.	.	.	V	.
22.683	1.4891	0.41	Q	.	.	.	V	.
22.700	1.4897	0.41	Q	.	.	.	V	.
22.717	1.4903	0.41	Q	.	.	.	V	.
22.733	1.4908	0.41	Q	.	.	.	V	.
22.750	1.4914	0.40	Q	.	.	.	V	.
22.767	1.4919	0.40	Q	.	.	.	V	.
22.783	1.4925	0.40	Q	.	.	.	V	.
22.800	1.4930	0.40	Q	.	.	.	V	.
22.817	1.4936	0.40	Q	.	.	.	V	.
22.833	1.4942	0.40	Q	.	.	.	V	.
22.850	1.4947	0.40	Q	.	.	.	V	.
22.867	1.4953	0.40	Q	.	.	.	V	.
22.883	1.4958	0.40	Q	.	.	.	V	.
22.900	1.4964	0.40	Q	.	.	.	V	.
22.917	1.4969	0.40	Q	.	.	.	V	.
22.933	1.4975	0.40	Q	.	.	.	V	.
22.950	1.4980	0.40	Q	.	.	.	V	.
22.967	1.4986	0.40	Q	.	.	.	V	.
22.983	1.4991	0.40	Q	.	.	.	V	.
23.000	1.4997	0.40	Q	.	.	.	V	.
23.017	1.5002	0.40	Q	.	.	.	V	.
23.033	1.5008	0.40	Q	.	.	.	V	.
23.050	1.5013	0.40	Q	.	.	.	V	.
23.067	1.5018	0.40	Q	.	.	.	V	.
23.083	1.5024	0.39	Q	.	.	.	V	.
23.100	1.5029	0.39	Q	.	.	.	V	.
23.117	1.5035	0.39	Q	.	.	.	V	.
23.133	1.5040	0.39	Q	.	.	.	V	.
23.150	1.5046	0.39	Q	.	.	.	V	.
23.167	1.5051	0.39	Q	.	.	.	V	.
23.183	1.5056	0.39	Q	.	.	.	V	.
23.200	1.5062	0.39	Q	.	.	.	V	.
23.217	1.5067	0.39	Q	.	.	.	V	.
23.233	1.5073	0.39	Q	.	.	.	V	.
23.250	1.5078	0.39	Q	.	.	.	V	.
23.267	1.5083	0.39	Q	.	.	.	V	.
23.283	1.5089	0.39	Q	.	.	.	V	.
23.300	1.5094	0.39	Q	.	.	.	V	.
23.317	1.5099	0.39	Q	.	.	.	V	.
23.333	1.5105	0.39	Q	.	.	.	V	.
23.350	1.5110	0.39	Q	.	.	.	V	.
23.367	1.5115	0.39	Q	.	.	.	V	.

23.383	1.5121	0.39	Q	.	.	.	V.
23.400	1.5126	0.39	Q	.	.	.	V.
23.417	1.5131	0.39	Q	.	.	.	V.
23.433	1.5137	0.39	Q	.	.	.	V.
23.450	1.5142	0.38	Q	.	.	.	V.
23.467	1.5147	0.38	Q	.	.	.	V.
23.483	1.5152	0.38	Q	.	.	.	V.
23.500	1.5158	0.38	Q	.	.	.	V.
23.517	1.5163	0.38	Q	.	.	.	V.
23.533	1.5168	0.38	Q	.	.	.	V.
23.550	1.5174	0.38	Q	.	.	.	V.
23.567	1.5179	0.38	Q	.	.	.	V.
23.583	1.5184	0.38	Q	.	.	.	V.
23.600	1.5189	0.38	Q	.	.	.	V.
23.617	1.5195	0.38	Q	.	.	.	V.
23.633	1.5200	0.38	Q	.	.	.	V.
23.650	1.5205	0.38	Q	.	.	.	V.
23.667	1.5210	0.38	Q	.	.	.	V.
23.683	1.5215	0.38	Q	.	.	.	V.
23.700	1.5221	0.38	Q	.	.	.	V.
23.717	1.5226	0.38	Q	.	.	.	V.
23.733	1.5231	0.38	Q	.	.	.	V.
23.750	1.5236	0.38	Q	.	.	.	V.
23.767	1.5241	0.38	Q	.	.	.	V.
23.783	1.5247	0.38	Q	.	.	.	V.
23.800	1.5252	0.38	Q	.	.	.	V.
23.817	1.5257	0.38	Q	.	.	.	V.
23.833	1.5262	0.37	Q	.	.	.	V.
23.850	1.5267	0.37	Q	.	.	.	V.
23.867	1.5272	0.37	Q	.	.	.	V.
23.883	1.5278	0.37	Q	.	.	.	V.
23.900	1.5283	0.37	Q	.	.	.	V.
23.917	1.5288	0.37	Q	.	.	.	V.
23.933	1.5293	0.37	Q	.	.	.	V.
23.950	1.5298	0.37	Q	.	.	.	V.
23.967	1.5303	0.37	Q	.	.	.	V.
23.983	1.5308	0.37	Q	.	.	.	V.
24.000	1.5313	0.37	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1441.0
10%	715.0
20%	300.0
30%	170.0
40%	110.0
50%	95.0
60%	75.0
70%	55.0
80%	35.0
90%	20.0

END OF FLOODSCx ROUTING ANALYSIS

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************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
             USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
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                         Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SP8997 - WILDOMAR CHERRY OUTPOST                                      *
* PROPOSED CONDITION SMALL AREA UNIT HYDROGRAPH                         *
* 100-YEAR STORM EVENT FLOW THROUGH BASIN                               *
 ************************************************************************

  FILE NAME: 100YRPRH.DAT
  TIME/DATE OF STUDY: 15:39 04/30/2024

   The Small Area Unit Hydrograph Procedures in Section J
   of the Hydrology Manual provides estimates of runoff
   hydrograph and runoff volume for watersheds whose time of
   concentration is less than 25 minutes. The PROGRAM User
   should check the applicability of using the small area unit
   hydrograph procedures, and follow the guidelines in
   Sections J and K.5 in complex watershed modeling.


************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE    110.00 IS CODE = 1.2
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
========================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    5.95
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.227
    LOW LOSS FRACTION = 0.283
    TIME OF CONCENTRATION(MIN.) = 11.18
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) = 100
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.31
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.85
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.31
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.13
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.96
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.87

------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.93
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.98
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========================================================================

                    2 4 - H O U R    S T O R M
                 R U N O F F    H Y D R O G R A P H

========================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
       (Notes: Time indicated is at END of Each Unit Intervals.
               Peak 5-minute rainfall intensity is modeled as
               a constant value for entire 5-minute period.)
------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        3.2       6.4       9.6      12.8
------------------------------------------------------------------------
   0.017      0.0000      0.02  Q         .         .         .         .
   0.033      0.0001      0.07  Q         .         .         .         .
   0.050      0.0003      0.12  Q         .         .         .         .
   0.067      0.0005      0.17  Q         .         .         .         .
   0.083      0.0008      0.22  Q         .         .         .         .
   0.100      0.0012      0.26  Q         .         .         .         .
   0.117      0.0016      0.31  Q         .         .         .         .
   0.133      0.0021      0.36  VQ        .         .         .         .
   0.150      0.0027      0.41  VQ        .         .         .         .
   0.167      0.0033      0.45  VQ        .         .         .         .
   0.183      0.0039      0.46  VQ        .         .         .         .
   0.200      0.0046      0.46  VQ        .         .         .         .
   0.217      0.0052      0.46  VQ        .         .         .         .
   0.233      0.0059      0.47  VQ        .         .         .         .
   0.250      0.0065      0.47  VQ        .         .         .         .
   0.267      0.0071      0.47  VQ        .         .         .         .
   0.283      0.0078      0.47  VQ        .         .         .         .
   0.300      0.0084      0.47  VQ        .         .         .         .
   0.317      0.0091      0.47  VQ        .         .         .         .
   0.333      0.0097      0.47  VQ        .         .         .         .
   0.350      0.0103      0.47  VQ        .         .         .         .
   0.367      0.0110      0.47  VQ        .         .         .         .
   0.383      0.0116      0.47  VQ        .         .         .         .
   0.400      0.0123      0.47  VQ        .         .         .         .
   0.417      0.0129      0.47  VQ        .         .         .         .
   0.433      0.0136      0.47  VQ        .         .         .         .
   0.450      0.0142      0.47  VQ        .         .         .         .
   0.467      0.0149      0.47  VQ        .         .         .         .
   0.483      0.0155      0.47  VQ        .         .         .         .
   0.500      0.0161      0.47  VQ        .         .         .         .
   0.517      0.0168      0.47  VQ        .         .         .         .
   0.533      0.0174      0.47  VQ        .         .         .         .
   0.550      0.0181      0.47  VQ        .         .         .         .
   0.567      0.0187      0.47  VQ        .         .         .         .
   0.583      0.0194      0.47  VQ        .         .         .         .
   0.600      0.0200      0.47  VQ        .         .         .         .
   0.617      0.0207      0.47  VQ        .         .         .         .
   0.633      0.0213      0.47  VQ        .         .         .         .
   0.650      0.0220      0.47  VQ        .         .         .         .
   0.667      0.0226      0.47  VQ        .         .         .         .
   0.683      0.0233      0.47  VQ        .         .         .         .
   0.700      0.0239      0.47  VQ        .         .         .         .
   0.717      0.0246      0.47  VQ        .         .         .         .
```

0.733	0.0252	0.47	VQ	.	.	.	.
0.750	0.0259	0.47	VQ	.	.	.	.
0.767	0.0265	0.47	VQ	.	.	.	.
0.783	0.0272	0.47	VQ	.	.	.	.
0.800	0.0278	0.47	VQ	.	.	.	.
0.817	0.0285	0.47	VQ	.	.	.	.
0.833	0.0291	0.47	VQ	.	.	.	.
0.850	0.0298	0.47	VQ	.	.	.	.
0.867	0.0304	0.47	VQ	.	.	.	.
0.883	0.0311	0.48	VQ	.	.	.	.
0.900	0.0317	0.48	VQ	.	.	.	.
0.917	0.0324	0.48	VQ	.	.	.	.
0.933	0.0331	0.48	VQ	.	.	.	.
0.950	0.0337	0.48	VQ	.	.	.	.
0.967	0.0344	0.48	VQ	.	.	.	.
0.983	0.0350	0.48	VQ	.	.	.	.
1.000	0.0357	0.48	VQ	.	.	.	.
1.017	0.0363	0.48	VQ	.	.	.	.
1.033	0.0370	0.48	VQ	.	.	.	.
1.050	0.0377	0.48	VQ	.	.	.	.
1.067	0.0383	0.48	VQ	.	.	.	.
1.083	0.0390	0.48	VQ	.	.	.	.
1.100	0.0396	0.48	VQ	.	.	.	.
1.117	0.0403	0.48	VQ	.	.	.	.
1.133	0.0409	0.48	VQ	.	.	.	.
1.150	0.0416	0.48	VQ	.	.	.	.
1.167	0.0423	0.48	VQ	.	.	.	.
1.183	0.0429	0.48	VQ	.	.	.	.
1.200	0.0436	0.48	VQ	.	.	.	.
1.217	0.0442	0.48	VQ	.	.	.	.
1.233	0.0449	0.48	VQ	.	.	.	.
1.250	0.0456	0.48	VQ	.	.	.	.
1.267	0.0462	0.48	VQ	.	.	.	.
1.283	0.0469	0.48	VQ	.	.	.	.
1.300	0.0476	0.48	VQ	.	.	.	.
1.317	0.0482	0.48	.Q	.	.	.	.
1.333	0.0489	0.48	.Q	.	.	.	.
1.350	0.0496	0.48	.Q	.	.	.	.
1.367	0.0502	0.48	.Q	.	.	.	.
1.383	0.0509	0.48	.Q	.	.	.	.
1.400	0.0516	0.48	.Q	.	.	.	.
1.417	0.0522	0.48	.Q	.	.	.	.
1.433	0.0529	0.48	.Q	.	.	.	.
1.450	0.0535	0.48	.Q	.	.	.	.
1.467	0.0542	0.48	.Q	.	.	.	.
1.483	0.0549	0.48	.Q	.	.	.	.
1.500	0.0555	0.48	.Q	.	.	.	.
1.517	0.0562	0.48	.Q	.	.	.	.
1.533	0.0569	0.49	.Q	.	.	.	.
1.550	0.0576	0.49	.Q	.	.	.	.
1.567	0.0582	0.49	.Q	.	.	.	.
1.583	0.0589	0.49	.Q	.	.	.	.
1.600	0.0596	0.49	.Q	.	.	.	.
1.617	0.0602	0.49	.Q	.	.	.	.
1.633	0.0609	0.49	.Q	.	.	.	.
1.650	0.0616	0.49	.Q	.	.	.	.
1.667	0.0622	0.49	.Q	.	.	.	.
1.683	0.0629	0.49	.Q	.	.	.	.
1.700	0.0636	0.49	.Q	.	.	.	.
1.717	0.0643	0.49	.Q	.	.	.	.
1.733	0.0649	0.49	.Q	.	.	.	.
1.750	0.0656	0.49	.Q	.	.	.	.
1.767	0.0663	0.49	.Q	.	.	.	.
1.783	0.0670	0.49	.Q	.	.	.	.
1.800	0.0676	0.49	.Q	.	.	.	.
1.817	0.0683	0.49	.Q	.	.	.	.
1.833	0.0690	0.49	.Q	.	.	.	.
1.850	0.0697	0.49	.Q	.	.	.	.
1.867	0.0703	0.49	.Q	.	.	.	.
1.883	0.0710	0.49	.Q	.	.	.	.
1.900	0.0717	0.49	.Q	.	.	.	.
1.917	0.0724	0.49	.Q	.	.	.	.
1.933	0.0730	0.49	.Q	.	.	.	.
1.950	0.0737	0.49	.Q	.	.	.	.
1.967	0.0744	0.49	.Q	.	.	.	.
1.983	0.0751	0.49	.Q	.	.	.	.
2.000	0.0758	0.49	.Q	.	.	.	.
2.017	0.0764	0.49	.Q	.	.	.	.
2.033	0.0771	0.49	.Q	.	.	.	.
2.050	0.0778	0.49	.Q	.	.	.	.
2.067	0.0785	0.49	.Q	.	.	.	.
2.083	0.0792	0.50	.Q	.	.	.	.
2.100	0.0798	0.50	.Q	.	.	.	.
2.117	0.0805	0.50	.Q	.	.	.	.
2.133	0.0812	0.50	.Q	.	.	.	.
2.150	0.0819	0.50	.Q	.	.	.	.
2.167	0.0826	0.50	.Q	.	.	.	.
2.183	0.0833	0.50	.Q	.	.	.	.
2.200	0.0839	0.50	.Q	.	.	.	.
2.217	0.0846	0.50	.Q	.	.	.	.
2.233	0.0853	0.50	.Q	.	.	.	.
2.250	0.0860	0.50	.Q	.	.	.	.
2.267	0.0867	0.50	.Q	.	.	.	.
2.283	0.0874	0.50	.Q	.	.	.	.
2.300	0.0881	0.50	.Q	.	.	.	.
2.317	0.0887	0.50	.Q	.	.	.	.
2.333	0.0894	0.50	.Q	.	.	.	.
2.350	0.0901	0.50	.Q	.	.	.	.
2.367	0.0908	0.50	.Q	.	.	.	.
2.383	0.0915	0.50	.Q	.	.	.	.
2.400	0.0922	0.50	.Q	.	.	.	.
2.417	0.0929	0.50	.Q	.	.	.	.
2.433	0.0936	0.50	.Q	.	.	.	.
2.450	0.0943	0.50	.Q	.	.	.	.
2.467	0.0950	0.50	.Q	.	.	.	.
2.483	0.0956	0.50	.Q	.	.	.	.
2.500	0.0963	0.50	.Q	.	.	.	.
2.517	0.0970	0.50	.QV	.	.	.	.
2.533	0.0977	0.50	.QV	.	.	.	.
2.550	0.0984	0.50	.QV	.	.	.	.
2.567	0.0991	0.50	.QV	.	.	.	.
2.583	0.0998	0.50	.QV	.	.	.	.
2.600	0.1005	0.50	.QV	.	.	.	.
2.617	0.1012	0.50	.QV	.	.	.	.
2.633	0.1019	0.50	.QV	.	.	.	.
2.650	0.1026	0.50	.QV	.	.	.	.
2.667	0.1033	0.51	.QV	.	.	.	.
2.683	0.1040	0.51	.QV	.	.	.	.

2.700	0.1047	0.51	.QV	.	.	.	.
2.717	0.1054	0.51	.QV	.	.	.	.
2.733	0.1061	0.51	.QV	.	.	.	.
2.750	0.1068	0.51	.QV	.	.	.	.
2.767	0.1075	0.51	.QV	.	.	.	.
2.783	0.1082	0.51	.QV	.	.	.	.
2.800	0.1089	0.51	.QV	.	.	.	.
2.817	0.1096	0.51	.QV	.	.	.	.
2.833	0.1103	0.51	.QV	.	.	.	.
2.850	0.1110	0.51	.QV	.	.	.	.
2.867	0.1117	0.51	.QV	.	.	.	.
2.883	0.1124	0.51	.QV	.	.	.	.
2.900	0.1131	0.51	.QV	.	.	.	.
2.917	0.1138	0.51	.QV	.	.	.	.
2.933	0.1145	0.51	.QV	.	.	.	.
2.950	0.1152	0.51	.QV	.	.	.	.
2.967	0.1159	0.51	.QV	.	.	.	.
2.983	0.1166	0.51	.QV	.	.	.	.
3.000	0.1173	0.51	.QV	.	.	.	.
3.017	0.1180	0.51	.QV	.	.	.	.
3.033	0.1187	0.51	.QV	.	.	.	.
3.050	0.1194	0.51	.QV	.	.	.	.
3.067	0.1201	0.51	.QV	.	.	.	.
3.083	0.1208	0.51	.QV	.	.	.	.
3.100	0.1215	0.51	.QV	.	.	.	.
3.117	0.1222	0.51	.QV	.	.	.	.
3.133	0.1230	0.52	.QV	.	.	.	.
3.150	0.1237	0.52	.QV	.	.	.	.
3.167	0.1244	0.52	.QV	.	.	.	.
3.183	0.1251	0.52	.QV	.	.	.	.
3.200	0.1258	0.52	.QV	.	.	.	.
3.217	0.1265	0.52	.QV	.	.	.	.
3.233	0.1272	0.52	.QV	.	.	.	.
3.250	0.1279	0.52	.QV	.	.	.	.
3.267	0.1286	0.52	.QV	.	.	.	.
3.283	0.1294	0.52	.QV	.	.	.	.
3.300	0.1301	0.52	.QV	.	.	.	.
3.317	0.1308	0.52	.QV	.	.	.	.
3.333	0.1315	0.52	.QV	.	.	.	.
3.350	0.1322	0.52	.QV	.	.	.	.
3.367	0.1329	0.52	.QV	.	.	.	.
3.383	0.1336	0.52	.QV	.	.	.	.
3.400	0.1344	0.52	.QV	.	.	.	.
3.417	0.1351	0.52	.QV	.	.	.	.
3.433	0.1358	0.52	.QV	.	.	.	.
3.450	0.1365	0.52	.QV	.	.	.	.
3.467	0.1372	0.52	.QV	.	.	.	.
3.483	0.1380	0.52	.QV	.	.	.	.
3.500	0.1387	0.52	.QV	.	.	.	.
3.517	0.1394	0.52	.QV	.	.	.	.
3.533	0.1401	0.52	.QV	.	.	.	.
3.550	0.1408	0.52	.QV	.	.	.	.
3.567	0.1416	0.52	.QV	.	.	.	.
3.583	0.1423	0.52	.QV	.	.	.	.
3.600	0.1430	0.52	.QV	.	.	.	.
3.617	0.1437	0.52	.QV	.	.	.	.
3.633	0.1444	0.52	.QV	.	.	.	.
3.650	0.1452	0.53	.Q V	.	.	.	.
3.667	0.1459	0.53	.Q V	.	.	.	.
3.683	0.1466	0.53	.Q V	.	.	.	.
3.700	0.1473	0.53	.Q V	.	.	.	.
3.717	0.1481	0.53	.Q V	.	.	.	.
3.733	0.1488	0.53	.Q V	.	.	.	.
3.750	0.1495	0.53	.Q V	.	.	.	.
3.767	0.1502	0.53	.Q V	.	.	.	.
3.783	0.1510	0.53	.Q V	.	.	.	.
3.800	0.1517	0.53	.Q V	.	.	.	.
3.817	0.1524	0.53	.Q V	.	.	.	.
3.833	0.1532	0.53	.Q V	.	.	.	.
3.850	0.1539	0.53	.Q V	.	.	.	.
3.867	0.1546	0.53	.Q V	.	.	.	.
3.883	0.1553	0.53	.Q V	.	.	.	.
3.900	0.1561	0.53	.Q V	.	.	.	.
3.917	0.1568	0.53	.Q V	.	.	.	.
3.933	0.1575	0.53	.Q V	.	.	.	.
3.950	0.1583	0.53	.Q V	.	.	.	.
3.967	0.1590	0.53	.Q V	.	.	.	.
3.983	0.1597	0.53	.Q V	.	.	.	.
4.000	0.1605	0.53	.Q V	.	.	.	.
4.017	0.1612	0.53	.Q V	.	.	.	.
4.033	0.1619	0.53	.Q V	.	.	.	.
4.050	0.1627	0.53	.Q V	.	.	.	.
4.067	0.1634	0.53	.Q V	.	.	.	.
4.083	0.1641	0.53	.Q V	.	.	.	.
4.100	0.1649	0.53	.Q V	.	.	.	.
4.117	0.1656	0.53	.Q V	.	.	.	.
4.133	0.1664	0.54	.Q V	.	.	.	.
4.150	0.1671	0.54	.Q V	.	.	.	.
4.167	0.1678	0.54	.Q V	.	.	.	.
4.183	0.1686	0.54	.Q V	.	.	.	.
4.200	0.1693	0.54	.Q V	.	.	.	.
4.217	0.1701	0.54	.Q V	.	.	.	.
4.233	0.1708	0.54	.Q V	.	.	.	.
4.250	0.1715	0.54	.Q V	.	.	.	.
4.267	0.1723	0.54	.Q V	.	.	.	.
4.283	0.1730	0.54	.Q V	.	.	.	.
4.300	0.1738	0.54	.Q V	.	.	.	.
4.317	0.1745	0.54	.Q V	.	.	.	.
4.333	0.1753	0.54	.Q V	.	.	.	.
4.350	0.1760	0.54	.Q V	.	.	.	.
4.367	0.1768	0.54	.Q V	.	.	.	.
4.383	0.1775	0.54	.Q V	.	.	.	.
4.400	0.1782	0.54	.Q V	.	.	.	.
4.417	0.1790	0.54	.Q V	.	.	.	.
4.433	0.1797	0.54	.Q V	.	.	.	.
4.450	0.1805	0.54	.Q V	.	.	.	.
4.467	0.1812	0.54	.Q V	.	.	.	.
4.483	0.1820	0.54	.Q V	.	.	.	.
4.500	0.1827	0.54	.Q V	.	.	.	.
4.517	0.1835	0.54	.Q V	.	.	.	.
4.533	0.1842	0.54	.Q V	.	.	.	.
4.550	0.1850	0.55	.Q V	.	.	.	.
4.567	0.1857	0.55	.Q V	.	.	.	.
4.583	0.1865	0.55	.Q V	.	.	.	.
4.600	0.1872	0.55	.Q V	.	.	.	.
4.617	0.1880	0.55	.Q V	.	.	.	.
4.633	0.1887	0.55	.Q V	.	.	.	.
4.650	0.1895	0.55	.Q V	.	.	.	.

4.667	0.1903	0.55	.Q	V	.	.	.	.
4.683	0.1910	0.55	.Q	V	.	.	.	.
4.700	0.1918	0.55	.Q	V	.	.	.	.
4.717	0.1925	0.55	.Q	V	.	.	.	.
4.733	0.1933	0.55	.Q	V	.	.	.	.
4.750	0.1940	0.55	.Q	V	.	.	.	.
4.767	0.1948	0.55	.Q	V	.	.	.	.
4.783	0.1956	0.55	.Q	V	.	.	.	.
4.800	0.1963	0.55	.Q	V	.	.	.	.
4.817	0.1971	0.55	.Q	V	.	.	.	.
4.833	0.1978	0.55	.Q	V	.	.	.	.
4.850	0.1986	0.55	.Q	V	.	.	.	.
4.867	0.1994	0.55	.Q	V	.	.	.	.
4.883	0.2001	0.55	.Q	V	.	.	.	.
4.900	0.2009	0.55	.Q	V	.	.	.	.
4.917	0.2017	0.55	.Q	V	.	.	.	.
4.933	0.2024	0.55	.Q	V	.	.	.	.
4.950	0.2032	0.56	.Q	V	.	.	.	.
4.967	0.2039	0.56	.Q	V	.	.	.	.
4.983	0.2047	0.56	.Q	V	.	.	.	.
5.000	0.2055	0.56	.Q	V	.	.	.	.
5.017	0.2062	0.56	.Q	V	.	.	.	.
5.033	0.2070	0.56	.Q	V	.	.	.	.
5.050	0.2078	0.56	.Q	V	.	.	.	.
5.067	0.2086	0.56	.Q	V	.	.	.	.
5.083	0.2093	0.56	.Q	V	.	.	.	.
5.100	0.2101	0.56	.Q	V	.	.	.	.
5.117	0.2109	0.56	.Q	V	.	.	.	.
5.133	0.2116	0.56	.Q	V	.	.	.	.
5.150	0.2124	0.56	.Q	V	.	.	.	.
5.167	0.2132	0.56	.Q	V	.	.	.	.
5.183	0.2140	0.56	.Q	V	.	.	.	.
5.200	0.2147	0.56	.Q	V	.	.	.	.
5.217	0.2155	0.56	.Q	V	.	.	.	.
5.233	0.2163	0.56	.Q	V	.	.	.	.
5.250	0.2170	0.56	.Q	V	.	.	.	.
5.267	0.2178	0.56	.Q	V	.	.	.	.
5.283	0.2186	0.56	.Q	V	.	.	.	.
5.300	0.2194	0.56	.Q	V	.	.	.	.
5.317	0.2202	0.56	.Q	V	.	.	.	.
5.333	0.2209	0.57	.Q	V	.	.	.	.
5.350	0.2217	0.57	.Q	V	.	.	.	.
5.367	0.2225	0.57	.Q	V	.	.	.	.
5.383	0.2233	0.57	.Q	V	.	.	.	.
5.400	0.2241	0.57	.Q	V	.	.	.	.
5.417	0.2248	0.57	.Q	V	.	.	.	.
5.433	0.2256	0.57	.Q	V	.	.	.	.
5.450	0.2264	0.57	.Q	V	.	.	.	.
5.467	0.2272	0.57	.Q	V	.	.	.	.
5.483	0.2280	0.57	.Q	V	.	.	.	.
5.500	0.2288	0.57	.Q	V	.	.	.	.
5.517	0.2295	0.57	.Q	V	.	.	.	.
5.533	0.2303	0.57	.Q	V	.	.	.	.
5.550	0.2311	0.57	.Q	V	.	.	.	.
5.567	0.2319	0.57	.Q	V	.	.	.	.
5.583	0.2327	0.57	.Q	V	.	.	.	.
5.600	0.2335	0.57	.Q	V	.	.	.	.
5.617	0.2343	0.57	.Q	V	.	.	.	.
5.633	0.2350	0.57	.Q	V	.	.	.	.
5.650	0.2358	0.57	.Q	V	.	.	.	.
5.667	0.2366	0.57	.Q	V	.	.	.	.
5.683	0.2374	0.57	.Q	V	.	.	.	.
5.700	0.2382	0.58	.Q	V	.	.	.	.
5.717	0.2390	0.58	.Q	V	.	.	.	.
5.733	0.2398	0.58	.Q	V	.	.	.	.
5.750	0.2406	0.58	.Q	V	.	.	.	.
5.767	0.2414	0.58	.Q	V	.	.	.	.
5.783	0.2422	0.58	.Q	V	.	.	.	.
5.800	0.2430	0.58	.Q	V	.	.	.	.
5.817	0.2438	0.58	.Q	V	.	.	.	.
5.833	0.2446	0.58	.Q	V	.	.	.	.
5.850	0.2454	0.58	.Q	V	.	.	.	.
5.867	0.2462	0.58	.Q	V	.	.	.	.
5.883	0.2470	0.58	.Q	V	.	.	.	.
5.900	0.2478	0.58	.Q	V	.	.	.	.
5.917	0.2486	0.58	.Q	V	.	.	.	.
5.933	0.2494	0.58	.Q	V	.	.	.	.
5.950	0.2502	0.58	.Q	V	.	.	.	.
5.967	0.2510	0.58	.Q	V	.	.	.	.
5.983	0.2518	0.58	.Q	V	.	.	.	.
6.000	0.2526	0.58	.Q	V	.	.	.	.
6.017	0.2534	0.58	.Q	V	.	.	.	.
6.033	0.2542	0.58	.Q	V	.	.	.	.
6.050	0.2550	0.59	.Q	V	.	.	.	.
6.067	0.2558	0.59	.Q	V	.	.	.	.
6.083	0.2566	0.59	.Q	V	.	.	.	.
6.100	0.2574	0.59	.Q	V	.	.	.	.
6.117	0.2582	0.59	.Q	V	.	.	.	.
6.133	0.2590	0.59	.Q	V	.	.	.	.
6.150	0.2598	0.59	.Q	V	.	.	.	.
6.167	0.2607	0.59	.Q	V	.	.	.	.
6.183	0.2615	0.59	.Q	V	.	.	.	.
6.200	0.2623	0.59	.Q	V	.	.	.	.
6.217	0.2631	0.59	.Q	V	.	.	.	.
6.233	0.2639	0.59	.Q	V	.	.	.	.
6.250	0.2647	0.59	.Q	V	.	.	.	.
6.267	0.2655	0.59	.Q	V	.	.	.	.
6.283	0.2664	0.59	.Q	V	.	.	.	.
6.300	0.2672	0.59	.Q	V	.	.	.	.
6.317	0.2680	0.59	.Q	V	.	.	.	.
6.333	0.2688	0.59	.Q	V	.	.	.	.
6.350	0.2696	0.59	.Q	V	.	.	.	.
6.367	0.2704	0.59	.Q	V	.	.	.	.
6.383	0.2713	0.59	.Q	V	.	.	.	.
6.400	0.2721	0.60	.Q	V	.	.	.	.
6.417	0.2729	0.60	.Q	V	.	.	.	.
6.433	0.2737	0.60	.Q	V	.	.	.	.
6.450	0.2745	0.60	.Q	V	.	.	.	.
6.467	0.2754	0.60	.Q	V	.	.	.	.
6.483	0.2762	0.60	.Q	V	.	.	.	.
6.500	0.2770	0.60	.Q	V	.	.	.	.
6.517	0.2778	0.60	.Q	V	.	.	.	.
6.533	0.2787	0.60	.Q	V	.	.	.	.
6.550	0.2795	0.60	.Q	V	.	.	.	.
6.567	0.2803	0.60	.Q	V	.	.	.	.
6.583	0.2812	0.60	.Q	V	.	.	.	.
6.600	0.2820	0.60	.Q	V	.	.	.	.
6.617	0.2828	0.60	.Q	V	.	.	.	.

6.633	0.2836	0.60	.Q	V	.	.	.	.
6.650	0.2845	0.60	.Q	V	.	.	.	.
6.667	0.2853	0.60	.Q	V	.	.	.	.
6.683	0.2861	0.60	.Q	V	.	.	.	.
6.700	0.2870	0.60	.Q	V	.	.	.	.
6.717	0.2878	0.60	.Q	V	.	.	.	.
6.733	0.2886	0.61	.Q	V	.	.	.	.
6.750	0.2895	0.61	.Q	V	.	.	.	.
6.767	0.2903	0.61	.Q	V	.	.	.	.
6.783	0.2911	0.61	.Q	V	.	.	.	.
6.800	0.2920	0.61	.Q	V	.	.	.	.
6.817	0.2928	0.61	.Q	V	.	.	.	.
6.833	0.2937	0.61	.Q	V	.	.	.	.
6.850	0.2945	0.61	.Q	V	.	.	.	.
6.867	0.2953	0.61	.Q	V	.	.	.	.
6.883	0.2962	0.61	.Q	V	.	.	.	.
6.900	0.2970	0.61	.Q	V	.	.	.	.
6.917	0.2979	0.61	.Q	V	.	.	.	.
6.933	0.2987	0.61	.Q	V	.	.	.	.
6.950	0.2996	0.61	.Q	V	.	.	.	.
6.967	0.3004	0.61	.Q	V	.	.	.	.
6.983	0.3013	0.61	.Q	V	.	.	.	.
7.000	0.3021	0.61	.Q	V	.	.	.	.
7.017	0.3029	0.62	.Q	V	.	.	.	.
7.033	0.3038	0.62	.Q	V	.	.	.	.
7.050	0.3046	0.62	.Q	V	.	.	.	.
7.067	0.3055	0.62	.Q	V	.	.	.	.
7.083	0.3063	0.62	.Q	V	.	.	.	.
7.100	0.3072	0.62	.Q	V	.	.	.	.
7.117	0.3080	0.62	.Q	V	.	.	.	.
7.133	0.3089	0.62	.Q	V	.	.	.	.
7.150	0.3098	0.62	.Q	V	.	.	.	.
7.167	0.3106	0.62	.Q	V	.	.	.	.
7.183	0.3115	0.62	.Q	V	.	.	.	.
7.200	0.3123	0.62	.Q	V	.	.	.	.
7.217	0.3132	0.62	.Q	V	.	.	.	.
7.233	0.3140	0.62	.Q	V	.	.	.	.
7.250	0.3149	0.62	.Q	V	.	.	.	.
7.267	0.3158	0.63	.Q	V	.	.	.	.
7.283	0.3166	0.63	.Q	V	.	.	.	.
7.300	0.3175	0.63	.Q	V	.	.	.	.
7.317	0.3183	0.63	.Q	V	.	.	.	.
7.333	0.3192	0.63	.Q	V	.	.	.	.
7.350	0.3201	0.63	.Q	V	.	.	.	.
7.367	0.3209	0.63	.Q	V	.	.	.	.
7.383	0.3218	0.63	.Q	V	.	.	.	.
7.400	0.3227	0.63	.Q	V	.	.	.	.
7.417	0.3235	0.63	.Q	V	.	.	.	.
7.433	0.3244	0.63	.Q	V	.	.	.	.
7.450	0.3253	0.63	.Q	V	.	.	.	.
7.467	0.3261	0.63	.Q	V	.	.	.	.
7.483	0.3270	0.63	.Q	V	.	.	.	.
7.500	0.3279	0.63	.Q	V	.	.	.	.
7.517	0.3287	0.63	.Q	V	.	.	.	.
7.533	0.3296	0.63	.Q	V	.	.	.	.
7.550	0.3305	0.63	.Q	V	.	.	.	.
7.567	0.3314	0.64	.Q	V	.	.	.	.
7.583	0.3322	0.64	.Q	V	.	.	.	.
7.600	0.3331	0.64	.Q	V	.	.	.	.
7.617	0.3340	0.64	.Q	V	.	.	.	.
7.633	0.3349	0.64	.Q	V	.	.	.	.
7.650	0.3358	0.64	.Q	V	.	.	.	.
7.667	0.3366	0.64	.Q	V	.	.	.	.
7.683	0.3375	0.64	. Q	V	.	.	.	.
7.700	0.3384	0.64	. Q	V	.	.	.	.
7.717	0.3393	0.64	. Q	V	.	.	.	.
7.733	0.3402	0.64	. Q	V	.	.	.	.
7.750	0.3411	0.64	. Q	V	.	.	.	.
7.767	0.3419	0.64	. Q	V	.	.	.	.
7.783	0.3428	0.64	. Q	V	.	.	.	.
7.800	0.3437	0.64	. Q	V	.	.	.	.
7.817	0.3446	0.64	. Q	V	.	.	.	.
7.833	0.3455	0.64	. Q	V	.	.	.	.
7.850	0.3464	0.65	. Q	V	.	.	.	.
7.867	0.3473	0.65	. Q	V	.	.	.	.
7.883	0.3482	0.65	. Q	V	.	.	.	.
7.900	0.3491	0.65	. Q	V	.	.	.	.
7.917	0.3499	0.65	. Q	V	.	.	.	.
7.933	0.3508	0.65	. Q	V	.	.	.	.
7.950	0.3517	0.65	. Q	V	.	.	.	.
7.967	0.3526	0.65	. Q	V	.	.	.	.
7.983	0.3535	0.65	. Q	V	.	.	.	.
8.000	0.3544	0.65	. Q	V	.	.	.	.
8.017	0.3553	0.65	. Q	V	.	.	.	.
8.033	0.3562	0.65	. Q	V	.	.	.	.
8.050	0.3571	0.65	. Q	V	.	.	.	.
8.067	0.3580	0.66	. Q	V	.	.	.	.
8.083	0.3589	0.66	. Q	V	.	.	.	.
8.100	0.3598	0.66	. Q	V	.	.	.	.
8.117	0.3607	0.66	. Q	V	.	.	.	.
8.133	0.3617	0.66	. Q	V	.	.	.	.
8.150	0.3626	0.66	. Q	V	.	.	.	.
8.167	0.3635	0.66	. Q	V	.	.	.	.
8.183	0.3644	0.66	. Q	V	.	.	.	.
8.200	0.3653	0.66	. Q	V	.	.	.	.
8.217	0.3662	0.66	. Q	V	.	.	.	.
8.233	0.3671	0.66	. Q	V	.	.	.	.
8.250	0.3680	0.66	. Q	V	.	.	.	.
8.267	0.3689	0.66	. Q	V	.	.	.	.
8.283	0.3698	0.66	. Q	V	.	.	.	.
8.300	0.3708	0.66	. Q	V	.	.	.	.
8.317	0.3717	0.67	. Q	V	.	.	.	.
8.333	0.3726	0.67	. Q	V	.	.	.	.
8.350	0.3735	0.67	. Q	V	.	.	.	.
8.367	0.3744	0.67	. Q	V	.	.	.	.
8.383	0.3754	0.67	. Q	V	.	.	.	.
8.400	0.3763	0.67	. Q	V	.	.	.	.
8.417	0.3772	0.67	. Q	V	.	.	.	.
8.433	0.3781	0.67	. Q	V	.	.	.	.
8.450	0.3790	0.67	. Q	V	.	.	.	.
8.467	0.3800	0.67	. Q	V	.	.	.	.
8.483	0.3809	0.67	. Q	V	.	.	.	.
8.500	0.3818	0.67	. Q	V	.	.	.	.
8.517	0.3828	0.67	. Q	V	.	.	.	.
8.533	0.3837	0.67	. Q	V	.	.	.	.
8.550	0.3846	0.67	. Q	V	.	.	.	.
8.567	0.3855	0.67	. Q	V	.	.	.	.
8.583	0.3865	0.68	. Q	V	.	.	.	.

8.600	0.3874	0.68	.	Q	V	.	.	.
8.617	0.3883	0.68	.	Q	V	.	.	.
8.633	0.3893	0.68	.	Q	V	.	.	.
8.650	0.3902	0.68	.	Q	V	.	.	.
8.667	0.3911	0.68	.	Q	V	.	.	.
8.683	0.3921	0.68	.	Q	V	.	.	.
8.700	0.3930	0.68	.	Q	V	.	.	.
8.717	0.3940	0.68	.	Q	V	.	.	.
8.733	0.3949	0.69	.	Q	V	.	.	.
8.750	0.3959	0.69	.	Q	V	.	.	.
8.767	0.3968	0.69	.	Q	V	.	.	.
8.783	0.3977	0.69	.	Q	V	.	.	.
8.800	0.3987	0.69	.	Q	V	.	.	.
8.817	0.3996	0.69	.	Q	V	.	.	.
8.833	0.4006	0.69	.	Q	V	.	.	.
8.850	0.4015	0.69	.	Q	V	.	.	.
8.867	0.4025	0.69	.	Q	V	.	.	.
8.883	0.4034	0.69	.	Q	V	.	.	.
8.900	0.4044	0.69	.	Q	V	.	.	.
8.917	0.4053	0.69	.	Q	V	.	.	.
8.933	0.4063	0.69	.	Q	V	.	.	.
8.950	0.4073	0.69	.	Q	V	.	.	.
8.967	0.4082	0.69	.	Q	V	.	.	.
8.983	0.4092	0.70	.	Q	V	.	.	.
9.000	0.4101	0.70	.	Q	V	.	.	.
9.017	0.4111	0.70	.	Q	V	.	.	.
9.033	0.4120	0.70	.	Q	V	.	.	.
9.050	0.4130	0.70	.	Q	V	.	.	.
9.067	0.4140	0.70	.	Q	V	.	.	.
9.083	0.4149	0.70	.	Q	V	.	.	.
9.100	0.4159	0.70	.	Q	V	.	.	.
9.117	0.4169	0.70	.	Q	V	.	.	.
9.133	0.4179	0.70	.	Q	V	.	.	.
9.150	0.4188	0.71	.	Q	V	.	.	.
9.167	0.4198	0.71	.	Q	V	.	.	.
9.183	0.4208	0.71	.	Q	V	.	.	.
9.200	0.4217	0.71	.	Q	V	.	.	.
9.217	0.4227	0.71	.	Q	V	.	.	.
9.233	0.4237	0.71	.	Q	V	.	.	.
9.250	0.4247	0.71	.	Q	V	.	.	.
9.267	0.4256	0.71	.	Q	V	.	.	.
9.283	0.4266	0.71	.	Q	V	.	.	.
9.300	0.4276	0.71	.	Q	V	.	.	.
9.317	0.4286	0.71	.	Q	V	.	.	.
9.333	0.4296	0.71	.	Q	V	.	.	.
9.350	0.4305	0.71	.	Q	V	.	.	.
9.367	0.4315	0.71	.	Q	V	.	.	.
9.383	0.4325	0.72	.	Q	V	.	.	.
9.400	0.4335	0.72	.	Q	V	.	.	.
9.417	0.4345	0.72	.	Q	V.	.	.	.
9.433	0.4355	0.72	.	Q	V.	.	.	.
9.450	0.4365	0.72	.	Q	V.	.	.	.
9.467	0.4375	0.72	.	Q	V.	.	.	.
9.483	0.4385	0.72	.	Q	V.	.	.	.
9.500	0.4395	0.72	.	Q	V.	.	.	.
9.517	0.4405	0.72	.	Q	V.	.	.	.
9.533	0.4415	0.73	.	Q	V.	.	.	.
9.550	0.4425	0.73	.	Q	V.	.	.	.
9.567	0.4435	0.73	.	Q	V.	.	.	.
9.583	0.4445	0.73	.	Q	V.	.	.	.
9.600	0.4455	0.73	.	Q	V.	.	.	.
9.617	0.4465	0.73	.	Q	V.	.	.	.
9.633	0.4475	0.73	.	Q	V.	.	.	.
9.650	0.4485	0.73	.	Q	V.	.	.	.
9.667	0.4495	0.73	.	Q	V.	.	.	.
9.683	0.4505	0.73	.	Q	V.	.	.	.
9.700	0.4515	0.73	.	Q	V.	.	.	.
9.717	0.4525	0.73	.	Q	V.	.	.	.
9.733	0.4535	0.74	.	Q	V.	.	.	.
9.750	0.4545	0.74	.	Q	V.	.	.	.
9.767	0.4556	0.74	.	Q	V.	.	.	.
9.783	0.4566	0.74	.	Q	V.	.	.	.
9.800	0.4576	0.74	.	Q	V.	.	.	.
9.817	0.4586	0.74	.	Q	V.	.	.	.
9.833	0.4596	0.74	.	Q	V.	.	.	.
9.850	0.4607	0.74	.	Q	V.	.	.	.
9.867	0.4617	0.75	.	Q	V.	.	.	.
9.883	0.4627	0.75	.	Q	V.	.	.	.
9.900	0.4637	0.75	.	Q	V.	.	.	.
9.917	0.4648	0.75	.	Q	V.	.	.	.
9.933	0.4658	0.75	.	Q	V.	.	.	.
9.950	0.4668	0.75	.	Q	V.	.	.	.
9.967	0.4679	0.75	.	Q	V.	.	.	.
9.983	0.4689	0.75	.	Q	V.	.	.	.
10.000	0.4699	0.75	.	Q	V.	.	.	.
10.017	0.4710	0.75	.	Q	V.	.	.	.
10.033	0.4720	0.75	.	Q	V.	.	.	.
10.050	0.4730	0.75	.	Q	V.	.	.	.
10.067	0.4741	0.75	.	Q	V.	.	.	.
10.083	0.4751	0.76	.	Q	V.	.	.	.
10.100	0.4762	0.76	.	Q	V.	.	.	.
10.117	0.4772	0.76	.	Q	V.	.	.	.
10.133	0.4783	0.76	.	Q	V.	.	.	.
10.150	0.4793	0.76	.	Q	V.	.	.	.
10.167	0.4804	0.76	.	Q	V.	.	.	.
10.183	0.4814	0.76	.	Q	V.	.	.	.
10.200	0.4825	0.77	.	Q	V	.	.	.
10.217	0.4835	0.77	.	Q	V	.	.	.
10.233	0.4846	0.77	.	Q	V	.	.	.
10.250	0.4856	0.77	.	Q	V	.	.	.
10.267	0.4867	0.77	.	Q	V	.	.	.
10.283	0.4878	0.77	.	Q	V	.	.	.
10.300	0.4888	0.77	.	Q	V	.	.	.
10.317	0.4899	0.77	.	Q	V	.	.	.
10.333	0.4910	0.77	.	Q	V	.	.	.
10.350	0.4920	0.77	.	Q	V	.	.	.
10.367	0.4931	0.77	.	Q	V	.	.	.
10.383	0.4942	0.78	.	Q	V	.	.	.
10.400	0.4952	0.78	.	Q	V	.	.	.
10.417	0.4963	0.78	.	Q	V	.	.	.
10.433	0.4974	0.78	.	Q	V	.	.	.
10.450	0.4984	0.78	.	Q	V	.	.	.
10.467	0.4995	0.78	.	Q	V	.	.	.
10.483	0.5006	0.78	.	Q	V	.	.	.
10.500	0.5017	0.78	.	Q	V	.	.	.
10.517	0.5028	0.79	.	Q	V	.	.	.
10.533	0.5038	0.79	.	Q	V	.	.	.
10.550	0.5049	0.79	.	Q	V	.	.	.

10.567	0.5060	0.79	. Q	V	.	.	.
10.583	0.5071	0.79	. Q	V	.	.	.
10.600	0.5082	0.79	. Q	V	.	.	.
10.617	0.5093	0.79	. Q	V	.	.	.
10.633	0.5104	0.80	. Q	V	.	.	.
10.650	0.5115	0.80	. Q	V	.	.	.
10.667	0.5126	0.80	. Q	V	.	.	.
10.683	0.5137	0.80	. Q	V	.	.	.
10.700	0.5148	0.80	. Q	V	.	.	.
10.717	0.5159	0.80	. Q	V	.	.	.
10.733	0.5170	0.80	. Q	V	.	.	.
10.750	0.5181	0.80	. Q	V	.	.	.
10.767	0.5192	0.80	. Q	V	.	.	.
10.783	0.5203	0.80	. Q	V	.	.	.
10.800	0.5214	0.80	. Q	V	.	.	.
10.817	0.5225	0.81	. Q	V	.	.	.
10.833	0.5236	0.81	. Q	V	.	.	.
10.850	0.5247	0.81	. Q	V	.	.	.
10.867	0.5259	0.81	. Q	V	.	.	.
10.883	0.5270	0.81	. Q	V	.	.	.
10.900	0.5281	0.81	. Q	V	.	.	.
10.917	0.5292	0.82	. Q	V	.	.	.
10.933	0.5304	0.82	. Q	.V	.	.	.
10.950	0.5315	0.82	. Q	.V	.	.	.
10.967	0.5326	0.82	. Q	.V	.	.	.
10.983	0.5338	0.82	. Q	.V	.	.	.
11.000	0.5349	0.82	. Q	.V	.	.	.
11.017	0.5360	0.82	. Q	.V	.	.	.
11.033	0.5372	0.83	. Q	.V	.	.	.
11.050	0.5383	0.83	. Q	.V	.	.	.
11.067	0.5394	0.83	. Q	.V	.	.	.
11.083	0.5406	0.83	. Q	.V	.	.	.
11.100	0.5417	0.83	. Q	.V	.	.	.
11.117	0.5429	0.83	. Q	.V	.	.	.
11.133	0.5440	0.83	. Q	.V	.	.	.
11.150	0.5452	0.83	. Q	.V	.	.	.
11.167	0.5463	0.83	. Q	.V	.	.	.
11.183	0.5475	0.84	. Q	.V	.	.	.
11.200	0.5486	0.84	. Q	.V	.	.	.
11.217	0.5498	0.84	. Q	.V	.	.	.
11.233	0.5509	0.84	. Q	.V	.	.	.
11.250	0.5521	0.84	. Q	.V	.	.	.
11.267	0.5533	0.84	. Q	.V	.	.	.
11.283	0.5544	0.85	. Q	.V	.	.	.
11.300	0.5556	0.85	. Q	.V	.	.	.
11.317	0.5568	0.85	. Q	.V	.	.	.
11.333	0.5579	0.85	. Q	.V	.	.	.
11.350	0.5591	0.85	. Q	.V	.	.	.
11.367	0.5603	0.86	. Q	.V	.	.	.
11.383	0.5615	0.86	. Q	.V	.	.	.
11.400	0.5627	0.86	. Q	.V	.	.	.
11.417	0.5638	0.86	. Q	.V	.	.	.
11.433	0.5650	0.86	. Q	.V	.	.	.
11.450	0.5662	0.86	. Q	.V	.	.	.
11.467	0.5674	0.86	. Q	.V	.	.	.
11.483	0.5686	0.86	. Q	.V	.	.	.
11.500	0.5698	0.86	. Q	.V	.	.	.
11.517	0.5710	0.86	. Q	.V	.	.	.
11.533	0.5722	0.87	. Q	.V	.	.	.
11.550	0.5733	0.87	. Q	.V	.	.	.
11.567	0.5745	0.87	. Q	.V	.	.	.
11.583	0.5757	0.87	. Q	.V	.	.	.
11.600	0.5770	0.87	. Q	.V	.	.	.
11.617	0.5782	0.88	. Q	.V	.	.	.
11.633	0.5794	0.88	. Q	. V	.	.	.
11.650	0.5806	0.88	. Q	. V	.	.	.
11.667	0.5818	0.88	. Q	. V	.	.	.
11.683	0.5830	0.89	. Q	. V	.	.	.
11.700	0.5842	0.89	. Q	. V	.	.	.
11.717	0.5855	0.89	. Q	. V	.	.	.
11.733	0.5867	0.89	. Q	. V	.	.	.
11.750	0.5879	0.89	. Q	. V	.	.	.
11.767	0.5892	0.89	. Q	. V	.	.	.
11.783	0.5904	0.89	. Q	. V	.	.	.
11.800	0.5916	0.90	. Q	. V	.	.	.
11.817	0.5929	0.90	. Q	. V	.	.	.
11.833	0.5941	0.90	. Q	. V	.	.	.
11.850	0.5953	0.90	. Q	. V	.	.	.
11.867	0.5966	0.90	. Q	. V	.	.	.
11.883	0.5978	0.90	. Q	. V	.	.	.
11.900	0.5991	0.90	. Q	. V	.	.	.
11.917	0.6003	0.90	. Q	. V	.	.	.
11.933	0.6016	0.91	. Q	. V	.	.	.
11.950	0.6028	0.91	. Q	. V	.	.	.
11.967	0.6041	0.91	. Q	. V	.	.	.
11.983	0.6053	0.91	. Q	. V	.	.	.
12.000	0.6066	0.91	. Q	. V	.	.	.
12.017	0.6078	0.92	. Q	. V	.	.	.
12.033	0.6091	0.92	. Q	. V	.	.	.
12.050	0.6104	0.92	. Q	. V	.	.	.
12.067	0.6116	0.92	. Q	. V	.	.	.
12.083	0.6129	0.92	. Q	. V	.	.	.
12.100	0.6142	0.92	. Q	. V	.	.	.
12.117	0.6154	0.92	. Q	. V	.	.	.
12.133	0.6167	0.92	. Q	. V	.	.	.
12.150	0.6180	0.92	. Q	. V	.	.	.
12.167	0.6192	0.92	. Q	. V	.	.	.
12.183	0.6205	0.92	. Q	. V	.	.	.
12.200	0.6218	0.92	. Q	. V	.	.	.
12.217	0.6230	0.91	. Q	. V	.	.	.
12.233	0.6243	0.91	. Q	. V	.	.	.
12.250	0.6255	0.91	. Q	. V	.	.	.
12.267	0.6268	0.91	. Q	. V	.	.	.
12.283	0.6280	0.91	. Q	. V	.	.	.
12.300	0.6293	0.91	. Q	. V	.	.	.
12.317	0.6306	0.92	. Q	. V	.	.	.
12.333	0.6318	0.92	. Q	. V	.	.	.
12.350	0.6331	0.92	. Q	. V	.	.	.
12.367	0.6344	0.92	. Q	. V	.	.	.
12.383	0.6357	0.93	. Q	. V	.	.	.
12.400	0.6369	0.93	. Q	. V	.	.	.
12.417	0.6382	0.93	. Q	. V	.	.	.
12.433	0.6395	0.94	. Q	. V	.	.	.
12.450	0.6408	0.94	. Q	. V	.	.	.
12.467	0.6421	0.94	. Q	. V	.	.	.
12.483	0.6434	0.94	. Q	. V	.	.	.
12.500	0.6447	0.94	. Q	. V	.	.	.
12.517	0.6460	0.95	. Q	. V	.	.	.

12.533	0.6473	0.95	.	Q	.	V	.	.	.
12.550	0.6486	0.95	.	Q	.	V	.	.	.
12.567	0.6499	0.95	.	Q	.	V	.	.	.
12.583	0.6512	0.95	.	Q	.	V	.	.	.
12.600	0.6525	0.95	.	Q	.	V	.	.	.
12.617	0.6539	0.96	.	Q	.	V	.	.	.
12.633	0.6552	0.96	.	Q	.	V	.	.	.
12.650	0.6565	0.96	.	Q	.	V	.	.	.
12.667	0.6578	0.96	.	Q	.	V	.	.	.
12.683	0.6592	0.96	.	Q	.	V	.	.	.
12.700	0.6605	0.97	.	Q	.	V	.	.	.
12.717	0.6618	0.97	.	Q	.	V	.	.	.
12.733	0.6632	0.97	.	Q	.	V	.	.	.
12.750	0.6645	0.98	.	Q	.	V	.	.	.
12.767	0.6659	0.98	.	Q	.	V	.	.	.
12.783	0.6672	0.98	.	Q	.	V	.	.	.
12.800	0.6686	0.99	.	Q	.	V	.	.	.
12.817	0.6700	0.99	.	Q	.	V	.	.	.
12.833	0.6713	0.99	.	Q	.	V	.	.	.
12.850	0.6727	1.00	.	Q	.	V	.	.	.
12.867	0.6741	1.00	.	Q	.	V	.	.	.
12.883	0.6754	1.00	.	Q	.	V	.	.	.
12.900	0.6768	1.00	.	Q	.	V	.	.	.
12.917	0.6782	1.00	.	Q	.	V	.	.	.
12.933	0.6796	1.01	.	Q	.	V	.	.	.
12.950	0.6810	1.01	.	Q	.	V	.	.	.
12.967	0.6824	1.01	.	Q	.	V	.	.	.
12.983	0.6838	1.01	.	Q	.	V	.	.	.
13.000	0.6852	1.01	.	Q	.	V	.	.	.
13.017	0.6866	1.02	.	Q	.	V	.	.	.
13.033	0.6880	1.02	.	Q	.	V	.	.	.
13.050	0.6894	1.02	.	Q	.	V	.	.	.
13.067	0.6908	1.03	.	Q	.	V	.	.	.
13.083	0.6922	1.03	.	Q	.	V	.	.	.
13.100	0.6936	1.03	.	Q	.	V	.	.	.
13.117	0.6951	1.04	.	Q	.	V	.	.	.
13.133	0.6965	1.04	.	Q	.	V	.	.	.
13.150	0.6979	1.05	.	Q	.	V	.	.	.
13.167	0.6994	1.05	.	Q	.	V	.	.	.
13.183	0.7008	1.05	.	Q	.	V	.	.	.
13.200	0.7023	1.06	.	Q	.	V	.	.	.
13.217	0.7038	1.06	.	Q	.	V	.	.	.
13.233	0.7052	1.06	.	Q	.	V	.	.	.
13.250	0.7067	1.07	.	Q	.	V	.	.	.
13.267	0.7082	1.07	.	Q	.	V	.	.	.
13.283	0.7096	1.07	.	Q	.	V	.	.	.
13.300	0.7111	1.07	.	Q	.	V	.	.	.
13.317	0.7126	1.07	.	Q	.	V	.	.	.
13.333	0.7141	1.08	.	Q	.	V	.	.	.
13.350	0.7156	1.08	.	Q	.	V	.	.	.
13.367	0.7171	1.08	.	Q	.	V	.	.	.
13.383	0.7185	1.08	.	Q	.	V	.	.	.
13.400	0.7200	1.09	.	Q	.	V	.	.	.
13.417	0.7215	1.09	.	Q	.	V	.	.	.
13.433	0.7231	1.10	.	Q	.	V	.	.	.
13.450	0.7246	1.10	.	Q	.	V	.	.	.
13.467	0.7261	1.11	.	Q	.	V	.	.	.
13.483	0.7276	1.11	.	Q	.	V	.	.	.
13.500	0.7292	1.11	.	Q	.	V	.	.	.

13.517	0.7307	1.12	.	Q	.	V	.	.	.
13.533	0.7322	1.12	.	Q	.	V	.	.	.
13.550	0.7338	1.13	.	Q	.	V	.	.	.
13.567	0.7354	1.13	.	Q	.	V	.	.	.
13.583	0.7369	1.14	.	Q	.	V	.	.	.
13.600	0.7385	1.14	.	Q	.	V	.	.	.
13.617	0.7401	1.15	.	Q	.	V	.	.	.
13.633	0.7417	1.15	.	Q	.	V	.	.	.
13.650	0.7432	1.15	.	Q	.	V	.	.	.
13.667	0.7448	1.15	.	Q	.	V	.	.	.
13.683	0.7464	1.16	.	Q	.	V	.	.	.
13.700	0.7480	1.16	.	Q	.	V	.	.	.
13.717	0.7496	1.16	.	Q	.	V	.	.	.
13.733	0.7512	1.16	.	Q	.	V	.	.	.
13.750	0.7528	1.17	.	Q	.	V	.	.	.
13.767	0.7544	1.17	.	Q	.	V	.	.	.
13.783	0.7561	1.17	.	Q	.	V	.	.	.
13.800	0.7577	1.18	.	Q	.	V	.	.	.
13.817	0.7593	1.19	.	Q	.	V	.	.	.
13.833	0.7610	1.19	.	Q	.	V	.	.	.
13.850	0.7626	1.20	.	Q	.	V	.	.	.
13.867	0.7643	1.21	.	Q	.	V	.	.	.
13.883	0.7659	1.21	.	Q	.	V	.	.	.
13.900	0.7676	1.22	.	Q	.	V	.	.	.
13.917	0.7693	1.22	.	Q	.	V	.	.	.
13.933	0.7710	1.23	.	Q	.	V	.	.	.
13.950	0.7727	1.24	.	Q	.	V	.	.	.
13.967	0.7744	1.24	.	Q	.	V	.	.	.
13.983	0.7761	1.24	.	Q	.	V	.	.	.
14.000	0.7778	1.25	.	Q	.	V	.	.	.
14.017	0.7796	1.25	.	Q	.	V	.	.	.
14.033	0.7813	1.25	.	Q	.	V	.	.	.
14.050	0.7830	1.25	.	Q	.	V	.	.	.
14.067	0.7847	1.26	.	Q	.	V	.	.	.
14.083	0.7865	1.26	.	Q	.	V	.	.	.
14.100	0.7882	1.26	.	Q	.	V	.	.	.
14.117	0.7900	1.26	.	Q	.	V	.	.	.
14.133	0.7917	1.27	.	Q	.	V	.	.	.
14.150	0.7934	1.27	.	Q	.	V	.	.	.
14.167	0.7952	1.27	.	Q	.	V	.	.	.
14.183	0.7969	1.27	.	Q	.	V	.	.	.
14.200	0.7987	1.27	.	Q	.	V	.	.	.
14.217	0.8005	1.27	.	Q	.	V	.	.	.
14.233	0.8022	1.27	.	Q	.	V	.	.	.
14.250	0.8040	1.27	.	Q	.	V	.	.	.
14.267	0.8057	1.28	.	Q	.	V	.	.	.
14.283	0.8075	1.28	.	Q	.	V	.	.	.
14.300	0.8092	1.28	.	Q	.	V	.	.	.
14.317	0.8110	1.28	.	Q	.	V	.	.	.
14.333	0.8128	1.28	.	Q	.	V	.	.	.
14.350	0.8145	1.28	.	Q	.	V	.	.	.
14.367	0.8163	1.29	.	Q	.	V	.	.	.
14.383	0.8181	1.29	.	Q	.	V	.	.	.
14.400	0.8199	1.30	.	Q	.	V	.	.	.
14.417	0.8217	1.30	.	Q	.	V	.	.	.
14.433	0.8235	1.31	.	Q	.	V	.	.	.
14.450	0.8253	1.31	.	Q	.	V	.	.	.
14.467	0.8271	1.32	.	Q	.	V	.	.	.
14.483	0.8289	1.32	.	Q	.	V	.	.	.

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14.500      0.8307      1.33  .   Q     .      V  .         .         .
14.517      0.8326      1.33  .   Q     .      V  .         .         .
14.533      0.8344      1.34  .   Q     .      V  .         .         .
14.550      0.8363      1.35  .   Q     .      V  .         .         .
14.567      0.8382      1.36  .   Q     .      V  .         .         .
14.583      0.8401      1.37  .   Q     .      V  .         .         .
14.600      0.8420      1.39  .   Q     .      V  .         .         .
14.617      0.8439      1.40  .   Q     .      V  .         .         .
14.633      0.8458      1.41  .   Q     .      V  .         .         .
14.650      0.8478      1.42  .   Q     .      V  .         .         .
14.667      0.8498      1.43  .   Q     .      V  .         .         .
14.683      0.8517      1.44  .   Q     .      V  .         .         .
14.700      0.8537      1.45  .   Q     .      V  .         .         .
14.717      0.8557      1.46  .   Q     .      V  .         .         .
14.733      0.8578      1.47  .   Q     .      V  .         .         .
14.750      0.8598      1.47  .   Q     .      V  .         .         .
14.767      0.8618      1.48  .   Q     .      V  .         .         .
14.783      0.8639      1.49  .   Q     .      V  .         .         .
14.800      0.8659      1.49  .   Q     .      V  .         .         .
14.817      0.8680      1.50  .   Q     .       V .         .         .
14.833      0.8701      1.51  .   Q     .       V .         .         .
14.850      0.8722      1.51  .   Q     .       V .         .         .
14.867      0.8743      1.52  .   Q     .       V .         .         .
14.883      0.8764      1.53  .   Q     .       V .         .         .
14.900      0.8785      1.54  .   Q     .       V .         .         .
14.917      0.8807      1.56  .   Q     .       V .         .         .
14.933      0.8828      1.58  .   Q     .       V .         .         .
14.950      0.8850      1.59  .   Q     .       V .         .         .
14.967      0.8872      1.61  .    Q    .       V .         .         .
14.983      0.8895      1.63  .    Q    .       V .         .         .
15.000      0.8917      1.64  .    Q    .       V .         .         .
15.017      0.8940      1.66  .    Q    .       V .         .         .
15.033      0.8963      1.68  .    Q    .       V .         .         .
15.050      0.8987      1.70  .    Q    .       V .         .         .
15.067      0.9010      1.71  .    Q    .       V .         .         .
15.083      0.9034      1.73  .    Q    .       V .         .         .
15.100      0.9058      1.74  .    Q    .       V .         .         .
15.117      0.9082      1.75  .    Q    .       V .         .         .
15.133      0.9106      1.76  .    Q    .       V .         .         .
15.150      0.9131      1.77  .    Q    .       V .         .         .
15.167      0.9155      1.78  .    Q    .        V.         .         .
15.183      0.9180      1.79  .    Q    .        V.         .         .
15.200      0.9205      1.81  .    Q    .        V.         .         .
15.217      0.9230      1.82  .    Q    .        V.         .         .
15.233      0.9255      1.83  .    Q    .        V.         .         .
15.250      0.9281      1.84  .    Q    .        V.         .         .
15.267      0.9306      1.86  .    Q    .        V.         .         .
15.283      0.9333      1.92  .     Q   .        V.         .         .
15.300      0.9360      1.98  .     Q   .        V.         .         .
15.317      0.9388      2.04  .     Q   .        V.         .         .
15.333      0.9417      2.11  .     Q   .        V.         .         .
15.350      0.9447      2.17  .     Q   .        V.         .         .
15.367      0.9478      2.23  .     Q   .        V.         .         .
15.383      0.9509      2.29  .      Q  .        V.         .         .
15.400      0.9542      2.35  .      Q  .        V.         .         .
15.417      0.9575      2.41  .      Q  .        V.         .         .
15.433      0.9609      2.47  .      Q  .        V.         .         .
15.450      0.9644      2.54  .      Q  .         V         .         .
15.467      0.9680      2.62  .       Q .         V         .         .
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15.483      0.9717      2.70  .       Q .         V         .         .
15.500      0.9756      2.79  .       Q .         V         .         .
15.517      0.9795      2.87  .       Q .         V         .         .
15.533      0.9836      2.95  .        Q.         V         .         .
15.550      0.9878      3.04  .        Q.         V         .         .
15.567      0.9921      3.12  .        Q.         V         .         .
15.583      0.9965      3.20  .         Q         V         .         .
15.600      1.0010      3.29  .         Q         V         .         .
15.617      1.0056      3.37  .         Q         V         .         .
15.633      1.0104      3.45  .         Q         V         .         .
15.650      1.0153      3.53  .        .Q        .V         .         .
15.667      1.0202      3.60  .        .Q        .V         .         .
15.683      1.0253      3.67  .        .Q        .V         .         .
15.700      1.0304      3.74  .        .Q        .V         .         .
15.717      1.0357      3.82  .        .Q        .V         .         .
15.733      1.0410      3.89  .        . Q       .V         .         .
15.750      1.0465      3.96  .        . Q       .V         .         .
15.767      1.0521      4.03  .        . Q       .V         .         .
15.783      1.0577      4.10  .        . Q       .V         .         .
15.800      1.0635      4.18  .        .  Q      . V        .         .
15.817      1.0693      4.25  .        .  Q      . V        .         .
15.833      1.0753      4.34  .        .  Q      . V        .         .
15.850      1.0814      4.45  .        .  Q      . V        .         .
15.867      1.0877      4.56  .        .   Q     . V        .         .
15.883      1.0941      4.67  .        .   Q     . V        .         .
15.900      1.1007      4.77  .        .   Q     . V        .         .
15.917      1.1074      4.88  .        .    Q    . V        .         .
15.933      1.1143      4.99  .        .    Q    .  V       .         .
15.950      1.1213      5.10  .        .    Q    .  V       .         .
15.967      1.1285      5.20  .        .     Q   .  V       .         .
15.983      1.1358      5.31  .        .     Q   .  V       .         .
16.000      1.1433      5.42  .        .     Q   .  V       .         .
16.017      1.1513      5.80  .        .       Q .  V       .         .
16.033      1.1602      6.46  .        .        Q   V       .         .
16.050      1.1700      7.11  .        .         . Q V      .         .
16.067      1.1807      7.77  .        .         .  Q       .         .
16.083      1.1923      8.42  .        .         .  V Q     .         .
16.100      1.2048      9.08  .        .         .   V  Q .           .
16.117      1.2182      9.73  .        .         .   V    Q          .
16.133      1.2325     10.39  .        .         .   V    . Q        .
16.150      1.2477     11.04  .        .         .   V    .  Q       .
16.167      1.2638     11.70  .        .         .    V   .    Q     .
16.183      1.2808     12.35  .        .         .    V   .      Q . .
16.200      1.2984     12.80  .        .         .    V   .       Q
16.217      1.3146     11.75  .        .         .     V  .    Q    .
16.233      1.3297     10.96  .        .         .     V  .  Q      .
16.250      1.3437     10.17  .        .         .     V  .Q        .
16.267      1.3566      9.37  .        .         .      VQ.         .
16.283      1.3684      8.58  .        .         .    Q V .         .
16.300      1.3792      7.79  .        .         .  Q   V .         .
16.317      1.3888      6.99  .        .        .Q    V .          .
16.333      1.3974      6.20  .        .       Q.      V.          .
16.350      1.4048      5.41  .        .    Q  .       V.          .
16.367      1.4112      4.62  .        .  Q    .       V.          .
16.383      1.4166      3.95  .        . Q     .       V.          .
16.400      1.4217      3.74  .        .Q      .       V.          .
16.417      1.4267      3.56  .        .Q      .       V.          .
16.433      1.4313      3.39  .        Q       .       V.          .
16.450      1.4358      3.22  .        Q       .       V.          .
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16.467	1.4400	3.05	.	Q.	.	V.	.		
16.483	1.4439	2.87	.	Q	.	V.	.		
16.500	1.4476	2.70	.	Q	.	V	.		
16.517	1.4511	2.53	.	Q	.	V	.		
16.533	1.4544	2.35	.	Q	.	V	.		
16.550	1.4574	2.18	.	Q	.	V	.		
16.567	1.4602	2.02	.	Q	.	V	.		
16.583	1.4629	1.97	.	Q	.	V	.		
16.600	1.4655	1.93	.	Q	.	V	.		
16.617	1.4681	1.90	.	Q	.	V	.		
16.633	1.4707	1.87	.	Q	.	V	.		
16.650	1.4732	1.83	.	Q	.	V	.		
16.667	1.4757	1.80	.	Q	.	V	.		
16.683	1.4781	1.76	.	Q	.	V	.		
16.700	1.4805	1.73	.	Q	.	V	.		
16.717	1.4829	1.70	.	Q	.	V	.		
16.733	1.4852	1.66	.	Q	.	V	.		
16.750	1.4874	1.63	.	Q	.	V	.		
16.767	1.4896	1.60	.	Q	.	V	.		
16.783	1.4918	1.58	.	Q	.	V	.		
16.800	1.4939	1.56	.	Q	.	.V	.		
16.817	1.4961	1.54	.	Q	.	.V	.		
16.833	1.4982	1.52	.	Q	.	.V	.		
16.850	1.5002	1.50	.	Q	.	.V	.		
16.867	1.5023	1.48	.	Q	.	.V	.		
16.883	1.5043	1.46	.	Q	.	.V	.		
16.900	1.5062	1.44	.	Q	.	.V	.		
16.917	1.5082	1.42	.	Q	.	.V	.		
16.933	1.5101	1.40	.	Q	.	.V	.		
16.950	1.5120	1.38	.	Q	.	.V	.		
16.967	1.5139	1.37	.	Q	.	.V	.		
16.983	1.5158	1.35	.	Q	.	.V	.		
17.000	1.5176	1.34	.	Q	.	.V	.		
17.017	1.5194	1.32	.	Q	.	.V	.		
17.033	1.5212	1.31	.	Q	.	.V	.		
17.050	1.5230	1.30	.	Q	.	.V	.		
17.067	1.5248	1.28	.	Q	.	.V	.		
17.083	1.5265	1.27	.	Q	.	.V	.		
17.100	1.5283	1.25	.	Q	.	.V	.		
17.117	1.5300	1.24	.	Q	.	.V	.		
17.133	1.5317	1.23	.	Q	.	.V	.		
17.150	1.5334	1.23	.	Q	.	.V	.		
17.167	1.5351	1.23	.	Q	.	.V	.		
17.183	1.5367	1.22	.	Q	.	.V	.		
17.200	1.5384	1.22	.	Q	.	.V	.		
17.217	1.5401	1.22	.	Q	.	.V	.		
17.233	1.5418	1.22	.	Q	.	.V	.		
17.250	1.5434	1.21	.	Q	.	. V	.		
17.267	1.5451	1.21	.	Q	.	. V	.		
17.283	1.5468	1.21	.	Q	.	. V	.		
17.300	1.5484	1.21	.	Q	.	. V	.		
17.317	1.5501	1.20	.	Q	.	. V	.		
17.333	1.5517	1.19	.	Q	.	. V	.		
17.350	1.5534	1.18	.	Q	.	. V	.		
17.367	1.5550	1.18	.	Q	.	. V	.		
17.383	1.5566	1.17	.	Q	.	. V	.		
17.400	1.5582	1.16	.	Q	.	. V	.		
17.417	1.5598	1.15	.	Q	.	. V	.		
17.433	1.5614	1.14	.	Q	.	. V	.		
17.450	1.5629	1.14	.	Q	.	.	. V	.	
17.467	1.5645	1.13	.	Q	.	.	. V	.	
17.483	1.5660	1.12	.	Q	.	.	. V	.	
17.500	1.5676	1.11	.	Q	.	.	. V	.	
17.517	1.5691	1.10	.	Q	.	.	. V	.	
17.533	1.5706	1.10	.	Q	.	.	. V	.	
17.550	1.5721	1.09	.	Q	.	.	. V	.	
17.567	1.5736	1.09	.	Q	.	.	. V	.	
17.583	1.5751	1.08	.	Q	.	.	. V	.	
17.600	1.5765	1.07	.	Q	.	.	. V	.	
17.617	1.5780	1.07	.	Q	.	.	. V	.	
17.633	1.5795	1.06	.	Q	.	.	. V	.	
17.650	1.5809	1.05	.	Q	.	.	. V	.	
17.667	1.5824	1.05	.	Q	.	.	. V	.	
17.683	1.5838	1.04	.	Q	.	.	. V	.	
17.700	1.5852	1.03	.	Q	.	.	. V	.	
17.717	1.5866	1.03	.	Q	.	.	. V	.	
17.733	1.5880	1.02	.	Q	.	.	. V	.	
17.750	1.5894	1.02	.	Q	.	.	. V	.	
17.767	1.5908	1.01	.	Q	.	.	. V	.	
17.783	1.5922	1.01	.	Q	.	.	. V	.	
17.800	1.5936	1.00	.	Q	.	.	. V	.	
17.817	1.5950	1.00	.	Q	.	.	. V	.	
17.833	1.5963	0.99	.	Q	.	.	. V	.	
17.850	1.5977	0.98	.	Q	.	.	. V	.	
17.867	1.5990	0.98	.	Q	.	.	. V	.	
17.883	1.6004	0.97	.	Q	.	.	. V	.	
17.900	1.6017	0.97	.	Q	.	.	. V	.	
17.917	1.6030	0.96	.	Q	.	.	. V	.	
17.933	1.6044	0.96	.	Q	.	.	. V	.	
17.950	1.6057	0.96	.	Q	.	.	. V	.	
17.967	1.6070	0.95	.	Q	.	.	. V	.	
17.983	1.6083	0.95	.	Q	.	.	. V	.	
18.000	1.6096	0.94	.	Q	.	.	. V	.	
18.017	1.6109	0.94	.	Q	.	.	. V	.	
18.033	1.6122	0.93	.	Q	.	.	. V	.	
18.050	1.6134	0.93	.	Q	.	.	. V	.	
18.067	1.6147	0.92	.	Q	.	.	. V	.	
18.083	1.6160	0.92	.	Q	.	.	. V	.	
18.100	1.6173	0.92	.	Q	.	.	. V	.	
18.117	1.6185	0.92	.	Q	.	.	. V	.	
18.133	1.6198	0.92	.	Q	.	.	. V	.	
18.150	1.6211	0.92	.	Q	.	.	. V	.	
18.167	1.6223	0.92	.	Q	.	.	. V	.	
18.183	1.6236	0.92	.	Q	.	.	. V	.	
18.200	1.6249	0.92	.	Q	.	.	. V	.	
18.217	1.6261	0.92	.	Q	.	.	. V	.	
18.233	1.6274	0.92	.	Q	.	.	. V	.	
18.250	1.6287	0.92	.	Q	.	.	. V	.	
18.267	1.6299	0.91	.	Q	.	.	. V	.	
18.283	1.6312	0.91	.	Q	.	.	. V	.	
18.300	1.6324	0.91	.	Q	.	.	. V	.	
18.317	1.6337	0.90	.	Q	.	.	. V	.	
18.333	1.6349	0.90	.	Q	.	.	. V	.	
18.350	1.6361	0.89	.	Q	.	.	. V	.	
18.367	1.6374	0.89	.	Q	.	.	. V	.	
18.383	1.6386	0.89	.	Q	.	.	.	V	.
18.400	1.6398	0.88	.	Q	.	.	.	V	.
18.417	1.6410	0.88	.	Q	.	.	.	V	.

18.433	1.6422	0.88	.	Q	.	.	.	V	.
18.450	1.6434	0.87	.	Q	.	.	.	V	.
18.467	1.6446	0.87	.	Q	.	.	.	V	.
18.483	1.6458	0.87	.	Q	.	.	.	V	.
18.500	1.6470	0.87	.	Q	.	.	.	V	.
18.517	1.6482	0.86	.	Q	.	.	.	V	.
18.533	1.6494	0.86	.	Q	.	.	.	V	.
18.550	1.6506	0.86	.	Q	.	.	.	V	.
18.567	1.6517	0.85	.	Q	.	.	.	V	.
18.583	1.6529	0.85	.	Q	.	.	.	V	.
18.600	1.6541	0.85	.	Q	.	.	.	V	.
18.617	1.6552	0.84	.	Q	.	.	.	V	.
18.633	1.6564	0.84	.	Q	.	.	.	V	.
18.650	1.6575	0.84	.	Q	.	.	.	V	.
18.667	1.6587	0.84	.	Q	.	.	.	V	.
18.683	1.6598	0.83	.	Q	.	.	.	V	.
18.700	1.6610	0.83	.	Q	.	.	.	V	.
18.717	1.6621	0.83	.	Q	.	.	.	V	.
18.733	1.6633	0.82	.	Q	.	.	.	V	.
18.750	1.6644	0.82	.	Q	.	.	.	V	.
18.767	1.6655	0.82	.	Q	.	.	.	V	.
18.783	1.6666	0.82	.	Q	.	.	.	V	.
18.800	1.6678	0.81	.	Q	.	.	.	V	.
18.817	1.6689	0.81	.	Q	.	.	.	V	.
18.833	1.6700	0.81	.	Q	.	.	.	V	.
18.850	1.6711	0.81	.	Q	.	.	.	V	.
18.867	1.6722	0.80	.	Q	.	.	.	V	.
18.883	1.6733	0.80	.	Q	.	.	.	V	.
18.900	1.6744	0.80	.	Q	.	.	.	V	.
18.917	1.6755	0.80	.	Q	.	.	.	V	.
18.933	1.6766	0.79	.	Q	.	.	.	V	.
18.950	1.6777	0.79	.	Q	.	.	.	V	.
18.967	1.6788	0.79	.	Q	.	.	.	V	.
18.983	1.6799	0.79	.	Q	.	.	.	V	.
19.000	1.6809	0.78	.	Q	.	.	.	V	.
19.017	1.6820	0.78	.	Q	.	.	.	V	.
19.033	1.6831	0.78	.	Q	.	.	.	V	.
19.050	1.6842	0.78	.	Q	.	.	.	V	.
19.067	1.6852	0.78	.	Q	.	.	.	V	.
19.083	1.6863	0.77	.	Q	.	.	.	V	.
19.100	1.6874	0.77	.	Q	.	.	.	V	.
19.117	1.6884	0.77	.	Q	.	.	.	V	.
19.133	1.6895	0.77	.	Q	.	.	.	V	.
19.150	1.6905	0.76	.	Q	.	.	.	V	.
19.167	1.6916	0.76	.	Q	.	.	.	V	.
19.183	1.6926	0.76	.	Q	.	.	.	V	.
19.200	1.6937	0.76	.	Q	.	.	.	V	.
19.217	1.6947	0.76	.	Q	.	.	.	V	.
19.233	1.6957	0.75	.	Q	.	.	.	V	.
19.250	1.6968	0.75	.	Q	.	.	.	V	.
19.267	1.6978	0.75	.	Q	.	.	.	V	.
19.283	1.6988	0.75	.	Q	.	.	.	V	.
19.300	1.6999	0.75	.	Q	.	.	.	V	.
19.317	1.7009	0.74	.	Q	.	.	.	V	.
19.333	1.7019	0.74	.	Q	.	.	.	V	.
19.350	1.7029	0.74	.	Q	.	.	.	V	.
19.367	1.7039	0.74	.	Q	.	.	.	V	.
19.383	1.7050	0.74	.	Q	.	.	.	V	.
19.400	1.7060	0.73	.	Q	.	.	.	V	.
19.417	1.7070	0.73	.	Q	.	.	.	V	.
19.433	1.7080	0.73	.	Q	.	.	.	V	.
19.450	1.7090	0.73	.	Q	.	.	.	V	.
19.467	1.7100	0.73	.	Q	.	.	.	V	.
19.483	1.7110	0.72	.	Q	.	.	.	V	.
19.500	1.7120	0.72	.	Q	.	.	.	V	.
19.517	1.7130	0.72	.	Q	.	.	.	V	.
19.533	1.7140	0.72	.	Q	.	.	.	V	.
19.550	1.7149	0.72	.	Q	.	.	.	V	.
19.567	1.7159	0.71	.	Q	.	.	.	V	.
19.583	1.7169	0.71	.	Q	.	.	.	V	.
19.600	1.7179	0.71	.	Q	.	.	.	V	.
19.617	1.7189	0.71	.	Q	.	.	.	V	.
19.633	1.7198	0.71	.	Q	.	.	.	V	.
19.650	1.7208	0.71	.	Q	.	.	.	V	.
19.667	1.7218	0.70	.	Q	.	.	.	V	.
19.683	1.7228	0.70	.	Q	.	.	.	V	.
19.700	1.7237	0.70	.	Q	.	.	.	V	.
19.717	1.7247	0.70	.	Q	.	.	.	V	.
19.733	1.7256	0.70	.	Q	.	.	.	V	.
19.750	1.7266	0.70	.	Q	.	.	.	V	.
19.767	1.7276	0.69	.	Q	.	.	.	V	.
19.783	1.7285	0.69	.	Q	.	.	.	V	.
19.800	1.7295	0.69	.	Q	.	.	.	V	.
19.817	1.7304	0.69	.	Q	.	.	.	V	.
19.833	1.7314	0.69	.	Q	.	.	.	V	.
19.850	1.7323	0.69	.	Q	.	.	.	V	.
19.867	1.7333	0.69	.	Q	.	.	.	V	.
19.883	1.7342	0.68	.	Q	.	.	.	V	.
19.900	1.7351	0.68	.	Q	.	.	.	V	.
19.917	1.7361	0.68	.	Q	.	.	.	V	.
19.933	1.7370	0.68	.	Q	.	.	.	V	.
19.950	1.7379	0.68	.	Q	.	.	.	V	.
19.967	1.7389	0.68	.	Q	.	.	.	V	.
19.983	1.7398	0.67	.	Q	.	.	.	V	.
20.000	1.7407	0.67	.	Q	.	.	.	V	.
20.017	1.7417	0.67	.	Q	.	.	.	V	.
20.033	1.7426	0.67	.	Q	.	.	.	V	.
20.050	1.7435	0.67	.	Q	.	.	.	V	.
20.067	1.7444	0.67	.	Q	.	.	.	V	.
20.083	1.7453	0.67	.	Q	.	.	.	V	.
20.100	1.7462	0.66	.	Q	.	.	.	V	.
20.117	1.7472	0.66	.	Q	.	.	.	V	.
20.133	1.7481	0.66	.	Q	.	.	.	V	.
20.150	1.7490	0.66	.	Q	.	.	.	V	.
20.167	1.7499	0.66	.	Q	.	.	.	V	.
20.183	1.7508	0.66	.	Q	.	.	.	V	.
20.200	1.7517	0.66	.	Q	.	.	.	V	.
20.217	1.7526	0.65	.	Q	.	.	.	V	.
20.233	1.7535	0.65	.	Q	.	.	.	V	.
20.250	1.7544	0.65	.	Q	.	.	.	V	.
20.267	1.7553	0.65	.	Q	.	.	.	V	.
20.283	1.7562	0.65	.	Q	.	.	.	V	.
20.300	1.7571	0.65	.	Q	.	.	.	V	.
20.317	1.7580	0.65	.	Q	.	.	.	V	.
20.333	1.7589	0.65	.	Q	.	.	.	V	.
20.350	1.7597	0.64	.	Q	.	.	.	V	.
20.367	1.7606	0.64	.	Q	.	.	.	V	.
20.383	1.7615	0.64	.	Q	.	.	.	V	.

20.400	1.7624	0.64	. Q	.	.	.	V	.
20.417	1.7633	0.64	.Q	.	.	.	V	.
20.433	1.7641	0.64	.Q	.	.	.	V	.
20.450	1.7650	0.64	.Q	.	.	.	V	.
20.467	1.7659	0.63	.Q	.	.	.	V	.
20.483	1.7668	0.63	.Q	.	.	.	V	.
20.500	1.7676	0.63	.Q	.	.	.	V	.
20.517	1.7685	0.63	.Q	.	.	.	V	.
20.533	1.7694	0.63	.Q	.	.	.	V	.
20.550	1.7702	0.63	.Q	.	.	.	V	.
20.567	1.7711	0.63	.Q	.	.	.	V	.
20.583	1.7720	0.63	.Q	.	.	.	V	.
20.600	1.7728	0.63	.Q	.	.	.	V	.
20.617	1.7737	0.62	.Q	.	.	.	V	.
20.633	1.7746	0.62	.Q	.	.	.	V	.
20.650	1.7754	0.62	.Q	.	.	.	V	.
20.667	1.7763	0.62	.Q	.	.	.	V	.
20.683	1.7771	0.62	.Q	.	.	.	V	.
20.700	1.7780	0.62	.Q	.	.	.	V	.
20.717	1.7788	0.62	.Q	.	.	.	V	.
20.733	1.7797	0.62	.Q	.	.	.	V	.
20.750	1.7805	0.61	.Q	.	.	.	V	.
20.767	1.7814	0.61	.Q	.	.	.	V	.
20.783	1.7822	0.61	.Q	.	.	.	V	.
20.800	1.7830	0.61	.Q	.	.	.	V	.
20.817	1.7839	0.61	.Q	.	.	.	V	.
20.833	1.7847	0.61	.Q	.	.	.	V	.
20.850	1.7856	0.61	.Q	.	.	.	V	.
20.867	1.7864	0.61	.Q	.	.	.	V	.
20.883	1.7872	0.61	.Q	.	.	.	V	.
20.900	1.7881	0.60	.Q	.	.	.	V	.
20.917	1.7889	0.60	.Q	.	.	.	V	.
20.933	1.7897	0.60	.Q	.	.	.	V	.
20.950	1.7906	0.60	.Q	.	.	.	V	.
20.967	1.7914	0.60	.Q	.	.	.	V	.
20.983	1.7922	0.60	.Q	.	.	.	V	.
21.000	1.7930	0.60	.Q	.	.	.	V	.
21.017	1.7939	0.60	.Q	.	.	.	V	.
21.033	1.7947	0.60	.Q	.	.	.	V	.
21.050	1.7955	0.60	.Q	.	.	.	V	.
21.067	1.7963	0.59	.Q	.	.	.	V	.
21.083	1.7971	0.59	.Q	.	.	.	V	.
21.100	1.7979	0.59	.Q	.	.	.	V	.
21.117	1.7988	0.59	.Q	.	.	.	V	.
21.133	1.7996	0.59	.Q	.	.	.	V	.
21.150	1.8004	0.59	.Q	.	.	.	V	.
21.167	1.8012	0.59	.Q	.	.	.	V	.
21.183	1.8020	0.59	.Q	.	.	.	V	.
21.200	1.8028	0.59	.Q	.	.	.	V	.
21.217	1.8036	0.59	.Q	.	.	.	V	.
21.233	1.8044	0.58	.Q	.	.	.	V	.
21.250	1.8052	0.58	.Q	.	.	.	V	.
21.267	1.8060	0.58	.Q	.	.	.	V	.
21.283	1.8068	0.58	.Q	.	.	.	V	.
21.300	1.8076	0.58	.Q	.	.	.	V	.
21.317	1.8084	0.58	.Q	.	.	.	V	.
21.333	1.8092	0.58	.Q	.	.	.	V	.
21.350	1.8100	0.58	.Q	.	.	.	V	.
21.367	1.8108	0.58	.Q	.	.	.	V	.
21.383	1.8116	0.58	.Q	.	.	.	V	.
21.400	1.8124	0.57	.Q	.	.	.	V	.
21.417	1.8132	0.57	.Q	.	.	.	V	.
21.433	1.8140	0.57	.Q	.	.	.	V	.
21.450	1.8148	0.57	.Q	.	.	.	V	.
21.467	1.8156	0.57	.Q	.	.	.	V	.
21.483	1.8163	0.57	.Q	.	.	.	V	.
21.500	1.8171	0.57	.Q	.	.	.	V	.
21.517	1.8179	0.57	.Q	.	.	.	V	.
21.533	1.8187	0.57	.Q	.	.	.	V	.
21.550	1.8195	0.57	.Q	.	.	.	V	.
21.567	1.8202	0.57	.Q	.	.	.	V	.
21.583	1.8210	0.56	.Q	.	.	.	V	.
21.600	1.8218	0.56	.Q	.	.	.	V	.
21.617	1.8226	0.56	.Q	.	.	.	V	.
21.633	1.8234	0.56	.Q	.	.	.	V	.
21.650	1.8241	0.56	.Q	.	.	.	V	.
21.667	1.8249	0.56	.Q	.	.	.	V	.
21.683	1.8257	0.56	.Q	.	.	.	V	.
21.700	1.8264	0.56	.Q	.	.	.	V	.
21.717	1.8272	0.56	.Q	.	.	.	V	.
21.733	1.8280	0.56	.Q	.	.	.	V	.
21.750	1.8287	0.56	.Q	.	.	.	V	.
21.767	1.8295	0.56	.Q	.	.	.	V	.
21.783	1.8303	0.55	.Q	.	.	.	V	.
21.800	1.8310	0.55	.Q	.	.	.	V	.
21.817	1.8318	0.55	.Q	.	.	.	V	.
21.833	1.8326	0.55	.Q	.	.	.	V	.
21.850	1.8333	0.55	.Q	.	.	.	V	.
21.867	1.8341	0.55	.Q	.	.	.	V	.
21.883	1.8348	0.55	.Q	.	.	.	V	.
21.900	1.8356	0.55	.Q	.	.	.	V	.
21.917	1.8363	0.55	.Q	.	.	.	V	.
21.933	1.8371	0.55	.Q	.	.	.	V	.
21.950	1.8378	0.55	.Q	.	.	.	V	.
21.967	1.8386	0.55	.Q	.	.	.	V	.
21.983	1.8393	0.54	.Q	.	.	.	V	.
22.000	1.8401	0.54	.Q	.	.	.	V	.
22.017	1.8408	0.54	.Q	.	.	.	V	.
22.033	1.8416	0.54	.Q	.	.	.	V	.
22.050	1.8423	0.54	.Q	.	.	.	V	.
22.067	1.8431	0.54	.Q	.	.	.	V	.
22.083	1.8438	0.54	.Q	.	.	.	V	.
22.100	1.8446	0.54	.Q	.	.	.	V	.
22.117	1.8453	0.54	.Q	.	.	.	V	.
22.133	1.8461	0.54	.Q	.	.	.	V	.
22.150	1.8468	0.54	.Q	.	.	.	V	.
22.167	1.8475	0.54	.Q	.	.	.	V	.
22.183	1.8483	0.54	.Q	.	.	.	V	.
22.200	1.8490	0.53	.Q	.	.	.	V	.
22.217	1.8497	0.53	.Q	.	.	.	V	.
22.233	1.8505	0.53	.Q	.	.	.	V	.
22.250	1.8512	0.53	.Q	.	.	.	V	.
22.267	1.8519	0.53	.Q	.	.	.	V	.
22.283	1.8527	0.53	.Q	.	.	.	V	.
22.300	1.8534	0.53	.Q	.	.	.	V	.
22.317	1.8541	0.53	.Q	.	.	.	V	.
22.333	1.8549	0.53	.Q	.	.	.	V	.
22.350	1.8556	0.53	.Q	.	.	.	V	.

22.367	1.8563	0.53	.Q	.	.	.	V .
22.383	1.8570	0.53	.Q	.	.	.	V .
22.400	1.8578	0.53	.Q	.	.	.	V .
22.417	1.8585	0.53	.Q	.	.	.	V .
22.433	1.8592	0.52	.Q	.	.	.	V .
22.450	1.8599	0.52	.Q	.	.	.	V .
22.467	1.8607	0.52	.Q	.	.	.	V .
22.483	1.8614	0.52	.Q	.	.	.	V .
22.500	1.8621	0.52	.Q	.	.	.	V .
22.517	1.8628	0.52	.Q	.	.	.	V .
22.533	1.8635	0.52	.Q	.	.	.	V .
22.550	1.8642	0.52	.Q	.	.	.	V .
22.567	1.8650	0.52	.Q	.	.	.	V .
22.583	1.8657	0.52	.Q	.	.	.	V .
22.600	1.8664	0.52	.Q	.	.	.	V .
22.617	1.8671	0.52	.Q	.	.	.	V .
22.633	1.8678	0.52	.Q	.	.	.	V .
22.650	1.8685	0.52	.Q	.	.	.	V .
22.667	1.8692	0.52	.Q	.	.	.	V .
22.683	1.8699	0.51	.Q	.	.	.	V .
22.700	1.8706	0.51	.Q	.	.	.	V .
22.717	1.8714	0.51	.Q	.	.	.	V .
22.733	1.8721	0.51	.Q	.	.	.	V .
22.750	1.8728	0.51	.Q	.	.	.	V .
22.767	1.8735	0.51	.Q	.	.	.	V .
22.783	1.8742	0.51	.Q	.	.	.	V .
22.800	1.8749	0.51	.Q	.	.	.	V .
22.817	1.8756	0.51	.Q	.	.	.	V .
22.833	1.8763	0.51	.Q	.	.	.	V .
22.850	1.8770	0.51	.Q	.	.	.	V .
22.867	1.8777	0.51	.Q	.	.	.	V .
22.883	1.8784	0.51	.Q	.	.	.	V .
22.900	1.8791	0.51	.Q	.	.	.	V .
22.917	1.8798	0.51	.Q	.	.	.	V.
22.933	1.8805	0.50	.Q	.	.	.	V.
22.950	1.8812	0.50	.Q	.	.	.	V.
22.967	1.8818	0.50	.Q	.	.	.	V.
22.983	1.8825	0.50	.Q	.	.	.	V.
23.000	1.8832	0.50	.Q	.	.	.	V.
23.017	1.8839	0.50	.Q	.	.	.	V.
23.033	1.8846	0.50	.Q	.	.	.	V.
23.050	1.8853	0.50	.Q	.	.	.	V.
23.067	1.8860	0.50	.Q	.	.	.	V.
23.083	1.8867	0.50	.Q	.	.	.	V.
23.100	1.8874	0.50	.Q	.	.	.	V.
23.117	1.8881	0.50	.Q	.	.	.	V.
23.133	1.8887	0.50	.Q	.	.	.	V.
23.150	1.8894	0.50	.Q	.	.	.	V.
23.167	1.8901	0.50	.Q	.	.	.	V.
23.183	1.8908	0.50	.Q	.	.	.	V.
23.200	1.8915	0.49	.Q	.	.	.	V.
23.217	1.8922	0.49	.Q	.	.	.	V.
23.233	1.8928	0.49	.Q	.	.	.	V.
23.250	1.8935	0.49	.Q	.	.	.	V.
23.267	1.8942	0.49	.Q	.	.	.	V.
23.283	1.8949	0.49	.Q	.	.	.	V.
23.300	1.8955	0.49	.Q	.	.	.	V.
23.317	1.8962	0.49	.Q	.	.	.	V.
23.333	1.8969	0.49	.Q	.	.	.	V.
23.350	1.8976	0.49	.Q	.	.	.	V.
23.367	1.8982	0.49	.Q	.	.	.	V.
23.383	1.8989	0.49	.Q	.	.	.	V.
23.400	1.8996	0.49	.Q	.	.	.	V.
23.417	1.9003	0.49	.Q	.	.	.	V.
23.433	1.9009	0.49	.Q	.	.	.	V.
23.450	1.9016	0.49	.Q	.	.	.	V.
23.467	1.9023	0.49	.Q	.	.	.	V.
23.483	1.9029	0.49	.Q	.	.	.	V.
23.500	1.9036	0.48	.Q	.	.	.	V.
23.517	1.9043	0.48	.Q	.	.	.	V.
23.533	1.9049	0.48	.Q	.	.	.	V.
23.550	1.9056	0.48	.Q	.	.	.	V.
23.567	1.9063	0.48	.Q	.	.	.	V.
23.583	1.9069	0.48	.Q	.	.	.	V.
23.600	1.9076	0.48	.Q	.	.	.	V.
23.617	1.9083	0.48	.Q	.	.	.	V.
23.633	1.9089	0.48	.Q	.	.	.	V.
23.650	1.9096	0.48	.Q	.	.	.	V.
23.667	1.9102	0.48	.Q	.	.	.	V.
23.683	1.9109	0.48	.Q	.	.	.	V.
23.700	1.9116	0.48	.Q	.	.	.	V.
23.717	1.9122	0.48	.Q	.	.	.	V.
23.733	1.9129	0.48	.Q	.	.	.	V.
23.750	1.9135	0.48	.Q	.	.	.	V.
23.767	1.9142	0.48	.Q	.	.	.	V.
23.783	1.9148	0.48	.Q	.	.	.	V.
23.800	1.9155	0.47	.Q	.	.	.	V.
23.817	1.9161	0.47	.Q	.	.	.	V.
23.833	1.9168	0.47	.Q	.	.	.	V.
23.850	1.9174	0.47	.Q	.	.	.	V.
23.867	1.9181	0.47	.Q	.	.	.	V.
23.883	1.9187	0.47	.Q	.	.	.	V.
23.900	1.9194	0.47	.Q	.	.	.	V.
23.917	1.9200	0.47	.Q	.	.	.	V.
23.933	1.9207	0.47	.Q	.	.	.	V.
23.950	1.9213	0.47	.Q	.	.	.	V.
23.967	1.9220	0.47	.Q	.	.	.	V.
23.983	1.9226	0.47	.Q	.	.	.	V.
24.000	1.9233	0.47	.Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1441.0
10%	820.0
20%	315.0
30%	200.0
40%	120.0
50%	90.0
60%	75.0
70%	55.0
80%	35.0
90%	20.0

```
****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
============================================================================

                    INFLOW
                   (STREAM 1)
                        |
                        |
                        V                __effective depth
                    ------------         |   (and volume)
                   |            |    |    |
                   |            |    |....V........
                   | detention  |<-->|           outflow
                   |   basin    |    |.........______
                    ------------     |    ^    |  \
                        |            |  dead   |   basin outlet
                        V            | storage |
                     OUTFLOW          ---------
                   (STREAM 1)



         ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
         THROUGH A FLOW-THROUGH DETENTION BASIN
         SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
           DEAD STORAGE(AF) =      0.000
           SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
           SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
           DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00


         BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)       (AF)
               1       0.00        0.00       0.000
               2       0.50        0.01       0.045
               3       1.00        2.70       0.097
               4       2.00        4.80       0.222
               5       3.00        6.10       0.380
               6       4.00        7.30       0.568


============================================================================
 MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
 (Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
        MEAN OUTFLOW is the average value during the unit interval.)

           CLOCK                                              MEAN
            TIME  DEAD-STORAGE  INFLOW    LOSS   EFFECTIVE OUTFLOW  EFFECTIVE
           (HRS)   FILLED(AF)    (CFS)    (CFS)  DEPTH(FT)  (CFS)   VOLUME(AF)
----------------------------------------------------------------------------
           0.017       0.000     0.02     0.00      0.00      0.0      0.000
           0.033       0.000     0.07     0.00      0.00      0.0      0.000
           0.050       0.000     0.12     0.00      0.00      0.0      0.000
           0.067       0.000     0.17     0.00      0.01      0.0      0.001
           0.083       0.000     0.22     0.00      0.01      0.0      0.001
           0.100       0.000     0.26     0.00      0.01      0.0      0.001
           0.117       0.000     0.31     0.00      0.02      0.0      0.002
           0.133       0.000     0.36     0.00      0.02      0.0      0.002
           0.150       0.000     0.41     0.00      0.03      0.0      0.003
           0.167       0.000     0.45     0.00      0.04      0.0      0.003
           0.183       0.000     0.46     0.00      0.04      0.0      0.004
           0.200       0.000     0.46     0.00      0.05      0.0      0.005
           0.217       0.000     0.46     0.00      0.06      0.0      0.005
           0.233       0.000     0.47     0.00      0.06      0.0      0.006
           0.250       0.000     0.47     0.00      0.07      0.0      0.006
           0.267       0.000     0.47     0.00      0.08      0.0      0.007
           0.283       0.000     0.47     0.00      0.09      0.0      0.008
           0.300       0.000     0.47     0.00      0.09      0.0      0.008
           0.317       0.000     0.47     0.00      0.10      0.0      0.009
           0.333       0.000     0.47     0.00      0.11      0.0      0.010
           0.350       0.000     0.47     0.00      0.11      0.0      0.010
           0.367       0.000     0.47     0.00      0.12      0.0      0.011
           0.383       0.000     0.47     0.00      0.13      0.0      0.012
           0.400       0.000     0.47     0.00      0.14      0.0      0.012
           0.417       0.000     0.47     0.00      0.14      0.0      0.013
           0.433       0.000     0.47     0.00      0.15      0.0      0.014
           0.450       0.000     0.47     0.00      0.16      0.0      0.014
           0.467       0.000     0.47     0.00      0.16      0.0      0.015
           0.483       0.000     0.47     0.00      0.17      0.0      0.015
           0.500       0.000     0.47     0.00      0.18      0.0      0.016
           0.517       0.000     0.47     0.00      0.19      0.0      0.017
           0.533       0.000     0.47     0.00      0.19      0.0      0.017
           0.550       0.000     0.47     0.00      0.20      0.0      0.018
           0.567       0.000     0.47     0.00      0.21      0.0      0.019
           0.583       0.000     0.47     0.00      0.21      0.0      0.019
           0.600       0.000     0.47     0.00      0.22      0.0      0.020
           0.617       0.000     0.47     0.00      0.23      0.0      0.021
           0.633       0.000     0.47     0.00      0.24      0.0      0.021
           0.650       0.000     0.47     0.00      0.24      0.0      0.022
           0.667       0.000     0.47     0.00      0.25      0.0      0.022
           0.683       0.000     0.47     0.00      0.26      0.0      0.023
           0.700       0.000     0.47     0.00      0.26      0.0      0.024
           0.717       0.000     0.47     0.00      0.27      0.0      0.024
           0.733       0.000     0.47     0.00      0.28      0.0      0.025
           0.750       0.000     0.47     0.00      0.29      0.0      0.026
           0.767       0.000     0.47     0.00      0.29      0.0      0.026
           0.783       0.000     0.47     0.00      0.30      0.0      0.027
           0.800       0.000     0.47     0.00      0.31      0.0      0.028
           0.817       0.000     0.47     0.00      0.31      0.0      0.028
           0.833       0.000     0.47     0.00      0.32      0.0      0.029
           0.850       0.000     0.47     0.00      0.33      0.0      0.030
           0.867       0.000     0.47     0.00      0.34      0.0      0.030
           0.883       0.000     0.48     0.00      0.34      0.0      0.031
           0.900       0.000     0.48     0.00      0.35      0.0      0.031
           0.917       0.000     0.48     0.00      0.36      0.0      0.032
           0.933       0.000     0.48     0.00      0.36      0.0      0.033
           0.950       0.000     0.48     0.00      0.37      0.0      0.033
           0.967       0.000     0.48     0.00      0.38      0.0      0.034
           0.983       0.000     0.48     0.00      0.39      0.0      0.035
           1.000       0.000     0.48     0.00      0.39      0.0      0.035
           1.017       0.000     0.48     0.00      0.40      0.0      0.036
           1.033       0.000     0.48     0.00      0.41      0.0      0.037
           1.050       0.000     0.48     0.00      0.41      0.0      0.037
```

1.067	0.000	0.48	0.00	0.42	0.0	0.038
1.083	0.000	0.48	0.00	0.43	0.0	0.039
1.100	0.000	0.48	0.00	0.44	0.0	0.039
1.117	0.000	0.48	0.00	0.44	0.0	0.040
1.133	0.000	0.48	0.00	0.45	0.0	0.041
1.150	0.000	0.48	0.00	0.46	0.0	0.041
1.167	0.000	0.48	0.00	0.46	0.0	0.042
1.183	0.000	0.48	0.00	0.47	0.0	0.042
1.200	0.000	0.48	0.00	0.48	0.0	0.043
1.217	0.000	0.48	0.00	0.49	0.0	0.044
1.233	0.000	0.48	0.00	0.49	0.0	0.044
1.250	0.000	0.48	0.00	0.50	0.0	0.045
1.267	0.000	0.48	0.00	0.51	0.0	0.046
1.283	0.000	0.48	0.00	0.51	0.1	0.046
1.300	0.000	0.48	0.00	0.52	0.1	0.047
1.317	0.000	0.48	0.00	0.52	0.1	0.047
1.333	0.000	0.48	0.00	0.53	0.1	0.048
1.350	0.000	0.48	0.00	0.53	0.2	0.048
1.367	0.000	0.48	0.00	0.53	0.2	0.049
1.383	0.000	0.48	0.00	0.54	0.2	0.049
1.400	0.000	0.48	0.00	0.54	0.2	0.049
1.417	0.000	0.48	0.00	0.54	0.2	0.050
1.433	0.000	0.48	0.00	0.55	0.3	0.050
1.450	0.000	0.48	0.00	0.55	0.3	0.050
1.467	0.000	0.48	0.00	0.55	0.3	0.051
1.483	0.000	0.48	0.00	0.56	0.3	0.051
1.500	0.000	0.48	0.00	0.56	0.3	0.051
1.517	0.000	0.48	0.00	0.56	0.3	0.051
1.533	0.000	0.49	0.00	0.56	0.3	0.051
1.550	0.000	0.49	0.00	0.56	0.3	0.052
1.567	0.000	0.49	0.00	0.57	0.4	0.052
1.583	0.000	0.49	0.00	0.57	0.4	0.052
1.600	0.000	0.49	0.00	0.57	0.4	0.052
1.617	0.000	0.49	0.00	0.57	0.4	0.052
1.633	0.000	0.49	0.00	0.57	0.4	0.052
1.650	0.000	0.49	0.00	0.57	0.4	0.053
1.667	0.000	0.49	0.00	0.57	0.4	0.053
1.683	0.000	0.49	0.00	0.57	0.4	0.053
1.700	0.000	0.49	0.00	0.58	0.4	0.053
1.717	0.000	0.49	0.00	0.58	0.4	0.053
1.733	0.000	0.49	0.00	0.58	0.4	0.053
1.750	0.000	0.49	0.00	0.58	0.4	0.053
1.767	0.000	0.49	0.00	0.58	0.4	0.053
1.783	0.000	0.49	0.00	0.58	0.4	0.053
1.800	0.000	0.49	0.00	0.58	0.4	0.053
1.817	0.000	0.49	0.00	0.58	0.4	0.053
1.833	0.000	0.49	0.00	0.58	0.4	0.053
1.850	0.000	0.49	0.00	0.58	0.4	0.054
1.867	0.000	0.49	0.00	0.58	0.5	0.054
1.883	0.000	0.49	0.00	0.58	0.5	0.054
1.900	0.000	0.49	0.00	0.58	0.5	0.054
1.917	0.000	0.49	0.00	0.58	0.5	0.054
1.933	0.000	0.49	0.00	0.58	0.5	0.054
1.950	0.000	0.49	0.00	0.58	0.5	0.054
1.967	0.000	0.49	0.00	0.58	0.5	0.054
1.983	0.000	0.49	0.00	0.59	0.5	0.054
2.000	0.000	0.49	0.00	0.59	0.5	0.054
2.017	0.000	0.49	0.00	0.59	0.5	0.054
2.033	0.000	0.49	0.00	0.59	0.5	0.054
2.050	0.000	0.49	0.00	0.59	0.5	0.054
2.067	0.000	0.49	0.00	0.59	0.5	0.054
2.083	0.000	0.50	0.00	0.59	0.5	0.054
2.100	0.000	0.50	0.00	0.59	0.5	0.054
2.117	0.000	0.50	0.00	0.59	0.5	0.054
2.133	0.000	0.50	0.00	0.59	0.5	0.054
2.150	0.000	0.50	0.00	0.59	0.5	0.054
2.167	0.000	0.50	0.00	0.59	0.5	0.054
2.183	0.000	0.50	0.00	0.59	0.5	0.054
2.200	0.000	0.50	0.00	0.59	0.5	0.054
2.217	0.000	0.50	0.00	0.59	0.5	0.054
2.233	0.000	0.50	0.00	0.59	0.5	0.054
2.250	0.000	0.50	0.00	0.59	0.5	0.054
2.267	0.000	0.50	0.00	0.59	0.5	0.054
2.283	0.000	0.50	0.00	0.59	0.5	0.054
2.300	0.000	0.50	0.00	0.59	0.5	0.054
2.317	0.000	0.50	0.00	0.59	0.5	0.054
2.333	0.000	0.50	0.00	0.59	0.5	0.054
2.350	0.000	0.50	0.00	0.59	0.5	0.054
2.367	0.000	0.50	0.00	0.59	0.5	0.054
2.383	0.000	0.50	0.00	0.59	0.5	0.054
2.400	0.000	0.50	0.00	0.59	0.5	0.054
2.417	0.000	0.50	0.00	0.59	0.5	0.054
2.433	0.000	0.50	0.00	0.59	0.5	0.054
2.450	0.000	0.50	0.00	0.59	0.5	0.054
2.467	0.000	0.50	0.00	0.59	0.5	0.054
2.483	0.000	0.50	0.00	0.59	0.5	0.054
2.500	0.000	0.50	0.00	0.59	0.5	0.054
2.517	0.000	0.50	0.00	0.59	0.5	0.054
2.533	0.000	0.50	0.00	0.59	0.5	0.054
2.550	0.000	0.50	0.00	0.59	0.5	0.054
2.567	0.000	0.50	0.00	0.59	0.5	0.054
2.583	0.000	0.50	0.00	0.59	0.5	0.054
2.600	0.000	0.50	0.00	0.59	0.5	0.054
2.617	0.000	0.50	0.00	0.59	0.5	0.054
2.633	0.000	0.50	0.00	0.59	0.5	0.054
2.650	0.000	0.50	0.00	0.59	0.5	0.054
2.667	0.000	0.51	0.00	0.59	0.5	0.054
2.683	0.000	0.51	0.00	0.59	0.5	0.054
2.700	0.000	0.51	0.00	0.59	0.5	0.054
2.717	0.000	0.51	0.00	0.59	0.5	0.054
2.733	0.000	0.51	0.00	0.59	0.5	0.054
2.750	0.000	0.51	0.00	0.59	0.5	0.054
2.767	0.000	0.51	0.00	0.59	0.5	0.055
2.783	0.000	0.51	0.00	0.59	0.5	0.055
2.800	0.000	0.51	0.00	0.59	0.5	0.055
2.817	0.000	0.51	0.00	0.59	0.5	0.055
2.833	0.000	0.51	0.00	0.59	0.5	0.055
2.850	0.000	0.51	0.00	0.59	0.5	0.055
2.867	0.000	0.51	0.00	0.59	0.5	0.055
2.883	0.000	0.51	0.00	0.59	0.5	0.055
2.900	0.000	0.51	0.00	0.59	0.5	0.055
2.917	0.000	0.51	0.00	0.59	0.5	0.055
2.933	0.000	0.51	0.00	0.59	0.5	0.055
2.950	0.000	0.51	0.00	0.59	0.5	0.055
2.967	0.000	0.51	0.00	0.59	0.5	0.055
2.983	0.000	0.51	0.00	0.59	0.5	0.055
3.000	0.000	0.51	0.00	0.59	0.5	0.055
3.017	0.000	0.51	0.00	0.59	0.5	0.055

3.033	0.000	0.51	0.00	0.59	0.5	0.055
3.050	0.000	0.51	0.00	0.59	0.5	0.055
3.067	0.000	0.51	0.00	0.59	0.5	0.055
3.083	0.000	0.51	0.00	0.59	0.5	0.055
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3.117	0.000	0.51	0.00	0.59	0.5	0.055
3.133	0.000	0.52	0.00	0.59	0.5	0.055
3.150	0.000	0.52	0.00	0.59	0.5	0.055
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3.267	0.000	0.52	0.00	0.59	0.5	0.055
3.283	0.000	0.52	0.00	0.59	0.5	0.055
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3.317	0.000	0.52	0.00	0.59	0.5	0.055
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3.967	0.000	0.53	0.00	0.60	0.5	0.055
3.983	0.000	0.53	0.00	0.60	0.5	0.055
4.000	0.000	0.53	0.00	0.60	0.5	0.055

4.017	0.000	0.53	0.00	0.60	0.5	0.055
4.033	0.000	0.53	0.00	0.60	0.5	0.055
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6.617	0.000	0.60	0.00	0.61	0.6	0.056
6.633	0.000	0.60	0.00	0.61	0.6	0.056
6.650	0.000	0.60	0.00	0.61	0.6	0.056
6.667	0.000	0.60	0.00	0.61	0.6	0.056
6.683	0.000	0.60	0.00	0.61	0.6	0.056
6.700	0.000	0.60	0.00	0.61	0.6	0.056
6.717	0.000	0.60	0.00	0.61	0.6	0.056
6.733	0.000	0.61	0.00	0.61	0.6	0.056
6.750	0.000	0.61	0.00	0.61	0.6	0.056
6.767	0.000	0.61	0.00	0.61	0.6	0.056
6.783	0.000	0.61	0.00	0.61	0.6	0.056
6.800	0.000	0.61	0.00	0.61	0.6	0.056
6.817	0.000	0.61	0.00	0.61	0.6	0.056
6.833	0.000	0.61	0.00	0.61	0.6	0.056
6.850	0.000	0.61	0.00	0.61	0.6	0.056
6.867	0.000	0.61	0.00	0.61	0.6	0.056
6.883	0.000	0.61	0.00	0.61	0.6	0.056
6.900	0.000	0.61	0.00	0.61	0.6	0.056
6.917	0.000	0.61	0.00	0.61	0.6	0.056
6.933	0.000	0.61	0.00	0.61	0.6	0.056
6.950	0.000	0.61	0.00	0.61	0.6	0.057

6.967	0.000	0.61	0.00	0.61	0.6	0.057
6.983	0.000	0.61	0.00	0.61	0.6	0.057
7.000	0.000	0.61	0.00	0.61	0.6	0.057
7.017	0.000	0.62	0.00	0.61	0.6	0.057
7.033	0.000	0.62	0.00	0.61	0.6	0.057
7.050	0.000	0.62	0.00	0.61	0.6	0.057
7.067	0.000	0.62	0.00	0.61	0.6	0.057
7.083	0.000	0.62	0.00	0.61	0.6	0.057
7.100	0.000	0.62	0.00	0.61	0.6	0.057
7.117	0.000	0.62	0.00	0.61	0.6	0.057
7.133	0.000	0.62	0.00	0.61	0.6	0.057
7.150	0.000	0.62	0.00	0.61	0.6	0.057
7.167	0.000	0.62	0.00	0.61	0.6	0.057
7.183	0.000	0.62	0.00	0.61	0.6	0.057
7.200	0.000	0.62	0.00	0.61	0.6	0.057
7.217	0.000	0.62	0.00	0.61	0.6	0.057
7.233	0.000	0.62	0.00	0.61	0.6	0.057
7.250	0.000	0.62	0.00	0.61	0.6	0.057
7.267	0.000	0.63	0.00	0.61	0.6	0.057
7.283	0.000	0.63	0.00	0.61	0.6	0.057
7.300	0.000	0.63	0.00	0.61	0.6	0.057
7.317	0.000	0.63	0.00	0.61	0.6	0.057
7.333	0.000	0.63	0.00	0.61	0.6	0.057
7.350	0.000	0.63	0.00	0.61	0.6	0.057
7.367	0.000	0.63	0.00	0.61	0.6	0.057
7.383	0.000	0.63	0.00	0.61	0.6	0.057
7.400	0.000	0.63	0.00	0.61	0.6	0.057
7.417	0.000	0.63	0.00	0.61	0.6	0.057
7.433	0.000	0.63	0.00	0.61	0.6	0.057
7.450	0.000	0.63	0.00	0.61	0.6	0.057
7.467	0.000	0.63	0.00	0.61	0.6	0.057
7.483	0.000	0.63	0.00	0.61	0.6	0.057
7.500	0.000	0.63	0.00	0.61	0.6	0.057
7.517	0.000	0.63	0.00	0.61	0.6	0.057
7.533	0.000	0.63	0.00	0.61	0.6	0.057
7.550	0.000	0.63	0.00	0.61	0.6	0.057
7.567	0.000	0.64	0.00	0.61	0.6	0.057
7.583	0.000	0.64	0.00	0.61	0.6	0.057
7.600	0.000	0.64	0.00	0.61	0.6	0.057
7.617	0.000	0.64	0.00	0.61	0.6	0.057
7.633	0.000	0.64	0.00	0.62	0.6	0.057
7.650	0.000	0.64	0.00	0.62	0.6	0.057
7.667	0.000	0.64	0.00	0.62	0.6	0.057
7.683	0.000	0.64	0.00	0.62	0.6	0.057
7.700	0.000	0.64	0.00	0.62	0.6	0.057
7.717	0.000	0.64	0.00	0.62	0.6	0.057
7.733	0.000	0.64	0.00	0.62	0.6	0.057
7.750	0.000	0.64	0.00	0.62	0.6	0.057
7.767	0.000	0.64	0.00	0.62	0.6	0.057
7.783	0.000	0.64	0.00	0.62	0.6	0.057
7.800	0.000	0.64	0.00	0.62	0.6	0.057
7.817	0.000	0.64	0.00	0.62	0.6	0.057
7.833	0.000	0.64	0.00	0.62	0.6	0.057
7.850	0.000	0.65	0.00	0.62	0.6	0.057
7.867	0.000	0.65	0.00	0.62	0.6	0.057
7.883	0.000	0.65	0.00	0.62	0.6	0.057
7.900	0.000	0.65	0.00	0.62	0.6	0.057
7.917	0.000	0.65	0.00	0.62	0.6	0.057
7.933	0.000	0.65	0.00	0.62	0.6	0.057
7.950	0.000	0.65	0.00	0.62	0.6	0.057
7.967	0.000	0.65	0.00	0.62	0.6	0.057
7.983	0.000	0.65	0.00	0.62	0.6	0.057
8.000	0.000	0.65	0.00	0.62	0.6	0.057
8.017	0.000	0.65	0.00	0.62	0.6	0.057
8.033	0.000	0.65	0.00	0.62	0.6	0.057
8.050	0.000	0.65	0.00	0.62	0.6	0.057
8.067	0.000	0.66	0.00	0.62	0.6	0.057
8.083	0.000	0.66	0.00	0.62	0.6	0.057
8.100	0.000	0.66	0.00	0.62	0.6	0.057
8.117	0.000	0.66	0.00	0.62	0.6	0.057
8.133	0.000	0.66	0.00	0.62	0.6	0.057
8.150	0.000	0.66	0.00	0.62	0.6	0.057
8.167	0.000	0.66	0.00	0.62	0.6	0.057
8.183	0.000	0.66	0.00	0.62	0.7	0.057
8.200	0.000	0.66	0.00	0.62	0.7	0.057
8.217	0.000	0.66	0.00	0.62	0.7	0.057
8.233	0.000	0.66	0.00	0.62	0.7	0.057
8.250	0.000	0.66	0.00	0.62	0.7	0.057
8.267	0.000	0.66	0.00	0.62	0.7	0.057
8.283	0.000	0.66	0.00	0.62	0.7	0.057
8.300	0.000	0.66	0.00	0.62	0.7	0.057
8.317	0.000	0.67	0.00	0.62	0.7	0.057
8.333	0.000	0.67	0.00	0.62	0.7	0.057
8.350	0.000	0.67	0.00	0.62	0.7	0.057
8.367	0.000	0.67	0.00	0.62	0.7	0.058
8.383	0.000	0.67	0.00	0.62	0.7	0.058
8.400	0.000	0.67	0.00	0.62	0.7	0.058
8.417	0.000	0.67	0.00	0.62	0.7	0.058
8.433	0.000	0.67	0.00	0.62	0.7	0.058
8.450	0.000	0.67	0.00	0.62	0.7	0.058
8.467	0.000	0.67	0.00	0.62	0.7	0.058
8.483	0.000	0.67	0.00	0.62	0.7	0.058
8.500	0.000	0.67	0.00	0.62	0.7	0.058
8.517	0.000	0.67	0.00	0.62	0.7	0.058
8.533	0.000	0.67	0.00	0.62	0.7	0.058
8.550	0.000	0.67	0.00	0.62	0.7	0.058
8.567	0.000	0.67	0.00	0.62	0.7	0.058
8.583	0.000	0.68	0.00	0.62	0.7	0.058
8.600	0.000	0.68	0.00	0.62	0.7	0.058
8.617	0.000	0.68	0.00	0.62	0.7	0.058
8.633	0.000	0.68	0.00	0.62	0.7	0.058
8.650	0.000	0.68	0.00	0.62	0.7	0.058
8.667	0.000	0.68	0.00	0.62	0.7	0.058
8.683	0.000	0.68	0.00	0.62	0.7	0.058
8.700	0.000	0.68	0.00	0.62	0.7	0.058
8.717	0.000	0.68	0.00	0.62	0.7	0.058
8.733	0.000	0.69	0.00	0.62	0.7	0.058
8.750	0.000	0.69	0.00	0.62	0.7	0.058
8.767	0.000	0.69	0.00	0.62	0.7	0.058
8.783	0.000	0.69	0.00	0.62	0.7	0.058
8.800	0.000	0.69	0.00	0.62	0.7	0.058
8.817	0.000	0.69	0.00	0.62	0.7	0.058
8.833	0.000	0.69	0.00	0.62	0.7	0.058
8.850	0.000	0.69	0.00	0.62	0.7	0.058
8.867	0.000	0.69	0.00	0.62	0.7	0.058
8.883	0.000	0.69	0.00	0.62	0.7	0.058
8.900	0.000	0.69	0.00	0.62	0.7	0.058
8.917	0.000	0.69	0.00	0.62	0.7	0.058

8.933	0.000	0.69	0.00	0.62	0.7	0.058
8.950	0.000	0.69	0.00	0.63	0.7	0.058
8.967	0.000	0.69	0.00	0.63	0.7	0.058
8.983	0.000	0.70	0.00	0.63	0.7	0.058
9.000	0.000	0.70	0.00	0.63	0.7	0.058
9.017	0.000	0.70	0.00	0.63	0.7	0.058
9.033	0.000	0.70	0.00	0.63	0.7	0.058
9.050	0.000	0.70	0.00	0.63	0.7	0.058
9.067	0.000	0.70	0.00	0.63	0.7	0.058
9.083	0.000	0.70	0.00	0.63	0.7	0.058
9.100	0.000	0.70	0.00	0.63	0.7	0.058
9.117	0.000	0.70	0.00	0.63	0.7	0.058
9.133	0.000	0.70	0.00	0.63	0.7	0.058
9.150	0.000	0.71	0.00	0.63	0.7	0.058
9.167	0.000	0.71	0.00	0.63	0.7	0.058
9.183	0.000	0.71	0.00	0.63	0.7	0.058
9.200	0.000	0.71	0.00	0.63	0.7	0.058
9.217	0.000	0.71	0.00	0.63	0.7	0.058
9.233	0.000	0.71	0.00	0.63	0.7	0.058
9.250	0.000	0.71	0.00	0.63	0.7	0.058
9.267	0.000	0.71	0.00	0.63	0.7	0.058
9.283	0.000	0.71	0.00	0.63	0.7	0.058
9.300	0.000	0.71	0.00	0.63	0.7	0.058
9.317	0.000	0.71	0.00	0.63	0.7	0.058
9.333	0.000	0.71	0.00	0.63	0.7	0.058
9.350	0.000	0.71	0.00	0.63	0.7	0.058
9.367	0.000	0.71	0.00	0.63	0.7	0.058
9.383	0.000	0.72	0.00	0.63	0.7	0.058
9.400	0.000	0.72	0.00	0.63	0.7	0.058
9.417	0.000	0.72	0.00	0.63	0.7	0.058
9.433	0.000	0.72	0.00	0.63	0.7	0.058
9.450	0.000	0.72	0.00	0.63	0.7	0.058
9.467	0.000	0.72	0.00	0.63	0.7	0.058
9.483	0.000	0.72	0.00	0.63	0.7	0.059
9.500	0.000	0.72	0.00	0.63	0.7	0.059
9.517	0.000	0.72	0.00	0.63	0.7	0.059
9.533	0.000	0.73	0.00	0.63	0.7	0.059
9.550	0.000	0.73	0.00	0.63	0.7	0.059
9.567	0.000	0.73	0.00	0.63	0.7	0.059
9.583	0.000	0.73	0.00	0.63	0.7	0.059
9.600	0.000	0.73	0.00	0.63	0.7	0.059
9.617	0.000	0.73	0.00	0.63	0.7	0.059
9.633	0.000	0.73	0.00	0.63	0.7	0.059
9.650	0.000	0.73	0.00	0.63	0.7	0.059
9.667	0.000	0.73	0.00	0.63	0.7	0.059
9.683	0.000	0.73	0.00	0.63	0.7	0.059
9.700	0.000	0.73	0.00	0.63	0.7	0.059
9.717	0.000	0.73	0.00	0.63	0.7	0.059
9.733	0.000	0.74	0.00	0.63	0.7	0.059
9.750	0.000	0.74	0.00	0.63	0.7	0.059
9.767	0.000	0.74	0.00	0.63	0.7	0.059
9.783	0.000	0.74	0.00	0.63	0.7	0.059
9.800	0.000	0.74	0.00	0.63	0.7	0.059
9.817	0.000	0.74	0.00	0.63	0.7	0.059
9.833	0.000	0.74	0.00	0.63	0.7	0.059
9.850	0.000	0.74	0.00	0.63	0.7	0.059
9.867	0.000	0.75	0.00	0.63	0.7	0.059
9.883	0.000	0.75	0.00	0.63	0.7	0.059
9.900	0.000	0.75	0.00	0.63	0.7	0.059
9.917	0.000	0.75	0.00	0.63	0.7	0.059
9.933	0.000	0.75	0.00	0.63	0.7	0.059
9.950	0.000	0.75	0.00	0.63	0.7	0.059
9.967	0.000	0.75	0.00	0.63	0.7	0.059
9.983	0.000	0.75	0.00	0.64	0.7	0.059
10.000	0.000	0.75	0.00	0.64	0.7	0.059
10.017	0.000	0.75	0.00	0.64	0.7	0.059
10.033	0.000	0.75	0.00	0.64	0.7	0.059
10.050	0.000	0.75	0.00	0.64	0.7	0.059
10.067	0.000	0.75	0.00	0.64	0.7	0.059
10.083	0.000	0.76	0.00	0.64	0.7	0.059
10.100	0.000	0.76	0.00	0.64	0.7	0.059
10.117	0.000	0.76	0.00	0.64	0.7	0.059
10.133	0.000	0.76	0.00	0.64	0.7	0.059
10.150	0.000	0.76	0.00	0.64	0.7	0.059
10.167	0.000	0.76	0.00	0.64	0.7	0.059
10.183	0.000	0.76	0.00	0.64	0.7	0.059
10.200	0.000	0.77	0.00	0.64	0.7	0.059
10.217	0.000	0.77	0.00	0.64	0.8	0.059
10.233	0.000	0.77	0.00	0.64	0.8	0.059
10.250	0.000	0.77	0.00	0.64	0.8	0.059
10.267	0.000	0.77	0.00	0.64	0.8	0.059
10.283	0.000	0.77	0.00	0.64	0.8	0.059
10.300	0.000	0.77	0.00	0.64	0.8	0.059
10.317	0.000	0.77	0.00	0.64	0.8	0.059
10.333	0.000	0.77	0.00	0.64	0.8	0.059
10.350	0.000	0.77	0.00	0.64	0.8	0.059
10.367	0.000	0.77	0.00	0.64	0.8	0.060
10.383	0.000	0.78	0.00	0.64	0.8	0.060
10.400	0.000	0.78	0.00	0.64	0.8	0.060
10.417	0.000	0.78	0.00	0.64	0.8	0.060
10.433	0.000	0.78	0.00	0.64	0.8	0.060
10.450	0.000	0.78	0.00	0.64	0.8	0.060
10.467	0.000	0.78	0.00	0.64	0.8	0.060
10.483	0.000	0.78	0.00	0.64	0.8	0.060
10.500	0.000	0.78	0.00	0.64	0.8	0.060
10.517	0.000	0.79	0.00	0.64	0.8	0.060
10.533	0.000	0.79	0.00	0.64	0.8	0.060
10.550	0.000	0.79	0.00	0.64	0.8	0.060
10.567	0.000	0.79	0.00	0.64	0.8	0.060
10.583	0.000	0.79	0.00	0.64	0.8	0.060
10.600	0.000	0.79	0.00	0.64	0.8	0.060
10.617	0.000	0.79	0.00	0.64	0.8	0.060
10.633	0.000	0.80	0.00	0.64	0.8	0.060
10.650	0.000	0.80	0.00	0.64	0.8	0.060
10.667	0.000	0.80	0.00	0.64	0.8	0.060
10.683	0.000	0.80	0.00	0.64	0.8	0.060
10.700	0.000	0.80	0.00	0.64	0.8	0.060
10.717	0.000	0.80	0.00	0.64	0.8	0.060
10.733	0.000	0.80	0.00	0.64	0.8	0.060
10.750	0.000	0.80	0.00	0.64	0.8	0.060
10.767	0.000	0.80	0.00	0.64	0.8	0.060
10.783	0.000	0.80	0.00	0.64	0.8	0.060
10.800	0.000	0.80	0.00	0.64	0.8	0.060
10.817	0.000	0.81	0.00	0.65	0.8	0.060
10.833	0.000	0.81	0.00	0.65	0.8	0.060
10.850	0.000	0.81	0.00	0.65	0.8	0.060
10.867	0.000	0.81	0.00	0.65	0.8	0.060
10.883	0.000	0.81	0.00	0.65	0.8	0.060

10.900	0.000	0.81	0.00	0.65	0.8	0.060
10.917	0.000	0.82	0.00	0.65	0.8	0.060
10.933	0.000	0.82	0.00	0.65	0.8	0.060
10.950	0.000	0.82	0.00	0.65	0.8	0.060
10.967	0.000	0.82	0.00	0.65	0.8	0.060
10.983	0.000	0.82	0.00	0.65	0.8	0.060
11.000	0.000	0.82	0.00	0.65	0.8	0.060
11.017	0.000	0.82	0.00	0.65	0.8	0.060
11.033	0.000	0.83	0.00	0.65	0.8	0.060
11.050	0.000	0.83	0.00	0.65	0.8	0.060
11.067	0.000	0.83	0.00	0.65	0.8	0.060
11.083	0.000	0.83	0.00	0.65	0.8	0.060
11.100	0.000	0.83	0.00	0.65	0.8	0.061
11.117	0.000	0.83	0.00	0.65	0.8	0.061
11.133	0.000	0.83	0.00	0.65	0.8	0.061
11.150	0.000	0.83	0.00	0.65	0.8	0.061
11.167	0.000	0.83	0.00	0.65	0.8	0.061
11.183	0.000	0.84	0.00	0.65	0.8	0.061
11.200	0.000	0.84	0.00	0.65	0.8	0.061
11.217	0.000	0.84	0.00	0.65	0.8	0.061
11.233	0.000	0.84	0.00	0.65	0.8	0.061
11.250	0.000	0.84	0.00	0.65	0.8	0.061
11.267	0.000	0.84	0.00	0.65	0.8	0.061
11.283	0.000	0.85	0.00	0.65	0.8	0.061
11.300	0.000	0.85	0.00	0.65	0.8	0.061
11.317	0.000	0.85	0.00	0.65	0.8	0.061
11.333	0.000	0.85	0.00	0.65	0.8	0.061
11.350	0.000	0.85	0.00	0.65	0.8	0.061
11.367	0.000	0.86	0.00	0.65	0.8	0.061
11.383	0.000	0.86	0.00	0.65	0.8	0.061
11.400	0.000	0.86	0.00	0.65	0.8	0.061
11.417	0.000	0.86	0.00	0.65	0.8	0.061
11.433	0.000	0.86	0.00	0.65	0.8	0.061
11.450	0.000	0.86	0.00	0.65	0.8	0.061
11.467	0.000	0.86	0.00	0.65	0.8	0.061
11.483	0.000	0.86	0.00	0.66	0.8	0.061
11.500	0.000	0.86	0.00	0.66	0.8	0.061
11.517	0.000	0.86	0.00	0.66	0.8	0.061
11.533	0.000	0.87	0.00	0.66	0.8	0.061
11.550	0.000	0.87	0.00	0.66	0.8	0.061
11.567	0.000	0.87	0.00	0.66	0.9	0.061
11.583	0.000	0.87	0.00	0.66	0.9	0.061
11.600	0.000	0.87	0.00	0.66	0.9	0.061
11.617	0.000	0.88	0.00	0.66	0.9	0.061
11.633	0.000	0.88	0.00	0.66	0.9	0.061
11.650	0.000	0.88	0.00	0.66	0.9	0.061
11.667	0.000	0.88	0.00	0.66	0.9	0.061
11.683	0.000	0.89	0.00	0.66	0.9	0.061
11.700	0.000	0.89	0.00	0.66	0.9	0.061
11.717	0.000	0.89	0.00	0.66	0.9	0.062
11.733	0.000	0.89	0.00	0.66	0.9	0.062
11.750	0.000	0.89	0.00	0.66	0.9	0.062
11.767	0.000	0.89	0.00	0.66	0.9	0.062
11.783	0.000	0.89	0.00	0.66	0.9	0.062
11.800	0.000	0.90	0.00	0.66	0.9	0.062
11.817	0.000	0.90	0.00	0.66	0.9	0.062
11.833	0.000	0.90	0.00	0.66	0.9	0.062
11.850	0.000	0.90	0.00	0.66	0.9	0.062
11.867	0.000	0.90	0.00	0.66	0.9	0.062
11.883	0.000	0.90	0.00	0.66	0.9	0.062
11.900	0.000	0.90	0.00	0.66	0.9	0.062
11.917	0.000	0.90	0.00	0.66	0.9	0.062
11.933	0.000	0.91	0.00	0.66	0.9	0.062
11.950	0.000	0.91	0.00	0.66	0.9	0.062
11.967	0.000	0.91	0.00	0.66	0.9	0.062
11.983	0.000	0.91	0.00	0.66	0.9	0.062
12.000	0.000	0.91	0.00	0.66	0.9	0.062
12.017	0.000	0.92	0.00	0.66	0.9	0.062
12.033	0.000	0.92	0.00	0.66	0.9	0.062
12.050	0.000	0.92	0.00	0.66	0.9	0.062
12.067	0.000	0.92	0.00	0.67	0.9	0.062
12.083	0.000	0.92	0.00	0.67	0.9	0.062
12.100	0.000	0.92	0.00	0.67	0.9	0.062
12.117	0.000	0.92	0.00	0.67	0.9	0.062
12.133	0.000	0.92	0.00	0.67	0.9	0.062
12.150	0.000	0.92	0.00	0.67	0.9	0.062
12.167	0.000	0.92	0.00	0.67	0.9	0.062
12.183	0.000	0.92	0.00	0.67	0.9	0.062
12.200	0.000	0.92	0.00	0.67	0.9	0.062
12.217	0.000	0.91	0.00	0.67	0.9	0.062
12.233	0.000	0.91	0.00	0.67	0.9	0.062
12.250	0.000	0.91	0.00	0.67	0.9	0.062
12.267	0.000	0.91	0.00	0.67	0.9	0.062
12.283	0.000	0.91	0.00	0.67	0.9	0.062
12.300	0.000	0.91	0.00	0.67	0.9	0.062
12.317	0.000	0.92	0.00	0.67	0.9	0.062
12.333	0.000	0.92	0.00	0.67	0.9	0.062
12.350	0.000	0.92	0.00	0.67	0.9	0.062
12.367	0.000	0.92	0.00	0.67	0.9	0.062
12.383	0.000	0.93	0.00	0.67	0.9	0.062
12.400	0.000	0.93	0.00	0.67	0.9	0.062
12.417	0.000	0.93	0.00	0.67	0.9	0.062
12.433	0.000	0.94	0.00	0.67	0.9	0.063
12.450	0.000	0.94	0.00	0.67	0.9	0.063
12.467	0.000	0.94	0.00	0.67	0.9	0.063
12.483	0.000	0.94	0.00	0.67	0.9	0.063
12.500	0.000	0.94	0.00	0.67	0.9	0.063
12.517	0.000	0.95	0.00	0.67	0.9	0.063
12.533	0.000	0.95	0.00	0.67	0.9	0.063
12.550	0.000	0.95	0.00	0.67	0.9	0.063
12.567	0.000	0.95	0.00	0.67	0.9	0.063
12.583	0.000	0.95	0.00	0.67	0.9	0.063
12.600	0.000	0.95	0.00	0.67	0.9	0.063
12.617	0.000	0.96	0.00	0.67	0.9	0.063
12.633	0.000	0.96	0.00	0.67	0.9	0.063
12.650	0.000	0.96	0.00	0.67	0.9	0.063
12.667	0.000	0.96	0.00	0.67	0.9	0.063
12.683	0.000	0.96	0.00	0.67	0.9	0.063
12.700	0.000	0.97	0.00	0.67	0.9	0.063
12.717	0.000	0.97	0.00	0.67	0.9	0.063
12.733	0.000	0.97	0.00	0.67	0.9	0.063
12.750	0.000	0.98	0.00	0.67	0.9	0.063
12.767	0.000	0.98	0.00	0.67	0.9	0.063
12.783	0.000	0.98	0.00	0.68	1.0	0.063
12.800	0.000	0.99	0.00	0.68	1.0	0.063
12.817	0.000	0.99	0.00	0.68	1.0	0.063
12.833	0.000	0.99	0.00	0.68	1.0	0.063
12.850	0.000	1.00	0.00	0.68	1.0	0.063

12.867	0.000	1.00	0.00	0.68	1.0	0.063
12.883	0.000	1.00	0.00	0.68	1.0	0.064
12.900	0.000	1.00	0.00	0.68	1.0	0.064
12.917	0.000	1.00	0.00	0.68	1.0	0.064
12.933	0.000	1.01	0.00	0.68	1.0	0.064
12.950	0.000	1.01	0.00	0.68	1.0	0.064
12.967	0.000	1.01	0.00	0.68	1.0	0.064
12.983	0.000	1.01	0.00	0.68	1.0	0.064
13.000	0.000	1.01	0.00	0.68	1.0	0.064
13.017	0.000	1.02	0.00	0.68	1.0	0.064
13.033	0.000	1.02	0.00	0.68	1.0	0.064
13.050	0.000	1.02	0.00	0.68	1.0	0.064
13.067	0.000	1.03	0.00	0.68	1.0	0.064
13.083	0.000	1.03	0.00	0.68	1.0	0.064
13.100	0.000	1.03	0.00	0.68	1.0	0.064
13.117	0.000	1.04	0.00	0.68	1.0	0.064
13.133	0.000	1.04	0.00	0.68	1.0	0.064
13.150	0.000	1.05	0.00	0.69	1.0	0.064
13.167	0.000	1.05	0.00	0.69	1.0	0.064
13.183	0.000	1.05	0.00	0.69	1.0	0.064
13.200	0.000	1.06	0.00	0.69	1.0	0.064
13.217	0.000	1.06	0.00	0.69	1.0	0.064
13.233	0.000	1.06	0.00	0.69	1.0	0.065
13.250	0.000	1.07	0.00	0.69	1.0	0.065
13.267	0.000	1.07	0.00	0.69	1.0	0.065
13.283	0.000	1.07	0.00	0.69	1.0	0.065
13.300	0.000	1.07	0.00	0.69	1.0	0.065
13.317	0.000	1.07	0.00	0.69	1.0	0.065
13.333	0.000	1.08	0.00	0.69	1.0	0.065
13.350	0.000	1.08	0.00	0.69	1.0	0.065
13.367	0.000	1.08	0.00	0.69	1.0	0.065
13.383	0.000	1.08	0.00	0.69	1.0	0.065
13.400	0.000	1.09	0.00	0.69	1.0	0.065
13.417	0.000	1.09	0.00	0.69	1.1	0.065
13.433	0.000	1.10	0.00	0.69	1.1	0.065
13.450	0.000	1.10	0.00	0.69	1.1	0.065
13.467	0.000	1.11	0.00	0.70	1.1	0.065
13.483	0.000	1.11	0.00	0.70	1.1	0.065
13.500	0.000	1.11	0.00	0.70	1.1	0.065
13.517	0.000	1.12	0.00	0.70	1.1	0.066
13.533	0.000	1.12	0.00	0.70	1.1	0.066
13.550	0.000	1.13	0.00	0.70	1.1	0.066
13.567	0.000	1.13	0.00	0.70	1.1	0.066
13.583	0.000	1.14	0.00	0.70	1.1	0.066
13.600	0.000	1.14	0.00	0.70	1.1	0.066
13.617	0.000	1.15	0.00	0.70	1.1	0.066
13.633	0.000	1.15	0.00	0.70	1.1	0.066
13.650	0.000	1.15	0.00	0.70	1.1	0.066
13.667	0.000	1.15	0.00	0.70	1.1	0.066
13.683	0.000	1.16	0.00	0.70	1.1	0.066
13.700	0.000	1.16	0.00	0.70	1.1	0.066
13.717	0.000	1.16	0.00	0.71	1.1	0.066
13.733	0.000	1.16	0.00	0.71	1.1	0.066
13.750	0.000	1.17	0.00	0.71	1.1	0.066
13.767	0.000	1.17	0.00	0.71	1.1	0.067
13.783	0.000	1.17	0.00	0.71	1.1	0.067
13.800	0.000	1.18	0.00	0.71	1.1	0.067
13.817	0.000	1.19	0.00	0.71	1.1	0.067
13.833	0.000	1.19	0.00	0.71	1.1	0.067
13.850	0.000	1.20	0.00	0.71	1.1	0.067
13.867	0.000	1.21	0.00	0.71	1.1	0.067
13.883	0.000	1.21	0.00	0.71	1.2	0.067
13.900	0.000	1.22	0.00	0.71	1.2	0.067
13.917	0.000	1.22	0.00	0.71	1.2	0.067
13.933	0.000	1.23	0.00	0.71	1.2	0.067
13.950	0.000	1.24	0.00	0.72	1.2	0.067
13.967	0.000	1.24	0.00	0.72	1.2	0.068
13.983	0.000	1.24	0.00	0.72	1.2	0.068
14.000	0.000	1.25	0.00	0.72	1.2	0.068
14.017	0.000	1.25	0.00	0.72	1.2	0.068
14.033	0.000	1.25	0.00	0.72	1.2	0.068
14.050	0.000	1.25	0.00	0.72	1.2	0.068
14.067	0.000	1.26	0.00	0.72	1.2	0.068
14.083	0.000	1.26	0.00	0.72	1.2	0.068
14.100	0.000	1.26	0.00	0.72	1.2	0.068
14.117	0.000	1.26	0.00	0.72	1.2	0.068
14.133	0.000	1.27	0.00	0.72	1.2	0.068
14.150	0.000	1.27	0.00	0.72	1.2	0.068
14.167	0.000	1.27	0.00	0.73	1.2	0.068
14.183	0.000	1.27	0.00	0.73	1.2	0.069
14.200	0.000	1.27	0.00	0.73	1.2	0.069
14.217	0.000	1.27	0.00	0.73	1.2	0.069
14.233	0.000	1.27	0.00	0.73	1.2	0.069
14.250	0.000	1.27	0.00	0.73	1.2	0.069
14.267	0.000	1.28	0.00	0.73	1.2	0.069
14.283	0.000	1.28	0.00	0.73	1.2	0.069
14.300	0.000	1.28	0.00	0.73	1.2	0.069
14.317	0.000	1.28	0.00	0.73	1.2	0.069
14.333	0.000	1.28	0.00	0.73	1.2	0.069
14.350	0.000	1.28	0.00	0.73	1.3	0.069
14.367	0.000	1.29	0.00	0.73	1.3	0.069
14.383	0.000	1.29	0.00	0.73	1.3	0.069
14.400	0.000	1.30	0.00	0.73	1.3	0.069
14.417	0.000	1.30	0.00	0.73	1.3	0.069
14.433	0.000	1.31	0.00	0.73	1.3	0.069
14.450	0.000	1.31	0.00	0.73	1.3	0.069
14.467	0.000	1.32	0.00	0.73	1.3	0.069
14.483	0.000	1.32	0.00	0.74	1.3	0.069
14.500	0.000	1.33	0.00	0.74	1.3	0.070
14.517	0.000	1.33	0.00	0.74	1.3	0.070
14.533	0.000	1.34	0.00	0.74	1.3	0.070
14.550	0.000	1.35	0.00	0.74	1.3	0.070
14.567	0.000	1.36	0.00	0.74	1.3	0.070
14.583	0.000	1.37	0.00	0.74	1.3	0.070
14.600	0.000	1.39	0.00	0.74	1.3	0.070
14.617	0.000	1.40	0.00	0.74	1.3	0.070
14.633	0.000	1.41	0.00	0.74	1.3	0.070
14.650	0.000	1.42	0.00	0.74	1.3	0.070
14.667	0.000	1.43	0.00	0.75	1.3	0.071
14.683	0.000	1.44	0.00	0.75	1.3	0.071
14.700	0.000	1.45	0.00	0.75	1.3	0.071
14.717	0.000	1.46	0.00	0.75	1.4	0.071
14.733	0.000	1.47	0.00	0.75	1.4	0.071
14.750	0.000	1.47	0.00	0.75	1.4	0.071
14.767	0.000	1.48	0.00	0.75	1.4	0.071
14.783	0.000	1.49	0.00	0.76	1.4	0.072
14.800	0.000	1.49	0.00	0.76	1.4	0.072
14.817	0.000	1.50	0.00	0.76	1.4	0.072

14.833	0.000	1.51	0.00	0.76	1.4	0.072
14.850	0.000	1.51	0.00	0.76	1.4	0.072
14.867	0.000	1.52	0.00	0.76	1.4	0.072
14.883	0.000	1.53	0.00	0.76	1.4	0.072
14.900	0.000	1.54	0.00	0.77	1.4	0.073
14.917	0.000	1.56	0.00	0.77	1.4	0.073
14.933	0.000	1.58	0.00	0.77	1.5	0.073
14.950	0.000	1.59	0.00	0.77	1.5	0.073
14.967	0.000	1.61	0.00	0.77	1.5	0.073
14.983	0.000	1.63	0.00	0.77	1.5	0.074
15.000	0.000	1.64	0.00	0.78	1.5	0.074
15.017	0.000	1.66	0.00	0.78	1.5	0.074
15.033	0.000	1.68	0.00	0.78	1.5	0.074
15.050	0.000	1.70	0.00	0.78	1.5	0.074
15.067	0.000	1.71	0.00	0.79	1.5	0.075
15.083	0.000	1.73	0.00	0.79	1.6	0.075
15.100	0.000	1.74	0.00	0.79	1.6	0.075
15.117	0.000	1.75	0.00	0.79	1.6	0.075
15.133	0.000	1.76	0.00	0.79	1.6	0.076
15.150	0.000	1.77	0.00	0.80	1.6	0.076
15.167	0.000	1.78	0.00	0.80	1.6	0.076
15.183	0.000	1.79	0.00	0.80	1.6	0.076
15.200	0.000	1.81	0.00	0.80	1.6	0.077
15.217	0.000	1.82	0.00	0.81	1.6	0.077
15.233	0.000	1.83	0.00	0.81	1.7	0.077
15.250	0.000	1.84	0.00	0.81	1.7	0.077
15.267	0.000	1.86	0.00	0.81	1.7	0.077
15.283	0.000	1.92	0.00	0.82	1.7	0.078
15.300	0.000	1.98	0.00	0.82	1.7	0.078
15.317	0.000	2.04	0.00	0.82	1.7	0.079
15.333	0.000	2.11	0.00	0.83	1.8	0.079
15.350	0.000	2.17	0.00	0.83	1.8	0.080
15.367	0.000	2.23	0.00	0.84	1.8	0.080
15.383	0.000	2.29	0.00	0.84	1.8	0.081
15.400	0.000	2.35	0.00	0.85	1.9	0.081
15.417	0.000	2.41	0.00	0.86	1.9	0.082
15.433	0.000	2.47	0.00	0.86	1.9	0.083
15.450	0.000	2.54	0.00	0.87	2.0	0.084
15.467	0.000	2.62	0.00	0.88	2.0	0.084
15.483	0.000	2.70	0.00	0.89	2.1	0.085
15.500	0.000	2.79	0.00	0.90	2.1	0.086
15.517	0.000	2.87	0.00	0.91	2.2	0.087
15.533	0.000	2.95	0.00	0.92	2.2	0.088
15.550	0.000	3.04	0.00	0.93	2.3	0.089
15.567	0.000	3.12	0.00	0.94	2.3	0.090
15.583	0.000	3.20	0.00	0.95	2.4	0.091
15.600	0.000	3.29	0.00	0.96	2.4	0.093
15.617	0.000	3.37	0.00	0.97	2.5	0.094
15.633	0.000	3.45	0.00	0.98	2.6	0.095
15.650	0.000	3.53	0.00	0.99	2.6	0.096
15.667	0.000	3.60	0.00	1.00	2.7	0.098
15.683	0.000	3.67	0.00	1.01	2.7	0.099
15.700	0.000	3.74	0.00	1.03	2.7	0.100
15.717	0.000	3.82	0.00	1.04	2.8	0.102
15.733	0.000	3.89	0.00	1.05	2.8	0.103
15.750	0.000	3.96	0.00	1.06	2.8	0.105
15.767	0.000	4.03	0.00	1.08	2.8	0.106
15.783	0.000	4.10	0.00	1.09	2.9	0.108
15.800	0.000	4.18	0.00	1.10	2.9	0.110
15.817	0.000	4.25	0.00	1.12	2.9	0.112
15.833	0.000	4.34	0.00	1.13	3.0	0.114
15.850	0.000	4.45	0.00	1.15	3.0	0.116
15.867	0.000	4.56	0.00	1.17	3.0	0.118
15.883	0.000	4.67	0.00	1.18	3.1	0.120
15.900	0.000	4.77	0.00	1.20	3.1	0.122
15.917	0.000	4.88	0.00	1.22	3.1	0.125
15.933	0.000	4.99	0.00	1.24	3.2	0.127
15.950	0.000	5.10	0.00	1.26	3.2	0.130
15.967	0.000	5.20	0.00	1.28	3.3	0.132
15.983	0.000	5.31	0.00	1.30	3.3	0.135
16.000	0.000	5.42	0.00	1.33	3.4	0.138
16.017	0.000	5.80	0.00	1.35	3.4	0.141
16.033	0.000	6.46	0.00	1.39	3.5	0.145
16.050	0.000	7.11	0.00	1.43	3.6	0.150
16.067	0.000	7.77	0.00	1.47	3.6	0.156
16.083	0.000	8.42	0.00	1.52	3.7	0.162
16.100	0.000	9.08	0.00	1.58	3.9	0.169
16.117	0.000	9.73	0.00	1.64	4.0	0.177
16.133	0.000	10.39	0.00	1.71	4.1	0.186
16.150	0.000	11.04	0.00	1.79	4.3	0.195
16.167	0.000	11.70	0.00	1.87	4.4	0.205
16.183	0.000	12.35	0.00	1.95	4.6	0.216
16.200	0.000	12.80	0.00	2.03	4.8	0.227
16.217	0.000	11.75	0.00	2.09	4.9	0.237
16.233	0.000	10.96	0.00	2.14	5.0	0.245
16.250	0.000	10.17	0.00	2.19	5.0	0.252
16.267	0.000	9.37	0.00	2.23	5.1	0.258
16.283	0.000	8.58	0.00	2.26	5.1	0.263
16.300	0.000	7.79	0.00	2.28	5.1	0.266
16.317	0.000	6.99	0.00	2.30	5.2	0.269
16.333	0.000	6.20	0.00	2.30	5.2	0.270
16.350	0.000	5.41	0.00	2.31	5.2	0.270
16.367	0.000	4.62	0.00	2.30	5.2	0.270
16.383	0.000	3.95	0.00	2.29	5.2	0.268
16.400	0.000	3.74	0.00	2.28	5.2	0.266
16.417	0.000	3.56	0.00	2.26	5.2	0.264
16.433	0.000	3.39	0.00	2.25	5.1	0.261
16.450	0.000	3.22	0.00	2.23	5.1	0.259
16.467	0.000	3.05	0.00	2.21	5.1	0.256
16.483	0.000	2.87	0.00	2.20	5.1	0.253
16.500	0.000	2.70	0.00	2.18	5.0	0.250
16.517	0.000	2.53	0.00	2.15	5.0	0.246
16.533	0.000	2.35	0.00	2.13	5.0	0.243
16.550	0.000	2.18	0.00	2.11	5.0	0.239
16.567	0.000	2.02	0.00	2.08	4.9	0.235
16.583	0.000	1.97	0.00	2.06	4.9	0.231
16.600	0.000	1.93	0.00	2.03	4.9	0.227
16.617	0.000	1.90	0.00	2.00	4.8	0.223
16.633	0.000	1.87	0.00	1.97	4.8	0.219
16.650	0.000	1.83	0.00	1.94	4.7	0.215
16.667	0.000	1.80	0.00	1.91	4.6	0.211
16.683	0.000	1.76	0.00	1.88	4.6	0.207
16.700	0.000	1.73	0.00	1.85	4.5	0.203
16.717	0.000	1.70	0.00	1.82	4.5	0.199
16.733	0.000	1.66	0.00	1.79	4.4	0.196
16.750	0.000	1.63	0.00	1.76	4.3	0.192
16.767	0.000	1.60	0.00	1.73	4.3	0.188
16.783	0.000	1.58	0.00	1.70	4.2	0.185

16.800	0.000	1.56	0.00	1.67	4.1	0.181
16.817	0.000	1.54	0.00	1.64	4.1	0.178
16.833	0.000	1.52	0.00	1.62	4.0	0.174
16.850	0.000	1.50	0.00	1.59	4.0	0.171
16.867	0.000	1.48	0.00	1.56	3.9	0.167
16.883	0.000	1.46	0.00	1.54	3.9	0.164
16.900	0.000	1.44	0.00	1.51	3.8	0.161
16.917	0.000	1.42	0.00	1.48	3.7	0.158
16.933	0.000	1.40	0.00	1.46	3.7	0.154
16.950	0.000	1.38	0.00	1.43	3.6	0.151
16.967	0.000	1.37	0.00	1.41	3.6	0.148
16.983	0.000	1.35	0.00	1.39	3.5	0.145
17.000	0.000	1.34	0.00	1.36	3.5	0.142
17.017	0.000	1.32	0.00	1.34	3.4	0.139
17.033	0.000	1.31	0.00	1.32	3.4	0.137
17.050	0.000	1.30	0.00	1.29	3.3	0.134
17.067	0.000	1.28	0.00	1.27	3.3	0.131
17.083	0.000	1.27	0.00	1.25	3.2	0.128
17.100	0.000	1.25	0.00	1.23	3.2	0.126
17.117	0.000	1.24	0.00	1.21	3.2	0.123
17.133	0.000	1.23	0.00	1.19	3.1	0.120
17.150	0.000	1.23	0.00	1.17	3.1	0.118
17.167	0.000	1.23	0.00	1.15	3.0	0.115
17.183	0.000	1.22	0.00	1.13	3.0	0.113
17.200	0.000	1.22	0.00	1.11	2.9	0.110
17.217	0.000	1.22	0.00	1.09	2.9	0.108
17.233	0.000	1.22	0.00	1.07	2.9	0.106
17.250	0.000	1.21	0.00	1.05	2.8	0.104
17.267	0.000	1.21	0.00	1.04	2.8	0.101
17.283	0.000	1.21	0.00	1.02	2.8	0.099
17.300	0.000	1.21	0.00	1.00	2.7	0.097
17.317	0.000	1.20	0.00	0.98	2.7	0.095
17.333	0.000	1.19	0.00	0.97	2.6	0.093
17.350	0.000	1.18	0.00	0.95	2.5	0.092
17.367	0.000	1.18	0.00	0.93	2.4	0.090
17.383	0.000	1.17	0.00	0.92	2.3	0.088
17.400	0.000	1.16	0.00	0.90	2.2	0.087
17.417	0.000	1.15	0.00	0.89	2.1	0.086
17.433	0.000	1.14	0.00	0.88	2.1	0.084
17.450	0.000	1.14	0.00	0.87	2.0	0.083
17.467	0.000	1.13	0.00	0.86	2.0	0.082
17.483	0.000	1.12	0.00	0.85	1.9	0.081
17.500	0.000	1.11	0.00	0.84	1.8	0.080
17.517	0.000	1.10	0.00	0.83	1.8	0.079
17.533	0.000	1.10	0.00	0.82	1.7	0.078
17.550	0.000	1.09	0.00	0.81	1.7	0.077
17.567	0.000	1.09	0.00	0.80	1.7	0.076
17.583	0.000	1.08	0.00	0.80	1.6	0.076
17.600	0.000	1.07	0.00	0.79	1.6	0.075
17.617	0.000	1.07	0.00	0.78	1.5	0.074
17.633	0.000	1.06	0.00	0.78	1.5	0.074
17.650	0.000	1.05	0.00	0.77	1.5	0.073
17.667	0.000	1.05	0.00	0.76	1.5	0.073
17.683	0.000	1.04	0.00	0.76	1.4	0.072
17.700	0.000	1.03	0.00	0.76	1.4	0.072
17.717	0.000	1.03	0.00	0.75	1.4	0.071
17.733	0.000	1.02	0.00	0.75	1.3	0.071
17.750	0.000	1.02	0.00	0.74	1.3	0.070
17.767	0.000	1.01	0.00	0.74	1.3	0.070
17.783	0.000	1.01	0.00	0.73	1.3	0.069
17.800	0.000	1.00	0.00	0.73	1.3	0.069
17.817	0.000	1.00	0.00	0.73	1.2	0.069
17.833	0.000	0.99	0.00	0.72	1.2	0.068
17.850	0.000	0.98	0.00	0.72	1.2	0.068
17.867	0.000	0.98	0.00	0.72	1.2	0.068
17.883	0.000	0.97	0.00	0.72	1.2	0.067
17.900	0.000	0.97	0.00	0.71	1.2	0.067
17.917	0.000	0.96	0.00	0.71	1.2	0.067
17.933	0.000	0.96	0.00	0.71	1.1	0.067
17.950	0.000	0.96	0.00	0.71	1.1	0.066
17.967	0.000	0.95	0.00	0.70	1.1	0.066
17.983	0.000	0.95	0.00	0.70	1.1	0.066
18.000	0.000	0.94	0.00	0.70	1.1	0.066
18.017	0.000	0.94	0.00	0.70	1.1	0.066
18.033	0.000	0.93	0.00	0.70	1.1	0.065
18.050	0.000	0.93	0.00	0.69	1.1	0.065
18.067	0.000	0.92	0.00	0.69	1.1	0.065
18.083	0.000	0.92	0.00	0.69	1.0	0.065
18.100	0.000	0.92	0.00	0.69	1.0	0.065
18.117	0.000	0.92	0.00	0.69	1.0	0.065
18.133	0.000	0.92	0.00	0.69	1.0	0.064
18.150	0.000	0.92	0.00	0.69	1.0	0.064
18.167	0.000	0.92	0.00	0.68	1.0	0.064
18.183	0.000	0.92	0.00	0.68	1.0	0.064
18.200	0.000	0.92	0.00	0.68	1.0	0.064
18.217	0.000	0.92	0.00	0.68	1.0	0.064
18.233	0.000	0.92	0.00	0.68	1.0	0.064
18.250	0.000	0.92	0.00	0.68	1.0	0.064
18.267	0.000	0.91	0.00	0.68	1.0	0.064
18.283	0.000	0.91	0.00	0.68	1.0	0.064
18.300	0.000	0.91	0.00	0.68	1.0	0.063
18.317	0.000	0.90	0.00	0.68	1.0	0.063
18.333	0.000	0.90	0.00	0.68	1.0	0.063
18.350	0.000	0.89	0.00	0.67	1.0	0.063
18.367	0.000	0.89	0.00	0.67	0.9	0.063
18.383	0.000	0.89	0.00	0.67	0.9	0.063
18.400	0.000	0.88	0.00	0.67	0.9	0.063
18.417	0.000	0.88	0.00	0.67	0.9	0.063
18.433	0.000	0.88	0.00	0.67	0.9	0.063
18.450	0.000	0.87	0.00	0.67	0.9	0.063
18.467	0.000	0.87	0.00	0.67	0.9	0.063
18.483	0.000	0.87	0.00	0.67	0.9	0.063
18.500	0.000	0.87	0.00	0.67	0.9	0.063
18.517	0.000	0.86	0.00	0.67	0.9	0.062
18.533	0.000	0.86	0.00	0.67	0.9	0.062
18.550	0.000	0.86	0.00	0.67	0.9	0.062
18.567	0.000	0.85	0.00	0.67	0.9	0.062
18.583	0.000	0.85	0.00	0.66	0.9	0.062
18.600	0.000	0.85	0.00	0.66	0.9	0.062
18.617	0.000	0.84	0.00	0.66	0.9	0.062
18.633	0.000	0.84	0.00	0.66	0.9	0.062
18.650	0.000	0.84	0.00	0.66	0.9	0.062
18.667	0.000	0.84	0.00	0.66	0.9	0.062
18.683	0.000	0.83	0.00	0.66	0.9	0.062
18.700	0.000	0.83	0.00	0.66	0.9	0.062
18.717	0.000	0.83	0.00	0.66	0.9	0.062
18.733	0.000	0.82	0.00	0.66	0.9	0.062
18.750	0.000	0.82	0.00	0.66	0.9	0.062

18.767	0.000	0.82	0.00	0.66	0.9	0.061
18.783	0.000	0.82	0.00	0.66	0.9	0.061
18.800	0.000	0.81	0.00	0.66	0.9	0.061
18.817	0.000	0.81	0.00	0.66	0.9	0.061
18.833	0.000	0.81	0.00	0.66	0.9	0.061
18.850	0.000	0.81	0.00	0.66	0.8	0.061
18.867	0.000	0.80	0.00	0.65	0.8	0.061
18.883	0.000	0.80	0.00	0.65	0.8	0.061
18.900	0.000	0.80	0.00	0.65	0.8	0.061
18.917	0.000	0.80	0.00	0.65	0.8	0.061
18.933	0.000	0.79	0.00	0.65	0.8	0.061
18.950	0.000	0.79	0.00	0.65	0.8	0.061
18.967	0.000	0.79	0.00	0.65	0.8	0.061
18.983	0.000	0.79	0.00	0.65	0.8	0.061
19.000	0.000	0.78	0.00	0.65	0.8	0.061
19.017	0.000	0.78	0.00	0.65	0.8	0.061
19.033	0.000	0.78	0.00	0.65	0.8	0.061
19.050	0.000	0.78	0.00	0.65	0.8	0.061
19.067	0.000	0.78	0.00	0.65	0.8	0.060
19.083	0.000	0.77	0.00	0.65	0.8	0.060
19.100	0.000	0.77	0.00	0.65	0.8	0.060
19.117	0.000	0.77	0.00	0.65	0.8	0.060
19.133	0.000	0.77	0.00	0.65	0.8	0.060
19.150	0.000	0.76	0.00	0.65	0.8	0.060
19.167	0.000	0.76	0.00	0.65	0.8	0.060
19.183	0.000	0.76	0.00	0.65	0.8	0.060
19.200	0.000	0.76	0.00	0.64	0.8	0.060
19.217	0.000	0.76	0.00	0.64	0.8	0.060
19.233	0.000	0.75	0.00	0.64	0.8	0.060
19.250	0.000	0.75	0.00	0.64	0.8	0.060
19.267	0.000	0.75	0.00	0.64	0.8	0.060
19.283	0.000	0.75	0.00	0.64	0.8	0.060
19.300	0.000	0.75	0.00	0.64	0.8	0.060
19.317	0.000	0.74	0.00	0.64	0.8	0.060
19.333	0.000	0.74	0.00	0.64	0.8	0.060
19.350	0.000	0.74	0.00	0.64	0.8	0.060
19.367	0.000	0.74	0.00	0.64	0.8	0.060
19.383	0.000	0.74	0.00	0.64	0.8	0.060
19.400	0.000	0.73	0.00	0.64	0.8	0.060
19.417	0.000	0.73	0.00	0.64	0.8	0.059
19.433	0.000	0.73	0.00	0.64	0.8	0.059
19.450	0.000	0.73	0.00	0.64	0.8	0.059
19.467	0.000	0.73	0.00	0.64	0.8	0.059
19.483	0.000	0.72	0.00	0.64	0.8	0.059
19.500	0.000	0.72	0.00	0.64	0.8	0.059
19.517	0.000	0.72	0.00	0.64	0.7	0.059
19.533	0.000	0.72	0.00	0.64	0.7	0.059
19.550	0.000	0.72	0.00	0.64	0.7	0.059
19.567	0.000	0.71	0.00	0.64	0.7	0.059
19.583	0.000	0.71	0.00	0.64	0.7	0.059
19.600	0.000	0.71	0.00	0.64	0.7	0.059
19.617	0.000	0.71	0.00	0.63	0.7	0.059
19.633	0.000	0.71	0.00	0.63	0.7	0.059
19.650	0.000	0.71	0.00	0.63	0.7	0.059
19.667	0.000	0.70	0.00	0.63	0.7	0.059
19.683	0.000	0.70	0.00	0.63	0.7	0.059
19.700	0.000	0.70	0.00	0.63	0.7	0.059
19.717	0.000	0.70	0.00	0.63	0.7	0.059
19.733	0.000	0.70	0.00	0.63	0.7	0.059
19.750	0.000	0.70	0.00	0.63	0.7	0.059
19.767	0.000	0.69	0.00	0.63	0.7	0.059
19.783	0.000	0.69	0.00	0.63	0.7	0.059
19.800	0.000	0.69	0.00	0.63	0.7	0.059
19.817	0.000	0.69	0.00	0.63	0.7	0.059
19.833	0.000	0.69	0.00	0.63	0.7	0.059
19.850	0.000	0.69	0.00	0.63	0.7	0.059
19.867	0.000	0.69	0.00	0.63	0.7	0.058
19.883	0.000	0.68	0.00	0.63	0.7	0.058
19.900	0.000	0.68	0.00	0.63	0.7	0.058
19.917	0.000	0.68	0.00	0.63	0.7	0.058
19.933	0.000	0.68	0.00	0.63	0.7	0.058
19.950	0.000	0.68	0.00	0.63	0.7	0.058
19.967	0.000	0.68	0.00	0.63	0.7	0.058
19.983	0.000	0.67	0.00	0.63	0.7	0.058
20.000	0.000	0.67	0.00	0.63	0.7	0.058
20.017	0.000	0.67	0.00	0.63	0.7	0.058
20.033	0.000	0.67	0.00	0.63	0.7	0.058
20.050	0.000	0.67	0.00	0.63	0.7	0.058
20.067	0.000	0.67	0.00	0.63	0.7	0.058
20.083	0.000	0.67	0.00	0.63	0.7	0.058
20.100	0.000	0.66	0.00	0.63	0.7	0.058
20.117	0.000	0.66	0.00	0.63	0.7	0.058
20.133	0.000	0.66	0.00	0.62	0.7	0.058
20.150	0.000	0.66	0.00	0.62	0.7	0.058
20.167	0.000	0.66	0.00	0.62	0.7	0.058
20.183	0.000	0.66	0.00	0.62	0.7	0.058
20.200	0.000	0.66	0.00	0.62	0.7	0.058
20.217	0.000	0.65	0.00	0.62	0.7	0.058
20.233	0.000	0.65	0.00	0.62	0.7	0.058
20.250	0.000	0.65	0.00	0.62	0.7	0.058
20.267	0.000	0.65	0.00	0.62	0.7	0.058
20.283	0.000	0.65	0.00	0.62	0.7	0.058
20.300	0.000	0.65	0.00	0.62	0.7	0.058
20.317	0.000	0.65	0.00	0.62	0.7	0.058
20.333	0.000	0.65	0.00	0.62	0.7	0.058
20.350	0.000	0.64	0.00	0.62	0.7	0.058
20.367	0.000	0.64	0.00	0.62	0.7	0.058
20.383	0.000	0.64	0.00	0.62	0.7	0.058
20.400	0.000	0.64	0.00	0.62	0.7	0.058
20.417	0.000	0.64	0.00	0.62	0.7	0.058
20.433	0.000	0.64	0.00	0.62	0.7	0.057
20.450	0.000	0.64	0.00	0.62	0.7	0.057
20.467	0.000	0.63	0.00	0.62	0.7	0.057
20.483	0.000	0.63	0.00	0.62	0.7	0.057
20.500	0.000	0.63	0.00	0.62	0.7	0.057
20.517	0.000	0.63	0.00	0.62	0.6	0.057
20.533	0.000	0.63	0.00	0.62	0.6	0.057
20.550	0.000	0.63	0.00	0.62	0.6	0.057
20.567	0.000	0.63	0.00	0.62	0.6	0.057
20.583	0.000	0.63	0.00	0.62	0.6	0.057
20.600	0.000	0.63	0.00	0.62	0.6	0.057
20.617	0.000	0.62	0.00	0.62	0.6	0.057
20.633	0.000	0.62	0.00	0.62	0.6	0.057
20.650	0.000	0.62	0.00	0.62	0.6	0.057
20.667	0.000	0.62	0.00	0.62	0.6	0.057
20.683	0.000	0.62	0.00	0.62	0.6	0.057
20.700	0.000	0.62	0.00	0.62	0.6	0.057
20.717	0.000	0.62	0.00	0.62	0.6	0.057

20.733	0.000	0.62	0.00	0.62	0.6	0.057
20.750	0.000	0.61	0.00	0.62	0.6	0.057
20.767	0.000	0.61	0.00	0.62	0.6	0.057
20.783	0.000	0.61	0.00	0.61	0.6	0.057
20.800	0.000	0.61	0.00	0.61	0.6	0.057
20.817	0.000	0.61	0.00	0.61	0.6	0.057
20.833	0.000	0.61	0.00	0.61	0.6	0.057
20.850	0.000	0.61	0.00	0.61	0.6	0.057
20.867	0.000	0.61	0.00	0.61	0.6	0.057
20.883	0.000	0.61	0.00	0.61	0.6	0.057
20.900	0.000	0.60	0.00	0.61	0.6	0.057
20.917	0.000	0.60	0.00	0.61	0.6	0.057
20.933	0.000	0.60	0.00	0.61	0.6	0.057
20.950	0.000	0.60	0.00	0.61	0.6	0.057
20.967	0.000	0.60	0.00	0.61	0.6	0.057
20.983	0.000	0.60	0.00	0.61	0.6	0.057
21.000	0.000	0.60	0.00	0.61	0.6	0.057
21.017	0.000	0.60	0.00	0.61	0.6	0.057
21.033	0.000	0.60	0.00	0.61	0.6	0.057
21.050	0.000	0.60	0.00	0.61	0.6	0.057
21.067	0.000	0.59	0.00	0.61	0.6	0.057
21.083	0.000	0.59	0.00	0.61	0.6	0.057
21.100	0.000	0.59	0.00	0.61	0.6	0.057
21.117	0.000	0.59	0.00	0.61	0.6	0.057
21.133	0.000	0.59	0.00	0.61	0.6	0.056
21.150	0.000	0.59	0.00	0.61	0.6	0.056
21.167	0.000	0.59	0.00	0.61	0.6	0.056
21.183	0.000	0.59	0.00	0.61	0.6	0.056
21.200	0.000	0.59	0.00	0.61	0.6	0.056
21.217	0.000	0.59	0.00	0.61	0.6	0.056
21.233	0.000	0.58	0.00	0.61	0.6	0.056
21.250	0.000	0.58	0.00	0.61	0.6	0.056
21.267	0.000	0.58	0.00	0.61	0.6	0.056
21.283	0.000	0.58	0.00	0.61	0.6	0.056
21.300	0.000	0.58	0.00	0.61	0.6	0.056
21.317	0.000	0.58	0.00	0.61	0.6	0.056
21.333	0.000	0.58	0.00	0.61	0.6	0.056
21.350	0.000	0.58	0.00	0.61	0.6	0.056
21.367	0.000	0.58	0.00	0.61	0.6	0.056
21.383	0.000	0.58	0.00	0.61	0.6	0.056
21.400	0.000	0.57	0.00	0.61	0.6	0.056
21.417	0.000	0.57	0.00	0.61	0.6	0.056
21.433	0.000	0.57	0.00	0.61	0.6	0.056
21.450	0.000	0.57	0.00	0.61	0.6	0.056
21.467	0.000	0.57	0.00	0.61	0.6	0.056
21.483	0.000	0.57	0.00	0.61	0.6	0.056
21.500	0.000	0.57	0.00	0.61	0.6	0.056
21.517	0.000	0.57	0.00	0.61	0.6	0.056
21.533	0.000	0.57	0.00	0.61	0.6	0.056
21.550	0.000	0.57	0.00	0.61	0.6	0.056
21.567	0.000	0.57	0.00	0.61	0.6	0.056
21.583	0.000	0.56	0.00	0.61	0.6	0.056
21.600	0.000	0.56	0.00	0.61	0.6	0.056
21.617	0.000	0.56	0.00	0.61	0.6	0.056
21.633	0.000	0.56	0.00	0.60	0.6	0.056
21.650	0.000	0.56	0.00	0.60	0.6	0.056
21.667	0.000	0.56	0.00	0.60	0.6	0.056
21.683	0.000	0.56	0.00	0.60	0.6	0.056
21.700	0.000	0.56	0.00	0.60	0.6	0.056

21.717	0.000	0.56	0.00	0.60	0.6	0.056
21.733	0.000	0.56	0.00	0.60	0.6	0.056
21.750	0.000	0.56	0.00	0.60	0.6	0.056
21.767	0.000	0.56	0.00	0.60	0.6	0.056
21.783	0.000	0.55	0.00	0.60	0.6	0.056
21.800	0.000	0.55	0.00	0.60	0.6	0.056
21.817	0.000	0.55	0.00	0.60	0.6	0.056
21.833	0.000	0.55	0.00	0.60	0.6	0.056
21.850	0.000	0.55	0.00	0.60	0.6	0.056
21.867	0.000	0.55	0.00	0.60	0.6	0.056
21.883	0.000	0.55	0.00	0.60	0.6	0.056
21.900	0.000	0.55	0.00	0.60	0.6	0.056
21.917	0.000	0.55	0.00	0.60	0.6	0.056
21.933	0.000	0.55	0.00	0.60	0.6	0.056
21.950	0.000	0.55	0.00	0.60	0.6	0.056
21.967	0.000	0.55	0.00	0.60	0.6	0.056
21.983	0.000	0.54	0.00	0.60	0.6	0.056
22.000	0.000	0.54	0.00	0.60	0.6	0.056
22.017	0.000	0.54	0.00	0.60	0.6	0.056
22.033	0.000	0.54	0.00	0.60	0.6	0.055
22.050	0.000	0.54	0.00	0.60	0.6	0.055
22.067	0.000	0.54	0.00	0.60	0.6	0.055
22.083	0.000	0.54	0.00	0.60	0.6	0.055
22.100	0.000	0.54	0.00	0.60	0.6	0.055
22.117	0.000	0.54	0.00	0.60	0.6	0.055
22.133	0.000	0.54	0.00	0.60	0.5	0.055
22.150	0.000	0.54	0.00	0.60	0.5	0.055
22.167	0.000	0.54	0.00	0.60	0.5	0.055
22.183	0.000	0.54	0.00	0.60	0.5	0.055
22.200	0.000	0.53	0.00	0.60	0.5	0.055
22.216	0.000	0.53	0.00	0.60	0.5	0.055
22.233	0.000	0.53	0.00	0.60	0.5	0.055
22.250	0.000	0.53	0.00	0.60	0.5	0.055
22.266	0.000	0.53	0.00	0.60	0.5	0.055
22.283	0.000	0.53	0.00	0.60	0.5	0.055
22.300	0.000	0.53	0.00	0.60	0.5	0.055
22.316	0.000	0.53	0.00	0.60	0.5	0.055
22.333	0.000	0.53	0.00	0.60	0.5	0.055
22.350	0.000	0.53	0.00	0.60	0.5	0.055
22.366	0.000	0.53	0.00	0.60	0.5	0.055
22.383	0.000	0.53	0.00	0.60	0.5	0.055
22.400	0.000	0.53	0.00	0.60	0.5	0.055
22.416	0.000	0.53	0.00	0.60	0.5	0.055
22.433	0.000	0.52	0.00	0.60	0.5	0.055
22.450	0.000	0.52	0.00	0.60	0.5	0.055
22.466	0.000	0.52	0.00	0.60	0.5	0.055
22.483	0.000	0.52	0.00	0.60	0.5	0.055
22.500	0.000	0.52	0.00	0.60	0.5	0.055
22.516	0.000	0.52	0.00	0.60	0.5	0.055
22.533	0.000	0.52	0.00	0.60	0.5	0.055
22.550	0.000	0.52	0.00	0.60	0.5	0.055
22.566	0.000	0.52	0.00	0.60	0.5	0.055
22.583	0.000	0.52	0.00	0.60	0.5	0.055
22.600	0.000	0.52	0.00	0.60	0.5	0.055
22.616	0.000	0.52	0.00	0.60	0.5	0.055
22.633	0.000	0.52	0.00	0.60	0.5	0.055
22.650	0.000	0.52	0.00	0.60	0.5	0.055
22.666	0.000	0.52	0.00	0.60	0.5	0.055
22.683	0.000	0.51	0.00	0.60	0.5	0.055

22.700	0.000	0.51	0.00	0.60	0.5	0.055
22.716	0.000	0.51	0.00	0.60	0.5	0.055
22.733	0.000	0.51	0.00	0.59	0.5	0.055
22.750	0.000	0.51	0.00	0.59	0.5	0.055
22.766	0.000	0.51	0.00	0.59	0.5	0.055
22.783	0.000	0.51	0.00	0.59	0.5	0.055
22.800	0.000	0.51	0.00	0.59	0.5	0.055
22.816	0.000	0.51	0.00	0.59	0.5	0.055
22.833	0.000	0.51	0.00	0.59	0.5	0.055
22.850	0.000	0.51	0.00	0.59	0.5	0.055
22.866	0.000	0.51	0.00	0.59	0.5	0.055
22.883	0.000	0.51	0.00	0.59	0.5	0.055
22.900	0.000	0.51	0.00	0.59	0.5	0.055
22.916	0.000	0.51	0.00	0.59	0.5	0.055
22.933	0.000	0.50	0.00	0.59	0.5	0.055
22.950	0.000	0.50	0.00	0.59	0.5	0.055
22.966	0.000	0.50	0.00	0.59	0.5	0.055
22.983	0.000	0.50	0.00	0.59	0.5	0.055
23.000	0.000	0.50	0.00	0.59	0.5	0.055
23.016	0.000	0.50	0.00	0.59	0.5	0.055
23.033	0.000	0.50	0.00	0.59	0.5	0.055
23.050	0.000	0.50	0.00	0.59	0.5	0.055
23.066	0.000	0.50	0.00	0.59	0.5	0.055
23.083	0.000	0.50	0.00	0.59	0.5	0.055
23.100	0.000	0.50	0.00	0.59	0.5	0.055
23.116	0.000	0.50	0.00	0.59	0.5	0.055
23.133	0.000	0.50	0.00	0.59	0.5	0.055
23.150	0.000	0.50	0.00	0.59	0.5	0.055
23.166	0.000	0.50	0.00	0.59	0.5	0.055
23.183	0.000	0.50	0.00	0.59	0.5	0.055
23.200	0.000	0.49	0.00	0.59	0.5	0.055
23.216	0.000	0.49	0.00	0.59	0.5	0.055
23.233	0.000	0.49	0.00	0.59	0.5	0.054
23.250	0.000	0.49	0.00	0.59	0.5	0.054
23.266	0.000	0.49	0.00	0.59	0.5	0.054
23.283	0.000	0.49	0.00	0.59	0.5	0.054
23.300	0.000	0.49	0.00	0.59	0.5	0.054
23.316	0.000	0.49	0.00	0.59	0.5	0.054
23.333	0.000	0.49	0.00	0.59	0.5	0.054
23.350	0.000	0.49	0.00	0.59	0.5	0.054
23.366	0.000	0.49	0.00	0.59	0.5	0.054
23.383	0.000	0.49	0.00	0.59	0.5	0.054
23.400	0.000	0.49	0.00	0.59	0.5	0.054
23.416	0.000	0.49	0.00	0.59	0.5	0.054
23.433	0.000	0.49	0.00	0.59	0.5	0.054
23.450	0.000	0.49	0.00	0.59	0.5	0.054
23.466	0.000	0.49	0.00	0.59	0.5	0.054
23.483	0.000	0.49	0.00	0.59	0.5	0.054
23.500	0.000	0.48	0.00	0.59	0.5	0.054
23.516	0.000	0.48	0.00	0.59	0.5	0.054
23.533	0.000	0.48	0.00	0.59	0.5	0.054
23.550	0.000	0.48	0.00	0.59	0.5	0.054
23.566	0.000	0.48	0.00	0.59	0.5	0.054
23.583	0.000	0.48	0.00	0.59	0.5	0.054
23.600	0.000	0.48	0.00	0.59	0.5	0.054
23.616	0.000	0.48	0.00	0.59	0.5	0.054
23.633	0.000	0.48	0.00	0.59	0.5	0.054
23.650	0.000	0.48	0.00	0.59	0.5	0.054
23.666	0.000	0.48	0.00	0.59	0.5	0.054
23.683	0.000	0.48	0.00	0.59	0.5	0.054
23.700	0.000	0.48	0.00	0.59	0.5	0.054
23.716	0.000	0.48	0.00	0.59	0.5	0.054
23.733	0.000	0.48	0.00	0.59	0.5	0.054
23.750	0.000	0.48	0.00	0.59	0.5	0.054
23.766	0.000	0.48	0.00	0.59	0.5	0.054
23.783	0.000	0.48	0.00	0.59	0.5	0.054
23.800	0.000	0.47	0.00	0.59	0.5	0.054
23.816	0.000	0.47	0.00	0.59	0.5	0.054
23.833	0.000	0.47	0.00	0.59	0.5	0.054
23.850	0.000	0.47	0.00	0.59	0.5	0.054
23.866	0.000	0.47	0.00	0.59	0.5	0.054
23.883	0.000	0.47	0.00	0.59	0.5	0.054
23.900	0.000	0.47	0.00	0.59	0.5	0.054
23.916	0.000	0.47	0.00	0.59	0.5	0.054
23.933	0.000	0.47	0.00	0.59	0.5	0.054
23.950	0.000	0.47	0.00	0.59	0.5	0.054
23.966	0.000	0.47	0.00	0.59	0.5	0.054
23.983	0.000	0.47	0.00	0.59	0.5	0.054
24.000	0.000	0.47	0.00	0.59	0.5	0.054

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 1.927 AF
BASIN STORAGE = 0.003 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 1.925 AF
LOSS VOLUME = 0.000 AF

****

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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STREAM HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.017	0.0000	0.00	Q	.	.	.	.
0.033	0.0000	0.00	Q	.	.	.	.
0.050	0.0000	0.00	Q	.	.	.	.
0.067	0.0000	0.00	Q	.	.	.	.
0.083	0.0000	0.00	Q	.	.	.	.
0.100	0.0000	0.00	Q	.	.	.	.
0.117	0.0000	0.00	Q	.	.	.	.
0.133	0.0000	0.00	Q	.	.	.	.
0.150	0.0000	0.00	Q	.	.	.	.
0.167	0.0000	0.00	Q	.	.	.	.
0.183	0.0000	0.00	Q	.	.	.	.
0.200	0.0000	0.00	Q	.	.	.	.
0.217	0.0000	0.00	Q	.	.	.	.
0.233	0.0000	0.00	Q	.	.	.	.
0.250	0.0000	0.00	Q	.	.	.	.
0.267	0.0000	0.00	Q	.	.	.	.
0.283	0.0000	0.00	Q	.	.	.	.
0.300	0.0000	0.00	Q	.	.	.	.

0.317	0.0000	0.00	Q	.	.	.	.
0.333	0.0000	0.00	Q	.	.	.	.
0.350	0.0000	0.00	Q	.	.	.	.
0.367	0.0000	0.00	Q	.	.	.	.
0.383	0.0000	0.00	Q	.	.	.	.
0.400	0.0000	0.00	Q	.	.	.	.
0.417	0.0000	0.00	Q	.	.	.	.
0.433	0.0000	0.00	Q	.	.	.	.
0.450	0.0001	0.00	Q	.	.	.	.
0.467	0.0001	0.00	Q	.	.	.	.
0.483	0.0001	0.00	Q	.	.	.	.
0.500	0.0001	0.00	Q	.	.	.	.
0.517	0.0001	0.00	Q	.	.	.	.
0.533	0.0001	0.00	Q	.	.	.	.
0.550	0.0001	0.00	Q	.	.	.	.
0.567	0.0001	0.00	Q	.	.	.	.
0.583	0.0001	0.00	Q	.	.	.	.
0.600	0.0001	0.00	Q	.	.	.	.
0.617	0.0001	0.00	Q	.	.	.	.
0.633	0.0001	0.01	Q	.	.	.	.
0.650	0.0001	0.01	Q	.	.	.	.
0.667	0.0001	0.01	Q	.	.	.	.
0.683	0.0001	0.01	Q	.	.	.	.
0.700	0.0001	0.01	Q	.	.	.	.
0.717	0.0002	0.01	Q	.	.	.	.
0.733	0.0002	0.01	Q	.	.	.	.
0.750	0.0002	0.01	Q	.	.	.	.
0.767	0.0002	0.01	Q	.	.	.	.
0.783	0.0002	0.01	Q	.	.	.	.
0.800	0.0002	0.01	Q	.	.	.	.
0.817	0.0002	0.01	Q	.	.	.	.
0.833	0.0002	0.01	Q	.	.	.	.
0.850	0.0002	0.01	Q	.	.	.	.
0.867	0.0002	0.01	Q	.	.	.	.
0.883	0.0003	0.01	Q	.	.	.	.
0.900	0.0003	0.01	Q	.	.	.	.
0.917	0.0003	0.01	Q	.	.	.	.
0.933	0.0003	0.01	Q	.	.	.	.
0.950	0.0003	0.01	Q	.	.	.	.
0.967	0.0003	0.01	Q	.	.	.	.
0.983	0.0003	0.01	Q	.	.	.	.
1.000	0.0003	0.01	Q	.	.	.	.
1.017	0.0003	0.01	Q	.	.	.	.
1.033	0.0004	0.01	Q	.	.	.	.
1.050	0.0004	0.01	Q	.	.	.	.
1.067	0.0004	0.01	Q	.	.	.	.
1.083	0.0004	0.01	Q	.	.	.	.
1.100	0.0004	0.01	Q	.	.	.	.
1.117	0.0004	0.01	Q	.	.	.	.
1.133	0.0004	0.01	Q	.	.	.	.
1.150	0.0004	0.01	Q	.	.	.	.
1.167	0.0005	0.01	Q	.	.	.	.
1.183	0.0005	0.01	Q	.	.	.	.
1.200	0.0005	0.01	Q	.	.	.	.
1.217	0.0005	0.01	Q	.	.	.	.
1.233	0.0005	0.01	Q	.	.	.	.
1.250	0.0005	0.01	Q	.	.	.	.
1.267	0.0006	0.03	Q	.	.	.	.
1.283	0.0007	0.06	Q	.	.	.	.
1.300	0.0008	0.09	Q	.	.	.	.
1.317	0.0009	0.12	Q	.	.	.	.
1.333	0.0011	0.14	Q	.	.	.	.
1.350	0.0014	0.16	Q	.	.	.	.
1.367	0.0016	0.19	Q	.	.	.	.
1.383	0.0019	0.21	Q	.	.	.	.
1.400	0.0022	0.23	Q	.	.	.	.
1.417	0.0026	0.24	Q	.	.	.	.
1.433	0.0029	0.26	VQ	.	.	.	.
1.450	0.0033	0.28	VQ	.	.	.	.
1.467	0.0037	0.29	VQ	.	.	.	.
1.483	0.0041	0.30	VQ	.	.	.	.
1.500	0.0045	0.32	VQ	.	.	.	.
1.517	0.0050	0.33	VQ	.	.	.	.
1.533	0.0055	0.34	VQ	.	.	.	.
1.550	0.0059	0.35	VQ	.	.	.	.
1.567	0.0064	0.36	VQ	.	.	.	.
1.583	0.0069	0.37	VQ	.	.	.	.
1.600	0.0075	0.37	VQ	.	.	.	.
1.617	0.0080	0.38	VQ	.	.	.	.
1.633	0.0085	0.39	VQ	.	.	.	.
1.650	0.0091	0.40	VQ	.	.	.	.
1.667	0.0096	0.40	VQ	.	.	.	.
1.683	0.0102	0.41	VQ	.	.	.	.
1.700	0.0107	0.41	VQ	.	.	.	.
1.717	0.0113	0.42	VQ	.	.	.	.
1.733	0.0119	0.42	VQ	.	.	.	.
1.750	0.0125	0.43	VQ	.	.	.	.
1.767	0.0131	0.43	VQ	.	.	.	.
1.783	0.0137	0.44	VQ	.	.	.	.
1.800	0.0143	0.44	VQ	.	.	.	.
1.817	0.0149	0.44	VQ	.	.	.	.
1.833	0.0155	0.45	VQ	.	.	.	.
1.850	0.0161	0.45	VQ	.	.	.	.
1.867	0.0168	0.45	VQ	.	.	.	.
1.883	0.0174	0.46	VQ	.	.	.	.
1.900	0.0180	0.46	VQ	.	.	.	.
1.917	0.0187	0.46	VQ	.	.	.	.
1.933	0.0193	0.46	VQ	.	.	.	.
1.950	0.0199	0.46	VQ	.	.	.	.
1.967	0.0206	0.47	VQ	.	.	.	.
1.983	0.0212	0.47	VQ	.	.	.	.
2.000	0.0219	0.47	VQ	.	.	.	.
2.017	0.0225	0.47	VQ	.	.	.	.
2.033	0.0232	0.47	VQ	.	.	.	.
2.050	0.0238	0.47	VQ	.	.	.	.
2.067	0.0245	0.48	VQ	.	.	.	.
2.083	0.0251	0.48	VQ	.	.	.	.
2.100	0.0258	0.48	VQ	.	.	.	.
2.117	0.0265	0.48	VQ	.	.	.	.
2.133	0.0271	0.48	VQ	.	.	.	.
2.150	0.0278	0.48	VQ	.	.	.	.
2.167	0.0285	0.48	VQ	.	.	.	.
2.183	0.0291	0.48	VQ	.	.	.	.
2.200	0.0298	0.48	VQ	.	.	.	.
2.217	0.0305	0.49	VQ	.	.	.	.
2.233	0.0311	0.49	VQ	.	.	.	.
2.250	0.0318	0.49	VQ	.	.	.	.
2.267	0.0325	0.49	VQ	.	.	.	.

2.283	0.0331	0.49	VQ	.	.	.	.
2.300	0.0338	0.49	VQ	.	.	.	.
2.317	0.0345	0.49	VQ	.	.	.	.
2.333	0.0352	0.49	VQ	.	.	.	.
2.350	0.0358	0.49	VQ	.	.	.	.
2.367	0.0365	0.49	VQ	.	.	.	.
2.383	0.0372	0.49	VQ	.	.	.	.
2.400	0.0379	0.49	VQ	.	.	.	.
2.417	0.0386	0.49	VQ	.	.	.	.
2.433	0.0392	0.49	VQ	.	.	.	.
2.450	0.0399	0.49	VQ	.	.	.	.
2.467	0.0406	0.49	VQ	.	.	.	.
2.483	0.0413	0.50	VQ	.	.	.	.
2.500	0.0420	0.50	VQ	.	.	.	.
2.517	0.0426	0.50	VQ	.	.	.	.
2.533	0.0433	0.50	VQ	.	.	.	.
2.550	0.0440	0.50	VQ	.	.	.	.
2.567	0.0447	0.50	VQ	.	.	.	.
2.583	0.0454	0.50	VQ	.	.	.	.
2.600	0.0461	0.50	VQ	.	.	.	.
2.617	0.0468	0.50	VQ	.	.	.	.
2.633	0.0474	0.50	VQ	.	.	.	.
2.650	0.0481	0.50	.Q	.	.	.	.
2.667	0.0488	0.50	.Q	.	.	.	.
2.683	0.0495	0.50	.VQ	.	.	.	.
2.700	0.0502	0.50	.VQ	.	.	.	.
2.717	0.0509	0.50	.VQ	.	.	.	.
2.733	0.0516	0.50	.VQ	.	.	.	.
2.750	0.0523	0.50	.VQ	.	.	.	.
2.767	0.0530	0.50	.VQ	.	.	.	.
2.783	0.0537	0.50	.VQ	.	.	.	.
2.800	0.0544	0.50	.VQ	.	.	.	.
2.817	0.0550	0.50	.VQ	.	.	.	.
2.833	0.0557	0.50	.VQ	.	.	.	.
2.850	0.0564	0.50	.VQ	.	.	.	.
2.867	0.0571	0.50	.VQ	.	.	.	.
2.883	0.0578	0.50	.VQ	.	.	.	.
2.900	0.0585	0.51	.VQ	.	.	.	.
2.917	0.0592	0.51	.VQ	.	.	.	.
2.933	0.0599	0.51	.VQ	.	.	.	.
2.950	0.0606	0.51	.VQ	.	.	.	.
2.967	0.0613	0.51	.VQ	.	.	.	.
2.983	0.0620	0.51	.VQ	.	.	.	.
3.000	0.0627	0.51	.VQ	.	.	.	.
3.017	0.0634	0.51	.VQ	.	.	.	.
3.033	0.0641	0.51	.VQ	.	.	.	.
3.050	0.0648	0.51	.VQ	.	.	.	.
3.067	0.0655	0.51	.VQ	.	.	.	.
3.083	0.0662	0.51	.VQ	.	.	.	.
3.100	0.0669	0.51	.VQ	.	.	.	.
3.117	0.0676	0.51	.VQ	.	.	.	.
3.133	0.0683	0.51	.VQ	.	.	.	.
3.150	0.0690	0.51	.VQ	.	.	.	.
3.167	0.0697	0.51	.VQ	.	.	.	.
3.183	0.0704	0.51	.VQ	.	.	.	.
3.200	0.0711	0.51	.VQ	.	.	.	.
3.217	0.0718	0.51	.VQ	.	.	.	.
3.233	0.0725	0.51	.VQ	.	.	.	.
3.250	0.0732	0.51	.VQ	.	.	.	.
3.267	0.0739	0.51	.VQ	.	.	.	.
3.283	0.0747	0.51	.VQ	.	.	.	.
3.300	0.0754	0.51	.VQ	.	.	.	.
3.317	0.0761	0.51	.VQ	.	.	.	.
3.333	0.0768	0.51	.VQ	.	.	.	.
3.350	0.0775	0.51	.VQ	.	.	.	.
3.367	0.0782	0.51	.VQ	.	.	.	.
3.383	0.0789	0.51	.VQ	.	.	.	.
3.400	0.0796	0.52	.VQ	.	.	.	.
3.417	0.0803	0.52	.VQ	.	.	.	.
3.433	0.0810	0.52	.VQ	.	.	.	.
3.450	0.0817	0.52	.VQ	.	.	.	.
3.467	0.0825	0.52	.VQ	.	.	.	.
3.483	0.0832	0.52	.VQ	.	.	.	.
3.500	0.0839	0.52	.VQ	.	.	.	.
3.517	0.0846	0.52	.VQ	.	.	.	.
3.533	0.0853	0.52	.VQ	.	.	.	.
3.550	0.0860	0.52	.VQ	.	.	.	.
3.567	0.0867	0.52	.VQ	.	.	.	.
3.583	0.0874	0.52	.VQ	.	.	.	.
3.600	0.0882	0.52	.VQ	.	.	.	.
3.617	0.0889	0.52	.VQ	.	.	.	.
3.633	0.0896	0.52	.VQ	.	.	.	.
3.650	0.0903	0.52	.VQ	.	.	.	.
3.667	0.0910	0.52	.VQ	.	.	.	.
3.683	0.0917	0.52	.VQ	.	.	.	.
3.700	0.0925	0.52	.VQ	.	.	.	.
3.717	0.0932	0.52	.VQ	.	.	.	.
3.733	0.0939	0.52	.VQ	.	.	.	.
3.750	0.0946	0.52	.VQ	.	.	.	.
3.767	0.0953	0.52	.VQ	.	.	.	.
3.783	0.0961	0.52	.VQ	.	.	.	.
3.800	0.0968	0.52	. Q	.	.	.	.
3.817	0.0975	0.52	. Q	.	.	.	.
3.833	0.0982	0.52	. Q	.	.	.	.
3.850	0.0989	0.52	. Q	.	.	.	.
3.867	0.0997	0.52	. Q	.	.	.	.
3.883	0.1004	0.53	. Q	.	.	.	.
3.900	0.1011	0.53	. Q	.	.	.	.
3.917	0.1018	0.53	. Q	.	.	.	.
3.933	0.1026	0.53	. Q	.	.	.	.
3.950	0.1033	0.53	. Q	.	.	.	.
3.967	0.1040	0.53	. Q	.	.	.	.
3.983	0.1047	0.53	. Q	.	.	.	.
4.000	0.1055	0.53	. Q	.	.	.	.
4.017	0.1062	0.53	. Q	.	.	.	.
4.033	0.1069	0.53	. Q	.	.	.	.
4.050	0.1077	0.53	. Q	.	.	.	.
4.067	0.1084	0.53	. Q	.	.	.	.
4.083	0.1091	0.53	. Q	.	.	.	.
4.100	0.1098	0.53	. Q	.	.	.	.
4.117	0.1106	0.53	. Q	.	.	.	.
4.133	0.1113	0.53	. Q	.	.	.	.
4.150	0.1120	0.53	. Q	.	.	.	.
4.167	0.1128	0.53	. Q	.	.	.	.
4.183	0.1135	0.53	. Q	.	.	.	.
4.200	0.1142	0.53	. Q	.	.	.	.
4.217	0.1150	0.53	. Q	.	.	.	.
4.233	0.1157	0.53	. Q	.	.	.	.

4.250	0.1164	0.53	. Q	.	.	.	.
4.267	0.1172	0.53	. Q	.	.	.	.
4.283	0.1179	0.53	. Q	.	.	.	.
4.300	0.1186	0.53	. Q	.	.	.	.
4.317	0.1194	0.53	. Q	.	.	.	.
4.333	0.1201	0.54	. Q	.	.	.	.
4.350	0.1209	0.54	. Q	.	.	.	.
4.367	0.1216	0.54	. Q	.	.	.	.
4.383	0.1223	0.54	. Q	.	.	.	.
4.400	0.1231	0.54	. Q	.	.	.	.
4.417	0.1238	0.54	. Q	.	.	.	.
4.433	0.1246	0.54	. Q	.	.	.	.
4.450	0.1253	0.54	. Q	.	.	.	.
4.467	0.1260	0.54	. Q	.	.	.	.
4.483	0.1268	0.54	. Q	.	.	.	.
4.500	0.1275	0.54	. Q	.	.	.	.
4.517	0.1283	0.54	. Q	.	.	.	.
4.533	0.1290	0.54	. Q	.	.	.	.
4.550	0.1297	0.54	. Q	.	.	.	.
4.567	0.1305	0.54	. Q	.	.	.	.
4.583	0.1312	0.54	. Q	.	.	.	.
4.600	0.1320	0.54	. Q	.	.	.	.
4.617	0.1327	0.54	. Q	.	.	.	.
4.633	0.1335	0.54	. Q	.	.	.	.
4.650	0.1342	0.54	. Q	.	.	.	.
4.667	0.1350	0.54	. Q	.	.	.	.
4.683	0.1357	0.54	. Q	.	.	.	.
4.700	0.1365	0.54	. Q	.	.	.	.
4.717	0.1372	0.54	. Q	.	.	.	.
4.733	0.1380	0.54	. Q	.	.	.	.
4.750	0.1387	0.54	. Q	.	.	.	.
4.767	0.1395	0.55	. Q	.	.	.	.
4.783	0.1402	0.55	. Q	.	.	.	.
4.800	0.1410	0.55	. Q	.	.	.	.
4.817	0.1417	0.55	. Q	.	.	.	.
4.833	0.1425	0.55	. Q	.	.	.	.
4.850	0.1432	0.55	. Q	.	.	.	.
4.867	0.1440	0.55	. Q	.	.	.	.
4.883	0.1447	0.55	. QV	.	.	.	.
4.900	0.1455	0.55	. QV	.	.	.	.
4.917	0.1463	0.55	. QV	.	.	.	.
4.933	0.1470	0.55	. QV	.	.	.	.
4.950	0.1478	0.55	. QV	.	.	.	.
4.967	0.1485	0.55	. QV	.	.	.	.
4.983	0.1493	0.55	. QV	.	.	.	.
5.000	0.1500	0.55	. QV	.	.	.	.
5.017	0.1508	0.55	. QV	.	.	.	.
5.033	0.1516	0.55	. QV	.	.	.	.
5.050	0.1523	0.55	. QV	.	.	.	.
5.067	0.1531	0.55	. QV	.	.	.	.
5.083	0.1538	0.55	. QV	.	.	.	.
5.100	0.1546	0.55	. QV	.	.	.	.
5.117	0.1554	0.55	. QV	.	.	.	.
5.133	0.1561	0.55	. QV	.	.	.	.
5.150	0.1569	0.55	. QV	.	.	.	.
5.167	0.1577	0.55	. QV	.	.	.	.
5.183	0.1584	0.56	. QV	.	.	.	.
5.200	0.1592	0.56	. QV	.	.	.	.
5.217	0.1600	0.56	. QV	.	.	.	.
5.233	0.1607	0.56	. QV	.	.	.	.
5.250	0.1615	0.56	. QV	.	.	.	.
5.267	0.1623	0.56	. QV	.	.	.	.
5.283	0.1630	0.56	. QV	.	.	.	.
5.300	0.1638	0.56	. QV	.	.	.	.
5.317	0.1646	0.56	. QV	.	.	.	.
5.333	0.1653	0.56	. QV	.	.	.	.
5.350	0.1661	0.56	. QV	.	.	.	.
5.367	0.1669	0.56	. QV	.	.	.	.
5.383	0.1676	0.56	. QV	.	.	.	.
5.400	0.1684	0.56	. QV	.	.	.	.
5.417	0.1692	0.56	. QV	.	.	.	.
5.433	0.1700	0.56	. QV	.	.	.	.
5.450	0.1707	0.56	. QV	.	.	.	.
5.467	0.1715	0.56	. QV	.	.	.	.
5.483	0.1723	0.56	. QV	.	.	.	.
5.500	0.1731	0.56	. QV	.	.	.	.
5.517	0.1738	0.56	. QV	.	.	.	.
5.533	0.1746	0.56	. QV	.	.	.	.
5.550	0.1754	0.56	. QV	.	.	.	.
5.567	0.1762	0.57	. QV	.	.	.	.
5.583	0.1770	0.57	. QV	.	.	.	.
5.600	0.1777	0.57	. QV	.	.	.	.
5.617	0.1785	0.57	. QV	.	.	.	.
5.633	0.1793	0.57	. QV	.	.	.	.
5.650	0.1801	0.57	. QV	.	.	.	.
5.667	0.1809	0.57	. QV	.	.	.	.
5.683	0.1816	0.57	. QV	.	.	.	.
5.700	0.1824	0.57	. QV	.	.	.	.
5.717	0.1832	0.57	. QV	.	.	.	.
5.733	0.1840	0.57	. QV	.	.	.	.
5.750	0.1848	0.57	. QV	.	.	.	.
5.767	0.1856	0.57	. QV	.	.	.	.
5.783	0.1864	0.57	. QV	.	.	.	.
5.800	0.1871	0.57	. QV	.	.	.	.
5.817	0.1879	0.57	. QV	.	.	.	.
5.833	0.1887	0.57	. QV	.	.	.	.
5.850	0.1895	0.57	. QV	.	.	.	.
5.867	0.1903	0.57	. QV	.	.	.	.
5.883	0.1911	0.57	. QV	.	.	.	.
5.900	0.1919	0.57	. QV	.	.	.	.
5.917	0.1927	0.57	. Q V	.	.	.	.
5.933	0.1935	0.58	. Q V	.	.	.	.
5.950	0.1943	0.58	. Q V	.	.	.	.
5.967	0.1950	0.58	. Q V	.	.	.	.
5.983	0.1958	0.58	. Q V	.	.	.	.
6.000	0.1966	0.58	. Q V	.	.	.	.
6.017	0.1974	0.58	. Q V	.	.	.	.
6.033	0.1982	0.58	. Q V	.	.	.	.
6.050	0.1990	0.58	. Q V	.	.	.	.
6.067	0.1998	0.58	. Q V	.	.	.	.
6.083	0.2006	0.58	. Q V	.	.	.	.
6.100	0.2014	0.58	. Q V	.	.	.	.
6.117	0.2022	0.58	. Q V	.	.	.	.
6.133	0.2030	0.58	. Q V	.	.	.	.
6.150	0.2038	0.58	. Q V	.	.	.	.
6.167	0.2046	0.58	. Q V	.	.	.	.
6.183	0.2054	0.58	. Q V	.	.	.	.
6.200	0.2062	0.58	. Q V	.	.	.	.

6.217	0.2070	0.58	.	Q	V	.	.	.	.
6.233	0.2078	0.58	.	Q	V	.	.	.	.
6.250	0.2086	0.58	.	Q	V	.	.	.	.
6.267	0.2094	0.58	.	Q	V	.	.	.	.
6.283	0.2102	0.59	.	Q	V	.	.	.	.
6.300	0.2111	0.59	.	Q	V	.	.	.	.
6.317	0.2119	0.59	.	Q	V	.	.	.	.
6.333	0.2127	0.59	.	Q	V	.	.	.	.
6.350	0.2135	0.59	.	Q	V	.	.	.	.
6.367	0.2143	0.59	.	Q	V	.	.	.	.
6.383	0.2151	0.59	.	Q	V	.	.	.	.
6.400	0.2159	0.59	.	Q	V	.	.	.	.
6.417	0.2167	0.59	.	Q	V	.	.	.	.
6.433	0.2175	0.59	.	Q	V	.	.	.	.
6.450	0.2183	0.59	.	Q	V	.	.	.	.
6.467	0.2192	0.59	.	Q	V	.	.	.	.
6.483	0.2200	0.59	.	Q	V	.	.	.	.
6.500	0.2208	0.59	.	Q	V	.	.	.	.
6.517	0.2216	0.59	.	Q	V	.	.	.	.
6.533	0.2224	0.59	.	Q	V	.	.	.	.
6.550	0.2232	0.59	.	Q	V	.	.	.	.
6.567	0.2240	0.59	.	Q	V	.	.	.	.
6.583	0.2249	0.59	.	Q	V	.	.	.	.
6.600	0.2257	0.59	.	Q	V	.	.	.	.
6.617	0.2265	0.60	.	Q	V	.	.	.	.
6.633	0.2273	0.60	.	Q	V	.	.	.	.
6.650	0.2281	0.60	.	Q	V	.	.	.	.
6.667	0.2290	0.60	.	Q	V	.	.	.	.
6.683	0.2298	0.60	.	Q	V	.	.	.	.
6.700	0.2306	0.60	.	Q	V	.	.	.	.
6.717	0.2314	0.60	.	Q	V	.	.	.	.
6.733	0.2323	0.60	.	Q	V	.	.	.	.
6.750	0.2331	0.60	.	Q	V	.	.	.	.
6.767	0.2339	0.60	.	Q	V	.	.	.	.
6.783	0.2347	0.60	.	Q	V	.	.	.	.
6.800	0.2356	0.60	.	Q	V	.	.	.	.
6.817	0.2364	0.60	.	Q	V	.	.	.	.
6.833	0.2372	0.60	.	Q	V	.	.	.	.
6.850	0.2381	0.60	.	Q	V	.	.	.	.
6.867	0.2389	0.60	.	Q	V	.	.	.	.
6.883	0.2397	0.60	.	Q	V	.	.	.	.
6.900	0.2406	0.60	.	Q	V	.	.	.	.
6.917	0.2414	0.60	.	Q	V	.	.	.	.
6.933	0.2422	0.61	.	Q	V	.	.	.	.
6.950	0.2431	0.61	.	Q	V	.	.	.	.
6.967	0.2439	0.61	.	Q	V	.	.	.	.
6.983	0.2447	0.61	.	Q	V	.	.	.	.
7.000	0.2456	0.61	.	Q	V	.	.	.	.
7.017	0.2464	0.61	.	Q	V	.	.	.	.
7.033	0.2472	0.61	.	Q	V	.	.	.	.
7.050	0.2481	0.61	.	Q	V	.	.	.	.
7.067	0.2489	0.61	.	Q	V	.	.	.	.
7.083	0.2498	0.61	.	Q	V	.	.	.	.
7.100	0.2506	0.61	.	Q	V	.	.	.	.
7.117	0.2514	0.61	.	Q	V	.	.	.	.
7.133	0.2523	0.61	.	Q	V	.	.	.	.
7.150	0.2531	0.61	.	Q	V	.	.	.	.
7.167	0.2540	0.61	.	Q	V	.	.	.	.
7.183	0.2548	0.61	.	Q	V	.	.	.	.
7.200	0.2557	0.61	.	Q	V	.	.	.	.
7.217	0.2565	0.61	.	Q	V	.	.	.	.
7.233	0.2573	0.62	.	Q	V	.	.	.	.
7.250	0.2582	0.62	.	Q	V	.	.	.	.
7.267	0.2590	0.62	.	Q	V	.	.	.	.
7.283	0.2599	0.62	.	Q	V	.	.	.	.
7.300	0.2607	0.62	.	Q	V	.	.	.	.
7.317	0.2616	0.62	.	Q	V	.	.	.	.
7.333	0.2625	0.62	.	Q	V	.	.	.	.
7.350	0.2633	0.62	.	Q	V	.	.	.	.
7.367	0.2642	0.62	.	Q	V	.	.	.	.
7.383	0.2650	0.62	.	Q	V	.	.	.	.
7.400	0.2659	0.62	.	Q	V	.	.	.	.
7.417	0.2667	0.62	.	Q	V	.	.	.	.
7.433	0.2676	0.62	.	Q	V	.	.	.	.
7.450	0.2684	0.62	.	Q	V	.	.	.	.
7.467	0.2693	0.62	.	Q	V	.	.	.	.
7.483	0.2702	0.62	.	Q	V	.	.	.	.
7.500	0.2710	0.62	.	Q	V	.	.	.	.
7.517	0.2719	0.62	.	Q	V	.	.	.	.
7.533	0.2727	0.63	.	Q	V	.	.	.	.
7.550	0.2736	0.63	.	Q	V	.	.	.	.
7.567	0.2745	0.63	.	Q	V	.	.	.	.
7.583	0.2753	0.63	.	Q	V	.	.	.	.
7.600	0.2762	0.63	.	Q	V	.	.	.	.
7.617	0.2771	0.63	.	Q	V	.	.	.	.
7.633	0.2779	0.63	.	Q	V	.	.	.	.
7.650	0.2788	0.63	.	Q	V	.	.	.	.
7.667	0.2797	0.63	.	Q	V	.	.	.	.
7.683	0.2805	0.63	.	Q	V	.	.	.	.
7.700	0.2814	0.63	.	Q	V	.	.	.	.
7.717	0.2823	0.63	.	Q	V	.	.	.	.
7.733	0.2831	0.63	.	Q	V	.	.	.	.
7.750	0.2840	0.63	.	Q	V	.	.	.	.
7.767	0.2849	0.63	.	Q	V	.	.	.	.
7.783	0.2858	0.63	.	Q	V	.	.	.	.
7.800	0.2866	0.64	.	Q	V	.	.	.	.
7.817	0.2875	0.64	.	Q	V	.	.	.	.
7.833	0.2884	0.64	.	Q	V	.	.	.	.
7.850	0.2893	0.64	.	Q	V	.	.	.	.
7.867	0.2901	0.64	.	Q	V	.	.	.	.
7.883	0.2910	0.64	.	Q	V	.	.	.	.
7.900	0.2919	0.64	.	Q	V	.	.	.	.
7.917	0.2928	0.64	.	Q	V	.	.	.	.
7.933	0.2937	0.64	.	Q	V	.	.	.	.
7.950	0.2946	0.64	.	Q	V	.	.	.	.
7.967	0.2954	0.64	.	Q	V	.	.	.	.
7.983	0.2963	0.64	.	Q	V	.	.	.	.
8.000	0.2972	0.64	.	Q	V	.	.	.	.
8.017	0.2981	0.64	.	Q	V	.	.	.	.
8.033	0.2990	0.64	.	Q	V	.	.	.	.
8.050	0.2999	0.65	.	Q	V	.	.	.	.
8.067	0.3008	0.65	.	Q	V	.	.	.	.
8.083	0.3016	0.65	.	Q	V	.	.	.	.
8.100	0.3025	0.65	.	Q	V	.	.	.	.
8.117	0.3034	0.65	.	Q	V	.	.	.	.
8.133	0.3043	0.65	.	Q	V	.	.	.	.
8.150	0.3052	0.65	.	Q	V	.	.	.	.
8.167	0.3061	0.65	.	Q	V	.	.	.	.

8.183	0.3070	0.65	.	Q	V	.	.	.	.
8.200	0.3079	0.65	.	Q	V	.	.	.	.
8.217	0.3088	0.65	.	Q	V	.	.	.	.
8.233	0.3097	0.65	.	Q	V	.	.	.	.
8.250	0.3106	0.65	.	Q	V	.	.	.	.
8.267	0.3115	0.65	.	Q	V	.	.	.	.
8.283	0.3124	0.65	.	Q	V	.	.	.	.
8.300	0.3133	0.65	.	Q	V	.	.	.	.
8.317	0.3142	0.66	.	Q	V	.	.	.	.
8.333	0.3151	0.66	.	Q	V	.	.	.	.
8.350	0.3160	0.66	.	Q	V	.	.	.	.
8.367	0.3169	0.66	.	Q	V	.	.	.	.
8.383	0.3178	0.66	.	Q	V	.	.	.	.
8.400	0.3187	0.66	.	Q	V	.	.	.	.
8.417	0.3196	0.66	.	Q	V	.	.	.	.
8.433	0.3206	0.66	.	Q	V	.	.	.	.
8.450	0.3215	0.66	.	Q	V	.	.	.	.
8.467	0.3224	0.66	.	Q	V	.	.	.	.
8.483	0.3233	0.66	.	Q	V	.	.	.	.
8.500	0.3242	0.66	.	Q	V	.	.	.	.
8.517	0.3251	0.66	.	Q	V	.	.	.	.
8.533	0.3260	0.66	.	Q	V	.	.	.	.
8.550	0.3269	0.67	.	Q	V	.	.	.	.
8.567	0.3279	0.67	.	Q	V	.	.	.	.
8.583	0.3288	0.67	.	Q	V	.	.	.	.
8.600	0.3297	0.67	.	Q	V	.	.	.	.
8.617	0.3306	0.67	.	Q	V	.	.	.	.
8.633	0.3315	0.67	.	Q	V	.	.	.	.
8.650	0.3325	0.67	.	Q	V	.	.	.	.
8.667	0.3334	0.67	.	Q	V	.	.	.	.
8.683	0.3343	0.67	.	Q	V	.	.	.	.
8.700	0.3352	0.67	.	Q	V	.	.	.	.
8.717	0.3362	0.67	.	Q	V	.	.	.	.
8.733	0.3371	0.67	.	Q	V	.	.	.	.
8.750	0.3380	0.67	.	Q	V	.	.	.	.
8.767	0.3390	0.68	.	Q	V	.	.	.	.
8.783	0.3399	0.68	.	Q	V	.	.	.	.
8.800	0.3408	0.68	.	Q	V	.	.	.	.
8.817	0.3417	0.68	.	Q	V	.	.	.	.
8.833	0.3427	0.68	.	Q	V	.	.	.	.
8.850	0.3436	0.68	.	Q	V	.	.	.	.
8.867	0.3446	0.68	.	Q	V	.	.	.	.
8.883	0.3455	0.68	.	Q	V	.	.	.	.
8.900	0.3464	0.68	.	Q	V	.	.	.	.
8.917	0.3474	0.68	.	Q	V	.	.	.	.
8.933	0.3483	0.68	.	Q	V	.	.	.	.
8.950	0.3492	0.68	.	Q	V	.	.	.	.
8.967	0.3502	0.68	.	Q	V	.	.	.	.
8.983	0.3511	0.68	.	Q	V	.	.	.	.
9.000	0.3521	0.69	.	Q	V	.	.	.	.
9.017	0.3530	0.69	.	Q	V	.	.	.	.
9.033	0.3540	0.69	.	Q	V	.	.	.	.
9.050	0.3549	0.69	.	Q	V	.	.	.	.
9.067	0.3559	0.69	.	Q	V	.	.	.	.
9.083	0.3568	0.69	.	Q	V	.	.	.	.
9.100	0.3578	0.69	.	Q	V	.	.	.	.
9.117	0.3587	0.69	.	Q	V	.	.	.	.
9.133	0.3597	0.69	.	Q	V	.	.	.	.
9.150	0.3606	0.69	.	Q	V	.	.	.	.
9.167	0.3616	0.69	.	Q	V	.	.	.	.
9.183	0.3625	0.69	.	Q	V	.	.	.	.
9.200	0.3635	0.70	.	Q	V	.	.	.	.
9.217	0.3645	0.70	.	Q	V	.	.	.	.
9.233	0.3654	0.70	.	Q	V	.	.	.	.
9.250	0.3664	0.70	.	Q	V	.	.	.	.
9.267	0.3673	0.70	.	Q	V	.	.	.	.
9.283	0.3683	0.70	.	Q	V	.	.	.	.
9.300	0.3693	0.70	.	Q	V	.	.	.	.
9.317	0.3702	0.70	.	Q	V	.	.	.	.
9.333	0.3712	0.70	.	Q	V	.	.	.	.
9.350	0.3722	0.70	.	Q	V	.	.	.	.
9.367	0.3731	0.70	.	Q	V	.	.	.	.
9.383	0.3741	0.70	.	Q	V	.	.	.	.
9.400	0.3751	0.70	.	Q	V	.	.	.	.
9.417	0.3760	0.71	.	Q	V	.	.	.	.
9.433	0.3770	0.71	.	Q	V	.	.	.	.
9.450	0.3780	0.71	.	Q	V	.	.	.	.
9.467	0.3790	0.71	.	Q	V	.	.	.	.
9.483	0.3799	0.71	.	Q	V	.	.	.	.
9.500	0.3809	0.71	.	Q	V	.	.	.	.
9.517	0.3819	0.71	.	Q	V	.	.	.	.
9.533	0.3829	0.71	.	Q	V	.	.	.	.
9.550	0.3839	0.71	.	Q	V	.	.	.	.
9.567	0.3849	0.71	.	Q	V	.	.	.	.
9.583	0.3858	0.72	.	Q	V	.	.	.	.
9.600	0.3868	0.72	.	Q	V	.	.	.	.
9.617	0.3878	0.72	.	Q	V	.	.	.	.
9.633	0.3888	0.72	.	Q	V	.	.	.	.
9.650	0.3898	0.72	.	Q	V	.	.	.	.
9.667	0.3908	0.72	.	Q	V	.	.	.	.
9.683	0.3918	0.72	.	Q	V	.	.	.	.
9.700	0.3928	0.72	.	Q	V	.	.	.	.
9.717	0.3938	0.72	.	Q	V	.	.	.	.
9.733	0.3948	0.72	.	Q	V	.	.	.	.
9.750	0.3958	0.72	.	Q	V	.	.	.	.
9.767	0.3967	0.72	.	Q	V	.	.	.	.
9.783	0.3977	0.73	.	Q	V	.	.	.	.
9.800	0.3987	0.73	.	Q	V	.	.	.	.
9.817	0.3997	0.73	.	Q	V	.	.	.	.
9.833	0.4008	0.73	.	Q	V	.	.	.	.
9.850	0.4018	0.73	.	Q	V	.	.	.	.
9.867	0.4028	0.73	.	Q	V	.	.	.	.
9.883	0.4038	0.73	.	Q	V	.	.	.	.
9.900	0.4048	0.73	.	Q	V	.	.	.	.
9.917	0.4058	0.73	.	Q	V	.	.	.	.
9.933	0.4068	0.73	.	Q	V	.	.	.	.
9.950	0.4078	0.74	.	Q	V	.	.	.	.
9.967	0.4088	0.74	.	Q	V	.	.	.	.
9.983	0.4098	0.74	.	Q	V	.	.	.	.
10.000	0.4109	0.74	.	Q	V	.	.	.	.
10.017	0.4119	0.74	.	Q	V	.	.	.	.
10.033	0.4129	0.74	.	Q	V	.	.	.	.
10.050	0.4139	0.74	.	Q	V	.	.	.	.
10.067	0.4149	0.74	.	Q	V	.	.	.	.
10.083	0.4160	0.74	.	Q	V	.	.	.	.
10.100	0.4170	0.74	.	Q	V	.	.	.	.
10.117	0.4180	0.74	.	Q	V	.	.	.	.
10.133	0.4190	0.75	.	Q	V	.	.	.	.

10.150	0.4201	0.75	.	Q	V	.	.	.
10.167	0.4211	0.75	.	Q	V	.	.	.
10.183	0.4221	0.75	.	Q	V	.	.	.
10.200	0.4232	0.75	.	Q	V	.	.	.
10.217	0.4242	0.75	.	Q	V	.	.	.
10.233	0.4252	0.75	.	Q	V	.	.	.
10.250	0.4263	0.75	.	Q	V	.	.	.
10.267	0.4273	0.75	.	Q	V	.	.	.
10.283	0.4284	0.76	.	Q	V	.	.	.
10.300	0.4294	0.76	.	Q	V	.	.	.
10.317	0.4304	0.76	.	Q	V	.	.	.
10.333	0.4315	0.76	.	Q	V	.	.	.
10.350	0.4325	0.76	.	Q	V	.	.	.
10.367	0.4336	0.76	.	Q	V.	.	.	.
10.383	0.4346	0.76	.	Q	V.	.	.	.
10.400	0.4357	0.76	.	Q	V.	.	.	.
10.417	0.4367	0.76	.	Q	V.	.	.	.
10.433	0.4378	0.76	.	Q	V.	.	.	.
10.450	0.4388	0.77	.	Q	V.	.	.	.
10.467	0.4399	0.77	.	Q	V.	.	.	.
10.483	0.4409	0.77	.	Q	V.	.	.	.
10.500	0.4420	0.77	.	Q	V.	.	.	.
10.517	0.4431	0.77	.	Q	V.	.	.	.
10.533	0.4441	0.77	.	Q	V.	.	.	.
10.550	0.4452	0.77	.	Q	V.	.	.	.
10.567	0.4463	0.77	.	Q	V.	.	.	.
10.583	0.4473	0.77	.	Q	V.	.	.	.
10.600	0.4484	0.78	.	Q	V.	.	.	.
10.617	0.4495	0.78	.	Q	V.	.	.	.
10.633	0.4505	0.78	.	Q	V.	.	.	.
10.650	0.4516	0.78	.	Q	V.	.	.	.
10.667	0.4527	0.78	.	Q	V.	.	.	.
10.683	0.4538	0.78	.	Q	V.	.	.	.
10.700	0.4548	0.78	.	Q	V.	.	.	.
10.717	0.4559	0.78	.	Q	V.	.	.	.
10.733	0.4570	0.79	.	Q	V.	.	.	.
10.750	0.4581	0.79	.	Q	V.	.	.	.
10.767	0.4592	0.79	.	Q	V.	.	.	.
10.783	0.4603	0.79	.	Q	V.	.	.	.
10.800	0.4613	0.79	.	Q	V.	.	.	.
10.817	0.4624	0.79	.	Q	V.	.	.	.
10.833	0.4635	0.79	.	Q	V.	.	.	.
10.850	0.4646	0.79	.	Q	V.	.	.	.
10.867	0.4657	0.79	.	Q	V.	.	.	.
10.883	0.4668	0.80	.	Q	V.	.	.	.
10.900	0.4679	0.80	.	Q	V.	.	.	.
10.917	0.4690	0.80	.	Q	V.	.	.	.
10.933	0.4701	0.80	.	Q	V.	.	.	.
10.950	0.4712	0.80	.	Q	V.	.	.	.
10.967	0.4723	0.80	.	Q	V.	.	.	.
10.983	0.4734	0.80	.	Q	V.	.	.	.
11.000	0.4745	0.80	.	Q	V.	.	.	.
11.017	0.4756	0.81	.	Q	V.	.	.	.
11.033	0.4767	0.81	.	Q	V.	.	.	.
11.050	0.4779	0.81	.	Q	V.	.	.	.
11.067	0.4790	0.81	.	Q	V.	.	.	.
11.083	0.4801	0.81	.	Q	V.	.	.	.
11.100	0.4812	0.81	.	Q	V	.	.	.
11.117	0.4823	0.81	.	Q	V	.	.	.
11.133	0.4835	0.81	.	Q	V	.	.	.
11.150	0.4846	0.82	.	Q	V	.	.	.
11.167	0.4857	0.82	.	Q	V	.	.	.
11.183	0.4868	0.82	.	Q	V	.	.	.
11.200	0.4880	0.82	.	Q	V	.	.	.
11.217	0.4891	0.82	.	Q	V	.	.	.
11.233	0.4902	0.82	.	Q	V	.	.	.
11.250	0.4914	0.82	.	Q	V	.	.	.
11.267	0.4925	0.82	.	Q	V	.	.	.
11.283	0.4936	0.83	.	Q	V	.	.	.
11.300	0.4948	0.83	.	Q	V	.	.	.
11.317	0.4959	0.83	.	Q	V	.	.	.
11.333	0.4971	0.83	.	Q	V	.	.	.
11.350	0.4982	0.83	.	Q	V	.	.	.
11.367	0.4994	0.83	.	Q	V	.	.	.
11.383	0.5005	0.84	.	Q	V	.	.	.
11.400	0.5017	0.84	.	Q	V	.	.	.
11.417	0.5028	0.84	.	Q	V	.	.	.
11.433	0.5040	0.84	.	Q	V	.	.	.
11.450	0.5051	0.84	.	Q	V	.	.	.
11.467	0.5063	0.84	.	Q	V	.	.	.
11.483	0.5075	0.84	.	Q	V	.	.	.
11.500	0.5086	0.85	.	Q	V	.	.	.
11.517	0.5098	0.85	.	Q	V	.	.	.
11.533	0.5110	0.85	.	Q	V	.	.	.
11.550	0.5121	0.85	.	Q	V	.	.	.
11.567	0.5133	0.85	.	Q	V	.	.	.
11.583	0.5145	0.85	.	Q	V	.	.	.
11.600	0.5156	0.85	.	Q	V	.	.	.
11.617	0.5168	0.86	.	Q	V	.	.	.
11.633	0.5180	0.86	.	Q	V	.	.	.
11.650	0.5192	0.86	.	Q	V	.	.	.
11.667	0.5204	0.86	.	Q	V	.	.	.
11.683	0.5216	0.86	.	Q	V	.	.	.
11.700	0.5227	0.86	.	Q	V	.	.	.
11.717	0.5239	0.86	.	Q	V	.	.	.
11.733	0.5251	0.87	.	Q	V	.	.	.
11.750	0.5263	0.87	.	Q	V	.	.	.
11.767	0.5275	0.87	.	Q	V	.	.	.
11.783	0.5287	0.87	.	Q	V	.	.	.
11.800	0.5299	0.87	.	Q	.V	.	.	.
11.817	0.5311	0.87	.	Q	.V	.	.	.
11.833	0.5323	0.88	.	Q	.V	.	.	.
11.850	0.5336	0.88	.	Q	.V	.	.	.
11.867	0.5348	0.88	.	Q	.V	.	.	.
11.883	0.5360	0.88	.	Q	.V	.	.	.
11.900	0.5372	0.88	.	Q	.V	.	.	.
11.917	0.5384	0.88	.	Q	.V	.	.	.
11.933	0.5396	0.89	.	Q	.V	.	.	.
11.950	0.5409	0.89	.	Q	.V	.	.	.
11.967	0.5421	0.89	.	Q	.V	.	.	.
11.983	0.5433	0.89	.	Q	.V	.	.	.
12.000	0.5445	0.89	.	Q	.V	.	.	.
12.017	0.5458	0.89	.	Q	.V	.	.	.
12.033	0.5470	0.89	.	Q	.V	.	.	.
12.050	0.5482	0.90	.	Q	.V	.	.	.
12.067	0.5495	0.90	.	Q	.V	.	.	.
12.083	0.5507	0.90	.	Q	.V	.	.	.
12.100	0.5519	0.90	.	Q	.V	.	.	.

12.117	0.5532	0.90	.	Q	.V	.	.	.
12.133	0.5544	0.90	.	Q	.V	.	.	.
12.150	0.5557	0.91	.	Q	.V	.	.	.
12.167	0.5569	0.91	.	Q	.V	.	.	.
12.183	0.5582	0.91	.	Q	.V	.	.	.
12.200	0.5594	0.91	.	Q	.V	.	.	.
12.217	0.5607	0.91	.	Q	.V	.	.	.
12.233	0.5619	0.91	.	Q	.V	.	.	.
12.250	0.5632	0.91	.	Q	.V	.	.	.
12.267	0.5644	0.91	.	Q	.V	.	.	.
12.283	0.5657	0.91	.	Q	.V	.	.	.
12.300	0.5669	0.91	.	Q	.V	.	.	.
12.317	0.5682	0.91	.	Q	.V	.	.	.
12.333	0.5694	0.91	.	Q	.V	.	.	.
12.350	0.5707	0.91	.	Q	.V	.	.	.
12.367	0.5720	0.91	.	Q	.V	.	.	.
12.383	0.5732	0.91	.	Q	.V	.	.	.
12.400	0.5745	0.91	.	Q	.V	.	.	.
12.417	0.5757	0.91	.	Q	.V	.	.	.
12.433	0.5770	0.92	.	Q	.V	.	.	.
12.450	0.5783	0.92	.	Q	. V	.	.	.
12.467	0.5795	0.92	.	Q	. V	.	.	.
12.483	0.5808	0.92	.	Q	. V	.	.	.
12.500	0.5821	0.92	.	Q	. V	.	.	.
12.517	0.5833	0.92	.	Q	. V	.	.	.
12.533	0.5846	0.93	.	Q	. V	.	.	.
12.550	0.5859	0.93	.	Q	. V	.	.	.
12.567	0.5872	0.93	.	Q	. V	.	.	.
12.583	0.5884	0.93	.	Q	. V	.	.	.
12.600	0.5897	0.93	.	Q	. V	.	.	.
12.617	0.5910	0.93	.	Q	. V	.	.	.
12.633	0.5923	0.93	.	Q	. V	.	.	.
12.650	0.5936	0.94	.	Q	. V	.	.	.
12.667	0.5949	0.94	.	Q	. V	.	.	.
12.683	0.5962	0.94	.	Q	. V	.	.	.
12.700	0.5975	0.94	.	Q	. V	.	.	.
12.717	0.5988	0.94	.	Q	. V	.	.	.
12.733	0.6001	0.95	.	Q	. V	.	.	.
12.750	0.6014	0.95	.	Q	. V	.	.	.
12.767	0.6027	0.95	.	Q	. V	.	.	.
12.783	0.6040	0.95	.	Q	. V	.	.	.
12.800	0.6053	0.95	.	Q	. V	.	.	.
12.817	0.6066	0.96	.	Q	. V	.	.	.
12.833	0.6080	0.96	.	Q	. V	.	.	.
12.850	0.6093	0.96	.	Q	. V	.	.	.
12.867	0.6106	0.96	.	Q	. V	.	.	.
12.883	0.6119	0.97	.	Q	. V	.	.	.
12.900	0.6133	0.97	.	Q	. V	.	.	.
12.917	0.6146	0.97	.	Q	. V	.	.	.
12.933	0.6160	0.97	.	Q	. V	.	.	.
12.950	0.6173	0.98	.	Q	. V	.	.	.
12.967	0.6186	0.98	.	Q	. V	.	.	.
12.983	0.6200	0.98	.	Q	. V	.	.	.
13.000	0.6214	0.98	.	Q	. V	.	.	.
13.017	0.6227	0.99	.	Q	. V	.	.	.
13.033	0.6241	0.99	.	Q	. V	.	.	.
13.050	0.6254	0.99	.	Q	. V	.	.	.
13.067	0.6268	0.99	.	Q	. V	.	.	.
13.083	0.6282	0.99	.	Q	. V	.	.	.

13.100	0.6295	1.00	.	Q	. V	.	.	.
13.117	0.6309	1.00	.	Q	. V	.	.	.
13.133	0.6323	1.00	.	Q	. V	.	.	.
13.150	0.6337	1.01	.	Q	. V	.	.	.
13.167	0.6351	1.01	.	Q	. V	.	.	.
13.183	0.6365	1.01	.	Q	. V	.	.	.
13.200	0.6379	1.01	.	Q	. V	.	.	.
13.217	0.6393	1.02	.	Q	. V	.	.	.
13.233	0.6407	1.02	.	Q	. V	.	.	.
13.250	0.6421	1.02	.	Q	. V	.	.	.
13.267	0.6435	1.03	.	Q	. V	.	.	.
13.283	0.6449	1.03	.	Q	. V	.	.	.
13.300	0.6463	1.03	.	Q	. V	.	.	.
13.317	0.6478	1.04	.	Q	. V	.	.	.
13.333	0.6492	1.04	.	Q	. V	.	.	.
13.350	0.6506	1.04	.	Q	. V	.	.	.
13.367	0.6521	1.04	.	Q	. V	.	.	.
13.383	0.6535	1.05	.	Q	. V	.	.	.
13.400	0.6549	1.05	.	Q	. V	.	.	.
13.417	0.6564	1.05	.	Q	. V	.	.	.
13.433	0.6578	1.05	.	Q	. V	.	.	.
13.450	0.6593	1.06	.	Q	. V	.	.	.
13.467	0.6608	1.06	.	Q	. V	.	.	.
13.483	0.6622	1.06	.	Q	. V	.	.	.
13.500	0.6637	1.07	.	Q	. V	.	.	.
13.517	0.6652	1.07	.	Q	. V	.	.	.
13.533	0.6667	1.07	.	Q	. V	.	.	.
13.550	0.6681	1.08	.	Q	. V	.	.	.
13.567	0.6696	1.08	.	Q	. V	.	.	.
13.583	0.6711	1.09	.	Q	. V	.	.	.
13.600	0.6726	1.09	.	Q	. V	.	.	.
13.617	0.6741	1.09	.	Q	. V	.	.	.
13.633	0.6756	1.10	.	Q	. V	.	.	.
13.650	0.6772	1.10	.	Q	. V	.	.	.
13.667	0.6787	1.10	.	Q	. V	.	.	.
13.683	0.6802	1.11	.	Q	. V	.	.	.
13.700	0.6817	1.11	.	Q	. V	.	.	.
13.717	0.6833	1.11	.	Q	. V	.	.	.
13.733	0.6848	1.12	.	Q	. V	.	.	.
13.750	0.6863	1.12	.	Q	. V	.	.	.
13.767	0.6879	1.12	.	Q	. V	.	.	.
13.783	0.6894	1.13	.	Q	. V	.	.	.
13.800	0.6910	1.13	.	Q	. V	.	.	.
13.817	0.6926	1.13	.	Q	. V	.	.	.
13.833	0.6941	1.14	.	Q	. V	.	.	.
13.850	0.6957	1.14	.	Q	. V	.	.	.
13.867	0.6973	1.15	.	Q	. V	.	.	.
13.883	0.6989	1.15	.	Q	. V	.	.	.
13.900	0.7005	1.15	.	Q	. V	.	.	.
13.917	0.7021	1.16	.	Q	. V	.	.	.
13.933	0.7037	1.16	.	Q	. V	.	.	.
13.950	0.7053	1.17	.	Q	. V	.	.	.
13.967	0.7069	1.17	.	Q	. V	.	.	.
13.983	0.7085	1.18	.	Q	. V	.	.	.
14.000	0.7101	1.18	.	Q	. V	.	.	.
14.017	0.7118	1.19	.	Q	. V	.	.	.
14.033	0.7134	1.19	.	Q	. V	.	.	.
14.050	0.7151	1.20	.	Q	. V	.	.	.
14.067	0.7167	1.20	.	Q	. V	.	.	.

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14.083      0.7184      1.20  .   Q     .   V     .         .         .
14.100      0.7200      1.21  .   Q     .   V     .         .         .
14.117      0.7217      1.21  .   Q     .   V     .         .         .
14.133      0.7234      1.22  .   Q     .    V    .         .         .
14.150      0.7251      1.22  .   Q     .    V    .         .         .
14.167      0.7267      1.22  .   Q     .    V    .         .         .
14.183      0.7284      1.23  .   Q     .    V    .         .         .
14.200      0.7301      1.23  .   Q     .    V    .         .         .
14.217      0.7318      1.23  .   Q     .    V    .         .         .
14.233      0.7335      1.23  .   Q     .    V    .         .         .
14.250      0.7352      1.24  .   Q     .    V    .         .         .
14.267      0.7369      1.24  .   Q     .    V    .         .         .
14.283      0.7386      1.24  .   Q     .    V    .         .         .
14.300      0.7404      1.24  .   Q     .    V    .         .         .
14.317      0.7421      1.25  .   Q     .    V    .         .         .
14.333      0.7438      1.25  .   Q     .    V    .         .         .
14.350      0.7455      1.25  .    Q    .    V    .         .         .
14.367      0.7472      1.25  .    Q    .    V    .         .         .
14.383      0.7490      1.26  .    Q    .    V    .         .         .
14.400      0.7507      1.26  .    Q    .    V    .         .         .
14.417      0.7524      1.26  .    Q    .    V    .         .         .
14.433      0.7542      1.26  .    Q    .    V    .         .         .
14.450      0.7559      1.27  .    Q    .    V    .         .         .
14.467      0.7577      1.27  .    Q    .    V    .         .         .
14.483      0.7594      1.27  .    Q    .    V    .         .         .
14.500      0.7612      1.28  .    Q    .    V    .         .         .
14.517      0.7630      1.28  .    Q    .    V    .         .         .
14.533      0.7647      1.29  .    Q    .    V    .         .         .
14.550      0.7665      1.29  .    Q    .    V    .         .         .
14.567      0.7683      1.29  .    Q    .    V    .         .         .
14.583      0.7701      1.30  .    Q    .     V   .         .         .
14.600      0.7719      1.30  .    Q    .     V   .         .         .
14.617      0.7737      1.31  .    Q    .     V   .         .         .
14.633      0.7755      1.32  .    Q    .     V   .         .         .
14.650      0.7773      1.32  .    Q    .     V   .         .         .
14.667      0.7792      1.33  .    Q    .     V   .         .         .
14.683      0.7810      1.34  .    Q    .     V   .         .         .
14.700      0.7829      1.35  .    Q    .     V   .         .         .
14.717      0.7847      1.35  .    Q    .     V   .         .         .
14.733      0.7866      1.36  .    Q    .     V   .         .         .
14.750      0.7885      1.37  .    Q    .     V   .         .         .
14.767      0.7904      1.38  .    Q    .     V   .         .         .
14.783      0.7923      1.38  .    Q    .     V   .         .         .
14.800      0.7942      1.39  .    Q    .     V   .         .         .
14.817      0.7961      1.40  .    Q    .     V   .         .         .
14.833      0.7981      1.41  .    Q    .     V   .         .         .
14.850      0.8000      1.41  .    Q    .     V   .         .         .
14.867      0.8020      1.42  .    Q    .     V   .         .         .
14.883      0.8039      1.43  .    Q    .     V   .         .         .
14.900      0.8059      1.43  .    Q    .     V   .         .         .
14.917      0.8079      1.44  .    Q    .     V   .         .         .
14.933      0.8099      1.45  .    Q    .     V   .         .         .
14.950      0.8119      1.46  .    Q    .     V   .         .         .
14.967      0.8139      1.47  .    Q    .     V   .         .         .
14.983      0.8160      1.48  .    Q    .     V   .         .         .
15.000      0.8180      1.49  .    Q    .     V   .         .         .
15.017      0.8201      1.50  .     Q   .      V  .         .         .
15.033      0.8222      1.51  .     Q   .      V  .         .         .
15.050      0.8243      1.53  .     Q   .      V  .         .         .
15.067      0.8264      1.54  .     Q   .      V  .         .         .
15.083      0.8285      1.55  .     Q   .      V  .         .         .
15.100      0.8307      1.56  .     Q   .      V  .         .         .
15.117      0.8328      1.58  .     Q   .      V  .         .         .
15.133      0.8350      1.59  .     Q   .      V  .         .         .
15.150      0.8372      1.60  .     Q   .      V  .         .         .
15.167      0.8395      1.61  .     Q   .      V  .         .         .
15.183      0.8417      1.62  .     Q   .      V  .         .         .
15.200      0.8439      1.64  .     Q   .      V  .         .         .
15.217      0.8462      1.65  .     Q   .      V  .         .         .
15.233      0.8485      1.66  .     Q   .      V  .         .         .
15.250      0.8508      1.67  .     Q   .      V  .         .         .
15.267      0.8531      1.68  .     Q   .      V  .         .         .
15.283      0.8555      1.70  .     Q   .      V  .         .         .
15.300      0.8578      1.72  .     Q   .      V  .         .         .
15.317      0.8602      1.74  .     Q   .      V  .         .         .
15.333      0.8627      1.76  .      Q  .      V  .         .         .
15.350      0.8651      1.79  .      Q  .      V  .         .         .
15.367      0.8676      1.81  .      Q  .       V .         .         .
15.383      0.8702      1.85  .      Q  .       V .         .         .
15.400      0.8727      1.88  .      Q  .       V .         .         .
15.417      0.8754      1.91  .      Q  .       V .         .         .
15.433      0.8781      1.95  .      Q  .       V .         .         .
15.450      0.8808      1.99  .      Q  .       V .         .         .
15.467      0.8836      2.03  .       Q .       V .         .         .
15.483      0.8864      2.07  .       Q .       V .         .         .
15.500      0.8894      2.12  .       Q .       V .         .         .
15.517      0.8923      2.17  .       Q .       V .         .         .
15.533      0.8954      2.22  .       Q .       V .         .         .
15.550      0.8985      2.27  .        Q.       V .         .         .
15.567      0.9017      2.33  .        Q.       V .         .         .
15.583      0.9050      2.38  .        Q.       V .         .         .
15.600      0.9084      2.44  .        Q.       V .         .         .
15.617      0.9118      2.50  .         Q       V .         .         .
15.633      0.9154      2.57  .         Q        V.         .         .
15.650      0.9190      2.63  .         Q        V.         .         .
15.667      0.9227      2.69  .         Q        V.         .         .
15.683      0.9264      2.72  .         Q        V.         .         .
15.700      0.9302      2.74  .         Q        V.         .         .
15.717      0.9340      2.77  .         .Q       V.         .         .
15.733      0.9379      2.79  .         .Q       V.         .         .
15.750      0.9417      2.82  .         .Q       V.         .         .
15.767      0.9457      2.84  .         .Q       V.         .         .
15.783      0.9496      2.87  .         .Q       V.         .         .
15.800      0.9536      2.90  .         .Q       V.         .         .
15.817      0.9577      2.93  .         .Q       V.         .         .
15.833      0.9617      2.96  .         .Q       V.         .         .
15.850      0.9659      3.00  .         .Q        V         .         .
15.867      0.9700      3.03  .         . Q       V         .         .
15.883      0.9743      3.07  .         . Q       V         .         .
15.900      0.9785      3.10  .         . Q       V         .         .
15.917      0.9829      3.14  .         . Q       V         .         .
15.933      0.9872      3.18  .         . Q       V         .         .
15.950      0.9917      3.23  .         . Q       V         .         .
15.967      0.9962      3.27  .         .  Q      V         .         .
15.983      1.0008      3.32  .         .  Q      V         .         .
16.000      1.0054      3.36  .         .  Q      V         .         .
16.017      1.0101      3.41  .         .  Q      V         .         .
16.033      1.0149      3.48  .         .  Q      .V        .         .
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16.050      1.0198      3.55  .         .   Q     .V        .         .
16.067      1.0248      3.64  .         .   Q     .V        .         .
16.083      1.0300      3.74  .         .   Q     .V        .         .
16.100      1.0353      3.86  .         .    Q    .V        .         .
16.117      1.0408      3.98  .         .    Q    .V        .         .
16.133      1.0464      4.12  .         .     Q   .V        .         .
16.150      1.0523      4.27  .         .      Q  .V        .         .
16.167      1.0584      4.44  .         .      Q  .V        .         .
16.183      1.0648      4.61  .         .       Q . V       .         .
16.200      1.0713      4.77  .         .        Q. V       .         .
16.217      1.0781      4.88  .         .        Q. V       .         .
16.233      1.0849      4.95  .         .        Q. V       .         .
16.250      1.0918      5.02  .         .         Q V       .         .
16.267      1.0988      5.07  .         .         Q V       .         .
16.283      1.1058      5.11  .         .         Q V       .         .
16.300      1.1129      5.15  .         .         Q  V      .         .
16.317      1.1201      5.17  .         .         Q  V      .         .
16.333      1.1272      5.19  .         .         Q  V      .         .
16.350      1.1344      5.20  .         .         Q  V      .         .
16.367      1.1415      5.20  .         .         Q  V      .         .
16.383      1.1487      5.18  .         .         Q  V      .         .
16.400      1.1558      5.17  .         .         Q   V     .         .
16.417      1.1629      5.15  .         .         Q   V     .         .
16.433      1.1700      5.13  .         .         Q   V     .         .
16.450      1.1770      5.11  .         .         Q   V     .         .
16.467      1.1840      5.09  .         .         Q   V     .         .
16.483      1.1910      5.07  .         .         Q   V     .         .
16.500      1.1979      5.04  .         .         Q   V     .         .
16.517      1.2048      5.01  .         .         Q    V    .         .
16.533      1.2117      4.98  .         .        Q.    V    .         .
16.550      1.2185      4.95  .         .        Q.    V    .         .
16.567      1.2253      4.92  .         .        Q.    V    .         .
16.583      1.2320      4.89  .         .        Q.    V    .         .
16.600      1.2387      4.86  .         .        Q.    V    .         .
16.617      1.2454      4.82  .         .        Q.    V    .         .
16.633      1.2520      4.78  .         .        Q.     V   .         .
16.650      1.2584      4.71  .         .       Q .     V   .         .
16.667      1.2648      4.65  .         .       Q .     V   .         .
16.683      1.2712      4.58  .         .       Q .     V   .         .
16.700      1.2774      4.52  .         .       Q .     V   .         .
16.717      1.2835      4.45  .         .      Q  .     V   .         .
16.733      1.2895      4.39  .         .      Q  .     V   .         .
16.750      1.2955      4.33  .         .      Q  .     V   .         .
16.767      1.3014      4.26  .         .      Q  .      V  .         .
16.783      1.3072      4.20  .         .     Q   .      V  .         .
16.800      1.3129      4.14  .         .     Q   .      V  .         .
16.817      1.3185      4.08  .         .     Q   .      V  .         .
16.833      1.3240      4.02  .         .     Q   .      V  .         .
16.850      1.3295      3.97  .         .    Q    .      V  .         .
16.867      1.3349      3.91  .         .    Q    .      V  .         .
16.883      1.3402      3.85  .         .    Q    .      V  .         .
16.900      1.3454      3.80  .         .    Q    .      V  .         .
16.917      1.3506      3.75  .         .   Q     .       V .         .
16.933      1.3557      3.69  .         .   Q     .       V .         .
16.950      1.3607      3.64  .         .   Q     .       V .         .
16.967      1.3656      3.59  .         .   Q     .       V .         .
16.983      1.3705      3.54  .         .   Q     .       V .         .
17.000      1.3753      3.49  .         .  Q      .       V .         .
17.017      1.3800      3.44  .         .  Q      .       V .         .
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17.033      1.3847      3.39  .         .  Q      .       V .         .
17.050      1.3893      3.34  .         .  Q      .       V .         .
17.067      1.3938      3.29  .         .  Q      .       V .         .
17.083      1.3983      3.25  .         . Q       .        V.         .
17.100      1.4027      3.20  .         . Q       .        V.         .
17.117      1.4071      3.16  .         . Q       .        V.         .
17.133      1.4114      3.11  .         . Q       .        V.         .
17.150      1.4156      3.07  .         . Q       .        V.         .
17.167      1.4198      3.03  .         . Q       .        V.         .
17.183      1.4239      2.99  .         .Q        .        V.         .
17.200      1.4279      2.95  .         .Q        .        V.         .
17.217      1.4319      2.91  .         .Q        .        V.         .
17.233      1.4359      2.87  .         .Q        .        V.         .
17.250      1.4398      2.83  .         .Q        .        V.         .
17.267      1.4436      2.79  .         .Q        .         V         .
17.283      1.4474      2.76  .         .Q        .         V         .
17.300      1.4512      2.72  .         Q         .         V         .
17.317      1.4548      2.66  .         Q         .         V         .
17.333      1.4584      2.56  .         Q         .         V         .
17.350      1.4618      2.47  .        Q.         .         V         .
17.367      1.4650      2.38  .        Q.         .         V         .
17.383      1.4682      2.30  .        Q.         .         V         .
17.400      1.4713      2.22  .       Q .         .         V         .
17.417      1.4742      2.14  .       Q .         .         V         .
17.433      1.4771      2.08  .       Q .         .         V         .
17.450      1.4798      2.01  .       Q .         .         V         .
17.467      1.4825      1.95  .      Q  .         .         V         .
17.483      1.4851      1.89  .      Q  .         .         V         .
17.500      1.4877      1.84  .      Q  .         .         V         .
17.517      1.4901      1.79  .      Q  .         .         V         .
17.533      1.4925      1.74  .     Q   .         .         .V        .
17.550      1.4949      1.70  .     Q   .         .         .V        .
17.567      1.4972      1.66  .     Q   .         .         .V        .
17.583      1.4994      1.62  .     Q   .         .         .V        .
17.600      1.5016      1.58  .     Q   .         .         .V        .
17.617      1.5037      1.54  .     Q   .         .         .V        .
17.633      1.5058      1.51  .     Q   .         .         .V        .
17.650      1.5078      1.48  .    Q    .         .         .V        .
17.667      1.5098      1.45  .    Q    .         .         .V        .
17.683      1.5118      1.42  .    Q    .         .         .V        .
17.700      1.5137      1.40  .    Q    .         .         .V        .
17.717      1.5156      1.37  .    Q    .         .         .V        .
17.733      1.5174      1.35  .    Q    .         .         .V        .
17.750      1.5193      1.32  .    Q    .         .         .V        .
17.767      1.5211      1.30  .    Q    .         .         .V        .
17.783      1.5228      1.28  .    Q    .         .         .V        .
17.800      1.5246      1.26  .    Q    .         .         .V        .
17.817      1.5263      1.25  .   Q     .         .         .V        .
17.833      1.5280      1.23  .   Q     .         .         .V        .
17.850      1.5296      1.21  .   Q     .         .         .V        .
17.867      1.5313      1.20  .   Q     .         .         .V        .
17.883      1.5329      1.18  .   Q     .         .         .V        .
17.900      1.5345      1.17  .   Q     .         .         .V        .
17.917      1.5361      1.15  .   Q     .         .         .V        .
17.933      1.5377      1.14  .   Q     .         .         .V        .
17.950      1.5392      1.13  .   Q     .         .         .V        .
17.967      1.5408      1.11  .   Q     .         .         . V       .
17.983      1.5423      1.10  .   Q     .         .         . V       .
18.000      1.5438      1.09  .   Q     .         .         . V       .
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18.017	1.5453	1.08	.	Q	.	.	.	V	.	
18.033	1.5467	1.07	.	Q	.	.	.	V	.	
18.050	1.5482	1.06	.	Q	.	.	.	V	.	
18.067	1.5497	1.05	.	Q	.	.	.	V	.	
18.083	1.5511	1.04	.	Q	.	.	.	V	.	
18.100	1.5525	1.04	.	Q	.	.	.	V	.	
18.117	1.5539	1.03	.	Q	.	.	.	V	.	
18.133	1.5553	1.02	.	Q	.	.	.	V	.	
18.150	1.5567	1.01	.	Q	.	.	.	V	.	
18.167	1.5581	1.01	.	Q	.	.	.	V	.	
18.183	1.5595	1.00	.	Q	.	.	.	V	.	
18.200	1.5609	1.00	.	Q	.	.	.	V	.	
18.217	1.5622	0.99	.	Q	.	.	.	V	.	
18.233	1.5636	0.99	.	Q	.	.	.	V	.	
18.250	1.5650	0.98	.	Q	.	.	.	V	.	
18.267	1.5663	0.98	.	Q	.	.	.	V	.	
18.283	1.5676	0.97	.	Q	.	.	.	V	.	
18.300	1.5690	0.97	.	Q	.	.	.	V	.	
18.317	1.5703	0.96	.	Q	.	.	.	V	.	
18.333	1.5716	0.96	.	Q	.	.	.	V	.	
18.350	1.5729	0.95	.	Q	.	.	.	V	.	
18.367	1.5742	0.95	.	Q	.	.	.	V	.	
18.383	1.5755	0.95	.	Q	.	.	.	V	.	
18.400	1.5768	0.94	.	Q	.	.	.	V	.	
18.417	1.5781	0.94	.	Q	.	.	.	V	.	
18.433	1.5794	0.93	.	Q	.	.	.	V	.	
18.450	1.5807	0.93	.	Q	.	.	.	V	.	
18.467	1.5820	0.93	.	Q	.	.	.	V	.	
18.483	1.5832	0.92	.	Q	.	.	.	V	.	
18.500	1.5845	0.92	.	Q	.	.	.	V	.	
18.517	1.5858	0.91	.	Q	.	.	.	V	.	
18.533	1.5870	0.91	.	Q	.	.	.	V	.	
18.550	1.5883	0.91	.	Q	.	.	.	V	.	
18.567	1.5895	0.90	.	Q	.	.	.	V	.	
18.583	1.5908	0.90	.	Q	.	.	.	V	.	
18.600	1.5920	0.90	.	Q	.	.	.	V	.	
18.617	1.5932	0.89	.	Q	.	.	.	V	.	
18.633	1.5944	0.89	.	Q	.	.	.	V	.	
18.650	1.5957	0.89	.	Q	.	.	.	V	.	
18.667	1.5969	0.88	.	Q	.	.	.	V	.	
18.683	1.5981	0.88	.	Q	.	.	.	V	.	
18.700	1.5993	0.88	.	Q	.	.	.	V	.	
18.717	1.6005	0.87	.	Q	.	.	.	V	.	
18.733	1.6017	0.87	.	Q	.	.	.	V	.	
18.750	1.6029	0.87	.	Q	.	.	.	V	.	
18.767	1.6041	0.86	.	Q	.	.	.	V	.	
18.783	1.6053	0.86	.	Q	.	.	.	V	.	
18.800	1.6064	0.86	.	Q	.	.	.	V	.	
18.817	1.6076	0.85	.	Q	.	.	.	V	.	
18.833	1.6088	0.85	.	Q	.	.	.	V	.	
18.850	1.6100	0.85	.	Q	.	.	.	V	.	
18.867	1.6111	0.84	.	Q	.	.	.	V	.	
18.883	1.6123	0.84	.	Q	.	.	.	V	.	
18.900	1.6134	0.84	.	Q	.	.	.	V	.	
18.917	1.6146	0.84	.	Q	.	.	.	V	.	
18.933	1.6157	0.83	.	Q	.	.	.	V	.	
18.950	1.6169	0.83	.	Q	.	.	.	V	.	
18.967	1.6180	0.83	.	Q	.	.	.	V	.	
18.983	1.6192	0.82	.	Q	.	.	.	V	.	

19.000	1.6203	0.82	.	Q	.	.	.	V	.	
19.017	1.6214	0.82	.	Q	.	.	.	V	.	
19.033	1.6225	0.82	.	Q	.	.	.	V	.	
19.050	1.6237	0.81	.	Q	.	.	.	V	.	
19.067	1.6248	0.81	.	Q	.	.	.	V	.	
19.083	1.6259	0.81	.	Q	.	.	.	V	.	
19.100	1.6270	0.81	.	Q	.	.	.	V	.	
19.117	1.6281	0.80	.	Q	.	.	.	V	.	
19.133	1.6292	0.80	.	Q	.	.	.	V	.	
19.150	1.6303	0.80	.	Q	.	.	.	V	.	
19.167	1.6314	0.80	.	Q	.	.	.	V	.	
19.183	1.6325	0.79	.	Q	.	.	.	V	.	
19.200	1.6336	0.79	.	Q	.	.	.	V	.	
19.217	1.6347	0.79	.	Q	.	.	.	V	.	
19.233	1.6358	0.79	.	Q	.	.	.	V	.	
19.250	1.6368	0.78	.	Q	.	.	.	V	.	
19.267	1.6379	0.78	.	Q	.	.	.	V	.	
19.283	1.6390	0.78	.	Q	.	.	.	V	.	
19.300	1.6401	0.78	.	Q	.	.	.	V	.	
19.317	1.6411	0.78	.	Q	.	.	.	V	.	
19.333	1.6422	0.77	.	Q	.	.	.	V	.	
19.350	1.6433	0.77	.	Q	.	.	.	V	.	
19.367	1.6443	0.77	.	Q	.	.	.	V	.	
19.383	1.6454	0.77	.	Q	.	.	.	V	.	
19.400	1.6464	0.76	.	Q	.	.	.	V	.	
19.417	1.6475	0.76	.	Q	.	.	.	V	.	
19.433	1.6485	0.76	.	Q	.	.	.	V	.	
19.450	1.6496	0.76	.	Q	.	.	.	V	.	
19.467	1.6506	0.76	.	Q	.	.	.	V	.	
19.483	1.6516	0.75	.	Q	.	.	.	V	.	
19.500	1.6527	0.75	.	Q	.	.	.	V	.	
19.517	1.6537	0.75	.	Q	.	.	.	V	.	
19.533	1.6547	0.75	.	Q	.	.	.	V	.	
19.550	1.6558	0.75	.	Q	.	.	.	V	.	
19.567	1.6568	0.74	.	Q	.	.	.	V	.	
19.583	1.6578	0.74	.	Q	.	.	.	V	.	
19.600	1.6588	0.74	.	Q	.	.	.	V	.	
19.617	1.6598	0.74	.	Q	.	.	.	V	.	
19.633	1.6609	0.74	.	Q	.	.	.	V	.	
19.650	1.6619	0.73	.	Q	.	.	.	V	.	
19.667	1.6629	0.73	.	Q	.	.	.	V	.	
19.683	1.6639	0.73	.	Q	.	.	.	V	.	
19.700	1.6649	0.73	.	Q	.	.	.	V	.	
19.717	1.6659	0.73	.	Q	.	.	.	V	.	
19.733	1.6669	0.72	.	Q	.	.	.	V	.	
19.750	1.6679	0.72	.	Q	.	.	.	V	.	
19.767	1.6689	0.72	.	Q	.	.	.	V	.	
19.783	1.6699	0.72	.	Q	.	.	.	V	.	
19.800	1.6708	0.72	.	Q	.	.	.	V	.	
19.817	1.6718	0.71	.	Q	.	.	.	V	.	
19.833	1.6728	0.71	.	Q	.	.	.	V	.	
19.850	1.6738	0.71	.	Q	.	.	.	V	.	
19.867	1.6748	0.71	.	Q	.	.	.	V	.	
19.883	1.6757	0.71	.	Q	.	.	.	V	.	
19.900	1.6767	0.71	.	Q	.	.	.	V	.	
19.917	1.6777	0.70	.	Q	.	.	.	V	.	
19.933	1.6786	0.70	.	Q	.	.	.	V	.	
19.950	1.6796	0.70	.	Q	.	.	.	V	.	
19.967	1.6806	0.70	.	Q	.	.	.	V	.	

19.983	1.6815	0.70	.	Q	.	.	.	V	.	
20.000	1.6825	0.70	.	Q	.	.	.	V	.	
20.017	1.6835	0.69	.	Q	.	.	.	V	.	
20.033	1.6844	0.69	.	Q	.	.	.	V	.	
20.050	1.6854	0.69	.	Q	.	.	.	V	.	
20.067	1.6863	0.69	.	Q	.	.	.	V	.	
20.083	1.6873	0.69	.	Q	.	.	.	V	.	
20.100	1.6882	0.69	.	Q	.	.	.	V	.	
20.117	1.6891	0.68	.	Q	.	.	.	V	.	
20.133	1.6901	0.68	.	Q	.	.	.	V	.	
20.150	1.6910	0.68	.	Q	.	.	.	V	.	
20.167	1.6920	0.68	.	Q	.	.	.	V	.	
20.183	1.6929	0.68	.	Q	.	.	.	V	.	
20.200	1.6938	0.68	.	Q	.	.	.	V	.	
20.217	1.6948	0.68	.	Q	.	.	.	V	.	
20.233	1.6957	0.67	.	Q	.	.	.	V	.	
20.250	1.6966	0.67	.	Q	.	.	.	V	.	
20.267	1.6975	0.67	.	Q	.	.	.	V	.	
20.283	1.6985	0.67	.	Q	.	.	.	V	.	
20.300	1.6994	0.67	.	Q	.	.	.	V	.	
20.317	1.7003	0.67	.	Q	.	.	.	V	.	
20.333	1.7012	0.67	.	Q	.	.	.	V	.	
20.350	1.7021	0.66	.	Q	.	.	.	V	.	
20.367	1.7030	0.66	.	Q	.	.	.	V	.	
20.383	1.7040	0.66	.	Q	.	.	.	V	.	
20.400	1.7049	0.66	.	Q	.	.	.	V	.	
20.417	1.7058	0.66	.	Q	.	.	.	V	.	
20.433	1.7067	0.66	.	Q	.	.	.	V	.	
20.450	1.7076	0.66	.	Q	.	.	.	V	.	
20.467	1.7085	0.65	.	Q	.	.	.	V	.	
20.483	1.7094	0.65	.	Q	.	.	.	V	.	
20.500	1.7103	0.65	.	Q	.	.	.	V	.	
20.517	1.7112	0.65	.	Q	.	.	.	V	.	
20.533	1.7121	0.65	.	Q	.	.	.	V	.	
20.550	1.7130	0.65	.	Q	.	.	.	V	.	
20.567	1.7138	0.65	.	Q	.	.	.	V	.	
20.583	1.7147	0.64	.	Q	.	.	.	V	.	
20.600	1.7156	0.64	.	Q	.	.	.	V	.	
20.617	1.7165	0.64	.	Q	.	.	.	V	.	
20.633	1.7174	0.64	.	Q	.	.	.	V	.	
20.650	1.7183	0.64	.	Q	.	.	.	V	.	
20.667	1.7191	0.64	.	Q	.	.	.	V	.	
20.683	1.7200	0.64	.	Q	.	.	.	V	.	
20.700	1.7209	0.64	.	Q	.	.	.	V	.	
20.717	1.7218	0.63	.	Q	.	.	.	V	.	
20.733	1.7226	0.63	.	Q	.	.	.	V	.	
20.750	1.7235	0.63	.	Q	.	.	.	V	.	
20.767	1.7244	0.63	.	Q	.	.	.	V	.	
20.783	1.7252	0.63	.	Q	.	.	.	V	.	
20.800	1.7261	0.63	.	Q	.	.	.	V	.	
20.817	1.7270	0.63	.	Q	.	.	.	V	.	
20.833	1.7278	0.63	.	Q	.	.	.	V	.	
20.850	1.7287	0.62	.	Q	.	.	.	V	.	
20.867	1.7296	0.62	.	Q	.	.	.	V	.	
20.883	1.7304	0.62	.	Q	.	.	.	V	.	
20.900	1.7313	0.62	.	Q	.	.	.	V	.	
20.917	1.7321	0.62	.	Q	.	.	.	V	.	
20.933	1.7330	0.62	.	Q	.	.	.	V	.	
20.950	1.7338	0.62	.	Q	.	.	.	V	.	
20.967	1.7347	0.62	.	Q	.	.	.	V	.	
20.983	1.7355	0.62	.	Q	.	.	.	V	.	
21.000	1.7364	0.61	.	Q	.	.	.	V	.	
21.017	1.7372	0.61	.	Q	.	.	.	V	.	
21.033	1.7381	0.61	.	Q	.	.	.	V	.	
21.050	1.7389	0.61	.	Q	.	.	.	V	.	
21.067	1.7397	0.61	.	Q	.	.	.	V	.	
21.083	1.7406	0.61	.	Q	.	.	.	V	.	
21.100	1.7414	0.61	.	Q	.	.	.	V	.	
21.117	1.7423	0.61	.	Q	.	.	.	V	.	
21.133	1.7431	0.61	.	Q	.	.	.	V	.	
21.150	1.7439	0.60	.	Q	.	.	.	V	.	
21.167	1.7448	0.60	.	Q	.	.	.	V	.	
21.183	1.7456	0.60	.	Q	.	.	.	V	.	
21.200	1.7464	0.60	.	Q	.	.	.	V	.	
21.217	1.7472	0.60	.	Q	.	.	.	V	.	
21.233	1.7481	0.60	.	Q	.	.	.	V	.	
21.250	1.7489	0.60	.	Q	.	.	.	V	.	
21.267	1.7497	0.60	.	Q	.	.	.	V	.	
21.283	1.7505	0.60	.	Q	.	.	.	V	.	
21.300	1.7513	0.59	.	Q	.	.	.	V	.	
21.317	1.7522	0.59	.	Q	.	.	.	V	.	
21.333	1.7530	0.59	.	Q	.	.	.	V	.	
21.350	1.7538	0.59	.	Q	.	.	.	V	.	
21.367	1.7546	0.59	.	Q	.	.	.	V	.	
21.383	1.7554	0.59	.	Q	.	.	.	V	.	
21.400	1.7562	0.59	.	Q	.	.	.	V	.	
21.417	1.7570	0.59	.	Q	.	.	.	V	.	
21.433	1.7579	0.59	.	Q	.	.	.	V	.	
21.450	1.7587	0.59	.	Q	.	.	.	V	.	
21.467	1.7595	0.58	.	Q	.	.	.	V	.	
21.483	1.7603	0.58	.	Q	.	.	.	V	.	
21.500	1.7611	0.58	.	Q	.	.	.	V	.	
21.517	1.7619	0.58	.	Q	.	.	.	V	.	
21.533	1.7627	0.58	.	Q	.	.	.	V	.	
21.550	1.7635	0.58	.	Q	.	.	.	V	.	
21.567	1.7643	0.58	.	Q	.	.	.	V	.	
21.583	1.7651	0.58	.	Q	.	.	.	V	.	
21.600	1.7659	0.58	.	Q	.	.	.	V	.	
21.617	1.7667	0.58	.	Q	.	.	.	V	.	
21.633	1.7674	0.58	.	Q	.	.	.	V	.	
21.650	1.7682	0.57	.	Q	.	.	.	V	.	
21.667	1.7690	0.57	.	Q	.	.	.	V	.	
21.683	1.7698	0.57	.	Q	.	.	.	V	.	
21.700	1.7706	0.57	.	Q	.	.	.	V	.	
21.717	1.7714	0.57	.	Q	.	.	.	V	.	
21.733	1.7722	0.57	.	Q	.	.	.	V	.	
21.750	1.7730	0.57	.	Q	.	.	.	V	.	
21.767	1.7737	0.57	.	Q	.	.	.	V	.	
21.783	1.7745	0.57	.	Q	.	.	.	V	.	
21.800	1.7753	0.57	.	Q	.	.	.	V	.	
21.817	1.7761	0.57	.	Q	.	.	.	V	.	
21.833	1.7769	0.56	.	Q	.	.	.	V	.	
21.850	1.7776	0.56	.	Q	.	.	.	V	.	
21.867	1.7784	0.56	.	Q	.	.	.	V	.	
21.883	1.7792	0.56	.	Q	.	.	.	V	.	
21.900	1.7800	0.56	.	Q	.	.	.	V	.	
21.917	1.7807	0.56	.	Q	.	.	.	V	.	
21.933	1.7815	0.56	.	Q	.	.	.	V	.	

21.950	1.7823	0.56	.	Q	.	.	.	V	.
21.967	1.7830	0.56	.	Q	.	.	.	V	.
21.983	1.7838	0.56	.	Q	.	.	.	V	.
22.000	1.7846	0.56	.	Q	.	.	.	V	.
22.017	1.7853	0.56	.	Q	.	.	.	V	.
22.033	1.7861	0.55	.	Q	.	.	.	V	.
22.050	1.7869	0.55	.	Q	.	.	.	V	.
22.067	1.7876	0.55	.	Q	.	.	.	V	.
22.083	1.7884	0.55	.	Q	.	.	.	V	.
22.100	1.7891	0.55	.	Q	.	.	.	V	.
22.117	1.7899	0.55	.	Q	.	.	.	V	.
22.133	1.7907	0.55	.	Q	.	.	.	V	.
22.150	1.7914	0.55	.	Q	.	.	.	V	.
22.167	1.7922	0.55	.	Q	.	.	.	V	.
22.183	1.7929	0.55	.	Q	.	.	.	V	.
22.200	1.7937	0.55	.	Q	.	.	.	V	.
22.217	1.7944	0.55	.	Q	.	.	.	V	.
22.233	1.7952	0.54	.	Q	.	.	.	V	.
22.250	1.7959	0.54	.	Q	.	.	.	V	.
22.267	1.7967	0.54	.	Q	.	.	.	V	.
22.283	1.7974	0.54	.	Q	.	.	.	V	.
22.300	1.7982	0.54	.	Q	.	.	.	V	.
22.317	1.7989	0.54	.	Q	.	.	.	V	.
22.333	1.7996	0.54	.	Q	.	.	.	V	.
22.350	1.8004	0.54	.	Q	.	.	.	V	.
22.367	1.8011	0.54	.	Q	.	.	.	V	.
22.383	1.8019	0.54	.	Q	.	.	.	V	.
22.400	1.8026	0.54	.	Q	.	.	.	V	.
22.417	1.8033	0.54	.	Q	.	.	.	V	.
22.433	1.8041	0.54	.	Q	.	.	.	V	.
22.450	1.8048	0.53	.	Q	.	.	.	V	.
22.467	1.8056	0.53	.	Q	.	.	.	V	.
22.483	1.8063	0.53	.	Q	.	.	.	V	.
22.500	1.8070	0.53	.	Q	.	.	.	V	.
22.517	1.8078	0.53	.	Q	.	.	.	V	.
22.533	1.8085	0.53	.	Q	.	.	.	V	.
22.550	1.8092	0.53	.	Q	.	.	.	V	.
22.567	1.8099	0.53	.	Q	.	.	.	V	.
22.583	1.8107	0.53	.	Q	.	.	.	V	.
22.600	1.8114	0.53	.	Q	.	.	.	V	.
22.617	1.8121	0.53	.	Q	.	.	.	V	.
22.633	1.8129	0.53	.	Q	.	.	.	V	.
22.650	1.8136	0.53	.	Q	.	.	.	V	.
22.667	1.8143	0.53	.	Q	.	.	.	V	.
22.683	1.8150	0.52	.	Q	.	.	.	V	.
22.700	1.8157	0.52	.	Q	.	.	.	V	.
22.717	1.8165	0.52	.	Q	.	.	.	V	.
22.733	1.8172	0.52	.	Q	.	.	.	V	.
22.750	1.8179	0.52	.	Q	.	.	.	V	.
22.767	1.8186	0.52	.	Q	.	.	.	V	.
22.783	1.8193	0.52	.	Q	.	.	.	V	.
22.800	1.8200	0.52	.	Q	.	.	.	V	.
22.817	1.8208	0.52	.	Q	.	.	.	V	.
22.833	1.8215	0.52	.	Q	.	.	.	V	.
22.850	1.8222	0.52	.	Q	.	.	.	V	.
22.867	1.8229	0.52	.	Q	.	.	.	V	.
22.883	1.8236	0.52	.	Q	.	.	.	V	.
22.900	1.8243	0.52	.	Q	.	.	.	V	.
22.917	1.8250	0.51	.	Q	.	.	.	V	.
22.933	1.8257	0.51	.	Q	.	.	.	V	.
22.950	1.8264	0.51	.	Q	.	.	.	V	.
22.967	1.8272	0.51	.	Q	.	.	.	V	.
22.983	1.8279	0.51	.	Q	.	.	.	V	.
23.000	1.8286	0.51	.	Q	.	.	.	V	.
23.017	1.8293	0.51	.	Q	.	.	.	V	.
23.033	1.8300	0.51	.	Q	.	.	.	V	.
23.050	1.8307	0.51	.	Q	.	.	.	V	.
23.067	1.8314	0.51	.	Q	.	.	.	V	.
23.083	1.8321	0.51	.	Q	.	.	.	V	.
23.100	1.8328	0.51	.	Q	.	.	.	V	.
23.117	1.8335	0.51	.	Q	.	.	.	V	.
23.133	1.8342	0.51	.	Q	.	.	.	V	.
23.150	1.8349	0.51	.	Q	.	.	.	V	.
23.167	1.8356	0.50	.	Q	.	.	.	V	.
23.183	1.8363	0.50	.	Q	.	.	.	V	.
23.200	1.8369	0.50	.	Q	.	.	.	V	.
23.217	1.8376	0.50	.	Q	.	.	.	V	.
23.233	1.8383	0.50	.	Q	.	.	.	V	.
23.250	1.8390	0.50	.	Q	.	.	.	V	.
23.267	1.8397	0.50	.	Q	.	.	.	V	.
23.283	1.8404	0.50	.	Q	.	.	.	V	.
23.300	1.8411	0.50	.	Q	.	.	.	V	.
23.317	1.8418	0.50	.	Q	.	.	.	V	.
23.333	1.8425	0.50	.	Q	.	.	.	V	.
23.350	1.8432	0.50	.	Q	.	.	.	V	.
23.367	1.8438	0.50	.	Q	.	.	.	V	.
23.383	1.8445	0.50	.	Q	.	.	.	V	.
23.400	1.8452	0.50	.	Q	.	.	.	V	.
23.417	1.8459	0.50	.	Q	.	.	.	V	.
23.433	1.8466	0.50	.	Q	.	.	.	V	.
23.450	1.8473	0.49	.	Q	.	.	.	V	.
23.467	1.8479	0.49	.	Q	.	.	.	V	.
23.483	1.8486	0.49	.	Q	.	.	.	V	.
23.500	1.8493	0.49	.	Q	.	.	.	V	.
23.517	1.8500	0.49	.	Q	.	.	.	V	.
23.533	1.8506	0.49	.	Q	.	.	.	V	.
23.550	1.8513	0.49	.	Q	.	.	.	V	.
23.567	1.8520	0.49	.	Q	.	.	.	V	.
23.583	1.8527	0.49	.	Q	.	.	.	V	.
23.600	1.8533	0.49	.	Q	.	.	.	V	.
23.617	1.8540	0.49	.	Q	.	.	.	V	.
23.633	1.8547	0.49	.	Q	.	.	.	V	.
23.650	1.8554	0.49	.	Q	.	.	.	V	.
23.667	1.8560	0.49	.	Q	.	.	.	V	.
23.683	1.8567	0.49	.	Q	.	.	.	V	.
23.700	1.8574	0.49	.	Q	.	.	.	V	.
23.717	1.8580	0.49	.	Q	.	.	.	V	.
23.733	1.8587	0.48	.	Q	.	.	.	V	.
23.750	1.8594	0.48	.	Q	.	.	.	V	.
23.767	1.8600	0.48	.	Q	.	.	.	V	.
23.783	1.8607	0.48	.	Q	.	.	.	V	.
23.800	1.8614	0.48	.	Q	.	.	.	V	.
23.817	1.8620	0.48	.	Q	.	.	.	V	.
23.833	1.8627	0.48	.	Q	.	.	.	V	.
23.850	1.8634	0.48	.	Q	.	.	.	V	.
23.867	1.8640	0.48	.	Q	.	.	.	V	.
23.883	1.8647	0.48	.	Q	.	.	.	V	.
23.900	1.8653	0.48	.	Q	.	.	.	V	.

```
   23.917      1.8660      0.48  .Q        .         .         .      V .
   23.933      1.8667      0.48  .Q        .         .         .      V .
   23.950      1.8673      0.48  .Q        .         .         .      V .
   23.967      1.8680      0.48  .Q        .         .         .      V .
   23.983      1.8686      0.48  .Q        .         .         .      V .
   24.000      1.8693      0.48  .Q        .         .         .      V .
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1441.0
              10%                           1441.0
              20%                           1425.0
              30%                            755.0
              40%                            580.0
              50%                            505.0
              60%                            365.0
              70%                            270.0
              80%                            195.0
              90%                            140.0
 ===============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
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Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Include a copy of the completed Pollutant Sources/Source Control Checklist used to document Source Control BMPs in Section H of this Template.

Attachment 1

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section H of the 2018 SMR WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table H.1 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	**… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE**		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ 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		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

Attachment 1

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **D1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	☒ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☐ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs.	State that final landscape plans will accomplish all of the following. ☐ Preserve existing native 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 stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. To insure 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 "What you should know for…..Landscape and Gardening" at: http://www.rcwatershed.org/about/materials-library/#1450469138395-bb76dd39-d810 ☒ Provide IPM information to new owners, lessees and operators.

Attachment 1

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **E.** Pools, spas, ponds, decorative fountains, and other water features.	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee 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 "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at: http://www.rcwatershed.org/about/materials-library/#1450469201433-f5f358c9-6008
☒ **F.** Food service	☒ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☒ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 Provide this brochure to new site owners, lessees, and operators.
❑ **G.** Refuse areas	❑ 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. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	❑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ❑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	❑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

Appendix 8
STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **H.** Industrial processes.	❑ Show process area.	❑ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **J.** Vehicle and Equipment Cleaning	☒ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	☒ If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ☒ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 ☐ Car dealerships and similar may rinse cars with water only.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations; "Outdoor Cleaning Activities;" and "Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants. Brochures can be found at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ **L.** Fuel Dispensing Areas	☒ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ☒ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		☒ The property owner shall dry sweep the fueling area routinely. ☐ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **N.** Fire Sprinkler Test Water		❑ Provide a means to drain fire sprinkler test water to the sanitary sewer.	❑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ❑ Boiler drain lines ❑ Condensate drain lines ❑ Rooftop equipment ❑ Drainage sumps ❑ Roofing, gutters, and trim. ❑ Other sources		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ❑ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ❑ Include controls for other sources as specified by local reviewer.	

Attachment 1

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **P.** Plazas, sidewalks, and parking lots.			☒ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Include the completed Operation and Maintenance Plan in this Appendix along with additional documentation of Finance and Maintenance Recording Mechanisms for the site. Refer to Sections 3.10 and 5 of the SMR WQMP and Section J of this Template.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Examples of material to provide in Appendix 10 may include but are not limited to the following:

- BMP Fact Sheets for proposed BMPs form Exhibit C: LID BMP Design Handbook of the SMR WQMP,
- Source control information and training material for site owners and operators,
- O&M training material,
- Other educational/training material related to site drainage and BMPs.

After the Storm

A Citizen's Guide to Understanding Stormwater

WHEN IT RAINS IT DRAINS

EPA 833-B-03-002

January 2003

THE YEAR OF CLEAN WATER
Celebration & Recommitment

EPA United States Environmental Protection Agency

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For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Why is stormwater runoff a problem?

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

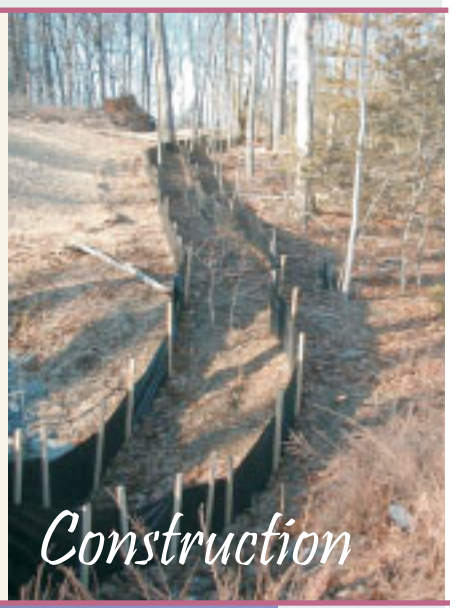
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

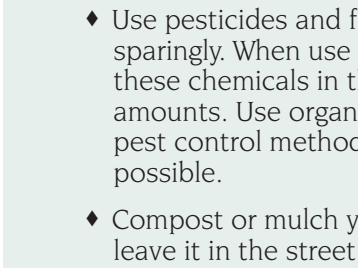
Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Agriculture



Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

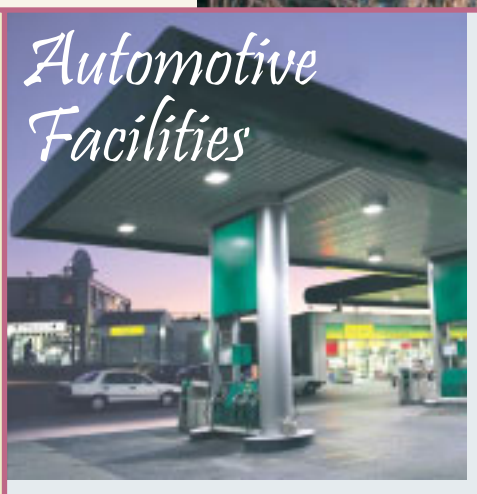
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

Automotive Facilities



Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your Regional Water Quality Control Board (RWQCB).

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairemont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
HAZARDOUS WASTE DISPOSAL: (909) 358-5055
RECYCLING INFORMATION: 1-800-366-SAVE
TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call:
(909) 955-1111.

StormWater
CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State Water Quality Control Board and the American Public Works Association, Storm Water Quality Task Force for the information provided in this brochure.

DID YOU KNOW . . .

YOUR FACILITY MAY NEED A STORM WATER PERMIT?

Many industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit

FIND OUT
IF YOUR FACILITY MUST OBTAIN A PERMIT

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."

National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are ***general descriptions*** of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

➜ Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;

➜ Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;

➜ Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;

➜ Hazardous waste treatment, storage, or disposal facilities;

➜ Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;

➜ Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;

➜ Steam electric power generating facilities, facilities that generate steam for electric power by combustion;

➜ Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;

➜ Sewage treatment facilities;

➜ Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee ($250 or $500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.

2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.

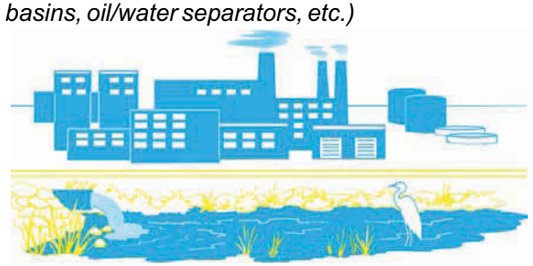
   Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.

3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.

4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... *any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.*

A BMP is . . . *a technique, process, activity, or structure used to reduce the pollutant content of a storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control (e.g. setting basins, oil/water separators, etc.)*



WARNING*: There are significant penalties for non-compliance: a minimum fine of $5,000 for failing to obtain permit coverage, and, up to $10,000 per day, per violation plus $10 per gallon of discharge in excess of 1,000 gallons.*

For Information:

Local Sewering Agencies in Riverside County:

City of Beaumont	(909) 769-8520
Belair Homeowners Association	(909) 277-1414
City of Banning	(909) 922-3130
City of Blythe	(760) 922-6161
City of Coachella	(760) 391-5008
Coachella Valley Water District	(760) 398-2651
City of Corona	(909) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(909) 928-3777
Elsinore Valley MWD	(909) 674-3146
Farm Mutual Water Company	(909) 244-4198
Idyllwild Water District	(909) 659-2143
Jurupa Community Services Dist.	(909) 685-7434
Lake Hemet MWD	(909) 658-3241
Lee Lake Water District	(909) 277-1414
March Air Force Base	(909) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8242
Rancho Caballero	(909) 780-9272
Rancho California Water Dist.	(909) 676-4101
Ripley, CSA #62	(760) 922-4909
Rubidoux Community Services Dist.	(909) 684-7580
City of Riverside	(909) 782-5341
Silent Valley Club, Inc	(909) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(909) 780-4170

Spill Response Agency:
Haz-Mat: (909) 358-5055
Hazardous Waste Disposal: (909) 358-5055
To Report Illegal Dumping or a Clogged Storm Drain: 1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

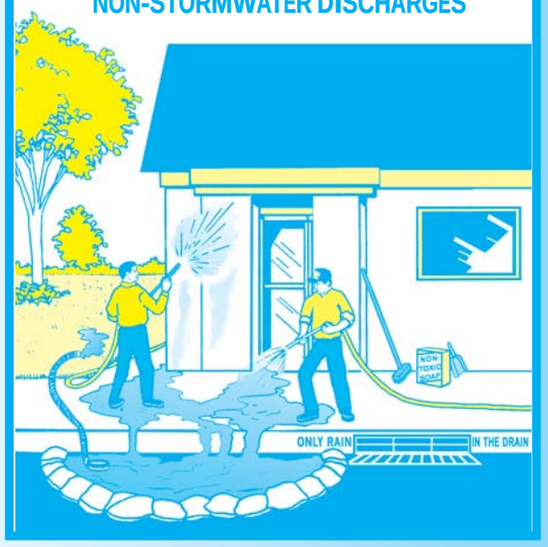
Riverside County gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES

NON-STORMWATER DISCHARGES



GUIDELINES for disposal of washwater from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water should go?

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to prevent flooding by carrying excess rainwater away from streets. . . it's not designed to be a waste disposal system. Since the storm drain system does not provide for water treatment, it often serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

Non-stormwater discharges such as washwater generated from outdoor cleaning projects often transport harmful pollutants into storm drains and our local waterways. Polluted runoff contaminates local waterways and poses a threat to groundwater resources.

Soaps, degreasers, automotive fluids, litter, and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles, and equipment can all pollute our waterways.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses of pollution prevention activities such as those described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes non-stormwater discharges containing oil, grease, detergents, degreasers, trash, or other waste materials.

PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways - without a Regional Water Quality Control Board permit or waiver - is ***strictly prohibited*** by local ordinances and state and federal law.

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Washwater Disposal

DO . . . Dispose of **small amounts** of **washwater from cleaning building exteriors, sidewalks, or plazas** onto landscaped or unpaved surfaces provided you have the owner's permission and the discharge will not cause flooding or nuisance problems, or flow into a storm drain.

DO NOT . . . Discharge **large amounts** of these types of washwater onto landscaped areas or soil where water may run to a street or storm drain. Wastewater from exterior cleaning may be pumped to a sewer line with specific permission from the local sewering agency.

DO . . . Check with your local sewering agency's policies and requirements concerning waste water disposal. **Water from many outdoor cleaning activities** may be acceptable for disposal to the sewer system. See the list on the back of this flyer for phone numbers of the sewering agencies in your area.

DO NOT . . . Pour **hazardous wastes** or toxic materials into the storm drain or sewer system . . . properly dispose of it instead. When in doubt, contact the local sewering agency! The agency will tell you what types of liquid wastes can be accepted.

DO . . . Understand that **water (without soap) used to remove dust from clean vehicles** may be discharged to a street or storm drain. **Washwater from sidewalk, plaza, and building surface cleaning** may go into a street or storm drain if ALL of the following conditions are met:

1) The surface being washed is free of residual oil stains, debris and similar pollutants by using dry cleanup methods (sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
2) Washing is done with water only - no soap or other cleaning materials.
3) You have not used the water to remove paint from surfaces during cleaning.

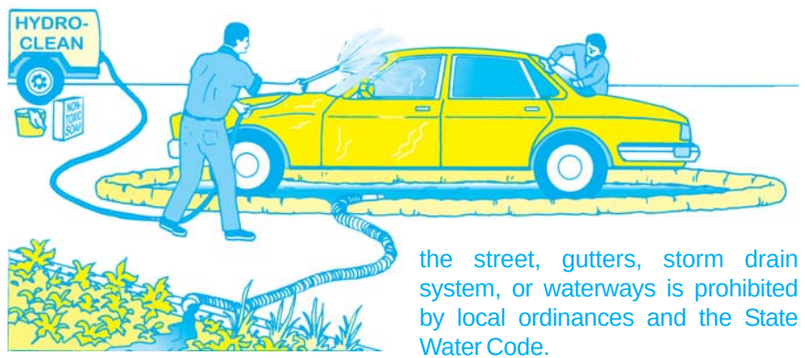
DO NOT . . . Dispose of water containing **soap or any other type of cleaning agent** into a storm drain or water body. This is a direct violation of state and/or local regulations. Because **wastewater from cleaning parking areas or roadways** normally contains metallic brake pad dust, oil and other automotive fluids, it should never be discharged to a street, gutter, or storm drain.

DO . . . Understand that **mobile auto detailers** should divert washwater to landscaped or dirt areas. Note: Be aware that soapy washwater may adversely affect landscaping; consult with the property owner. Residual washwater may remain on paved surfaces to evaporate; sweep up any remaining residue. If there is sufficient water volume to reach the storm drain, collect the runoff and obtain permission to pump it into the sanitary sewer. Follow local sewering agency's requirements for disposal.

DO NOT . . . Dispose of left over cleaning agents into the gutter, storm drain or sanitary sewer.

Regarding Cleaning Agents:

If you must use soap, use biodegradable/phosphate free cleaners. Avoid use of petroleum based cleaning products. Although the use of nontoxic cleaning products is strongly encouraged, ***do*** understand that these products can still degrade water quality and, therefore, the discharge of these products into



the street, gutters, storm drain system, or waterways is prohibited by local ordinances and the State Water Code.

Note: When cleaning surfaces with a high pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low pressure hose, can remove additional materials that can contaminate local waterways.

Other Tips to Help Protect Our Water . . .

Screening Wash Water

A thorough dry cleanup before washing (without soap) surfaces such as building exteriors and decks without loose paint, sidewalks, or plaza areas, *should be sufficient to protect storm drains.* **However**, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, washwater should first pass through a "20 mesh" or finer screen to catch the solid material, which should then be disposed of in the trash.

Drain Inlet Protection/ Containing & Collecting Wash Water

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- You can also use vacuum booms, containment pads, or temporary berms to keep wash water away from the street, gutter, or storm drain.

Equipment and Supplies

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information check catalogs such as New Pig (800-468-4647), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

Helpful telephone numbers and links:

Riverside County Water Agencies

City of Banning	(951) 922-3130
City of Beaumont/Cherry Valley	(951) 845-9581
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
City of Corona	(951) 736-2263
City of Hemet	(951) 765-3710
City of Norco	(951) 270 5607
City of Riverside Public Works	(951) 351-6140
City of San Jacinto	(951) 654-4041
Coachella Valley Water District	(760) 398-2651
Desert Water Agency (Palm Springs)	(760) 323-4971
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley Municipal Water District	(951) 674 3146
Elsinore Water District	(951) 674-2168
Farm Mutual Water Company	(951) 244-4198
Idyllwild Water District	(951) 659-2143
Indio Water Authority	(760) 391-4129
Jurupa Community Services District	(951) 685-7434
Lee Lake Water	(951) 658-3241
Mission Springs Water	(760) 329-6448
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
Riverside Co. Service Area #51	(760) 227-3203
Rubidoux Community Services District	(951) 684-7580
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

REPORT ILLEGAL STORM DRAIN DISPOSAL

1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers

Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

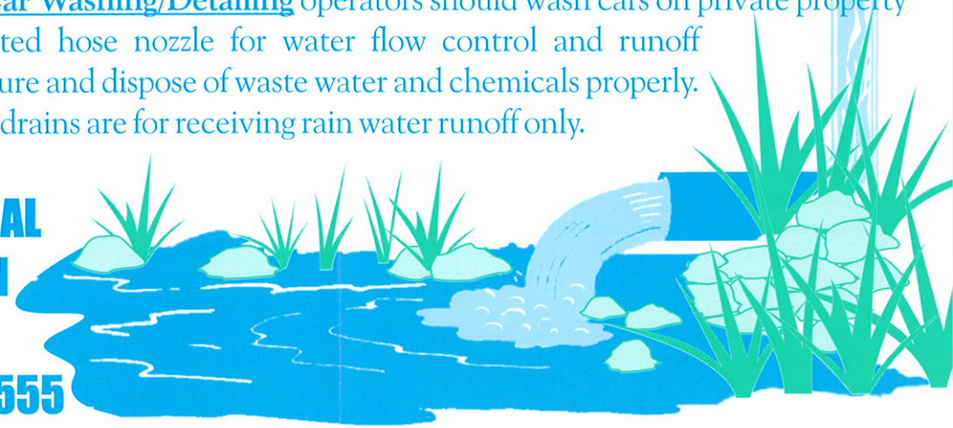
Do you know where street flows actually go?

Storm drains are NOT connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep storm water clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing wash water to the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.

Report illegal storm drain disposal,
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them for being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.

When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlet by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

IRRIGATION RUNOFF

STORMWATER FACT SHEET

Report Irrigation Runoff or Stormwater Pollution:
800.506.2555

RIVERSIDE COUNTY
WATERSHED PROTECTION

OVERWATERING

Overwatering causes irrigation runoff that may contain pollutants such as pesticides, herbicides, fertilizers, pet waste, yard waste, and sediments which can be hazardous to residents and harmful to our environment. Runoff can also serve as a transport mechanism for other pollutants already on the ground or in the curb gutter. Irrigation runoff entering the storm drain system is an illicit discharge.

BEST PRACTICES

Urban runoff begins when yards and landscaped areas are over-irrigated. Irrigation systems require regular maintenance and visual inspection of the system should be performed to prevent over-spray, leaks, and other problems that result in runoff to storm drains, curbs and gutters.

You can **prevent pollution** by conserving water on your property. Water during cooler times of the day (before 10am and after 6pm).

- Adjust sprinklers to stop overspray and runoff.
- Make needed repairs immediately.
- Use drip irrigation, soaker hoses, or micro-spray systems.
- Use an irrigation timer to pre-set watering times.
- Use a control nozzle or similar mechanism when watering by hand.
- Switch to a water-wise landscape - native plants need less fertilizers, herbicides, pesticides and water.

PROTECT OUR WATERSHED

Many people think that when water flows into a storm drain it is treated, but the storm drain system and the sanitary sewer system are not connected. Everything that enters storm drains flows untreated directly into our creeks, rivers, lakes, beaches and ultimately the ocean. Storm water often contains pollutants, including chemicals, trash, and automobile fluids, all of which pollute our watershed and harm fish and wildlife.

Whether at home or work, you can help reduce pollution and improve water quality by using the above Best Management Practices (BMP's) as part of your daily clean up and maintenance routine.

HOME & GARDEN

Yard waste and household toxics such as paints, solvents, and pesticides often make their way into the San Bernardino County storm drain system and DO NOT GET TREATED before reaching the Santa Ana River. These wastes pollute our drinking water and make our waters unhealthy and unsafe for people and wildlife.

Follow these practices to help prevent stormwater pollution...

In Your Home...

Household products such as paints, paint thinners, drain openers, motor oil, wood polishes, insecticides & herbicides, oven cleaners, and many other general cleaners frequently get dumped on the ground, or into a gutter, street or storm drain. Instead of polluting our stormwaters, take these items to a household hazardous waste collection facility. Call 1-800-OILY-CAT for a facility in your area.

Fertilizers and Pesticides...

Fertilizers and pesticides are often carried into our storm drains by sprinkler runoff. To minimize stormwater pollution, use organic or non-toxic pesticides and fertilizers as directed, and keep them away from ditches, gutters and storm drains. Store them in a covered area, off the ground, to prevent contact with water. For additional gardening questions, call the San Bernardino Master Gardeners at 387-2182.

Trimmin' the Garden...

Decaying organic materials that enter our storm drains, such as grass, leaves, yard clippings, and pet waste, will use up oxygen in nearby streams, stressing aquatic life. Prevent stormwater pollution by not blowing, sweeping, raking or hosing yard waste into the street, gutter, or storm drain. Alternatively, leave grass clippings on your lawn after mowing, or compost your clippings and yard waste. Pet waste should not be composted, but rather disposed of in the trash to prevent the potential spread of diseases.

Planting In The Yard

Produce less yard waste and save water by planting low maintenance trees and shrubs. Also, conserve water and minimize unwanted runoff by using drip irrigation, soaker hoses, or micro-spray systems to water vegetation.

For more information, call your city's stormwater representative

HOME REPAIR & REMODELING

Paints, solvents, adhesives, dusts, sediments, pesticides and household toxics commonly associated with home repair and remodeling activities often make their way into the San Bernardino County storm drain system and DO NOT GET TREATED before reaching the Santa Ana River. These wastes pollute our drinking water, and make our waters unhealthy and unsafe for people and wildlife.

Follow these practices to help prevent stormwater pollution...

Household Hazardous Wastes...

Common household cleaners, paint products, and wallpaper & tile adhesives contain toxic substances. Dispose of these products properly. REMEMBER: Toxic wastes should never enter the storm drain system. For disposal information, call 1-800-OILY-CAT.

Construction...

Keep all construction debris away from the street, gutter and storm drain, and if possible, schedule grading and excavation projects for dry weather. Cover excavated material and stockpiles of asphalt, sand, etc. with plastic tarps, and prevent erosion by planting fast-growing annual and perennial grasses, which will shield and bind the soil.

Landscape & Gardening...

Use fertilizers and pesticides as directed. Keep them away from ditches, gutters and storm drains, and store them in a covered area to prevent contact with rain water. Also, minimize runoff and conserve water by using drip irrigation, soaker hoses, or micro-spray systems. REMEMBER: Do not deposit leaves into the street, gutter, or storm drain.

Painting...

CLEANUP... Avoid cleaning brushes or rinsing paint containers into a street, gutter, or storm drain. For water-based paints, “brush out” as much paint as possible, and rinse in the sink. For oil-based paints, “brush out” as much paint as possible, clean with thinner, and then filter and reuse thinner or solvent.

REMOVAL... Paint stripping residue, chips & dust from marine paints, and paints containing lead or tributyl tin are hazardous wastes. Sweep them up and call 1-800-OILY-CAT for disposal information.

RECYCLING... Recycle or reuse leftover paint by using it for touch-ups, or by giving it to someone who can us it, such as a theatre group, school, city or other community organization. If you’re unable to give it away, contact 1-800-OILY-CAT for disposal information.

Concrete & Masonry...

Store bags of cement and plaster away from gutters and storm drains, and under cover, protected from rainfall, runoff and wind. REMEMBER: Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.

For more information, call your city’s stormwater representative

PAINTING

Paints, solvents, adhesives, and toxic chemicals from painting operations often make their way into the San Bernardino County storm drain system and DO NOT GET TREATED before reaching the Santa Ana River. These wastes pollute our drinking water, and make our waters unhealthy and unsafe for people and wildlife.

Follow these practices to help prevent stormwater pollution...

General Business Practices...

Keep all paint products and wastes away from the street, gutter, and storm drains. Reuse paint thinner by setting used thinner aside in a closed, labeled jar to settle out paint particles, and then pouring off the clear liquid for future use. Wrap dried paint residue in newspaper and dispose of it in the trash.

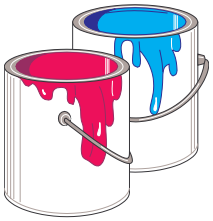
Water-Based Paints...

Purchase water-based paints whenever possible. Look for products labeled “latex” or “clean up with water.”

Recycle or Reuse Paints...

Recycle/reuse leftover paint by using it for touch-ups, or by giving it to someone who can use it, such as a theatre group, school, city or other community organization. If you’re unable to give it away, contact 386-8401 for information on hazardous waste pick-up.

Paint Cleanup...



Avoid cleaning brushes and rinsing paint containers in a street, gutter, or storm drain. For water-based paints, “brush out” as much paint as possible and and rinse in the sink. For oil-based paints, “brush out” as much paint as possible, clean with thinner, and then filter and reuse thinner or solvent.

Paint Removal...

Chemical paint stripping residue, chips & dust from marine paints, and paints containing lead or tributyl tin are hazardous wastes. For disposal information, call 386-8401. Also, when stripping or cleaning building exteriors with high-pressure water, block storm drains and divert the washwater onto a designated dirt area. Check with your local wastewater treatment authority to find out if you can collect building cleaning water and discharge it to the sewer.

For more information, call your city’s stormwater representative

Saltwater Pools

- Salt water pools, although different from regular pools, are in fact, sanitized using chlorine. A salt-chlorine generator separates the chlorine and sodium molecules in salt and reintroduces them into the pool water. The same harmful effects of chlorine still apply.
- A salt water pool is still maintained with chemicals such as Muriatic acid, soda ash and sodium carbonate to help keep a proper pH, total Alkalinity, Calcium Hardness and Stabilizer levels.

- It may be illegal to discharge salt water to land. The salt may kill plants and the build-up of salt in soil puts animals, plants, and groundwater at risk. Consult your city representatives to determine local requirements regarding salt water drainage.

NEVER put unused chemicals into the trash, onto the ground or down a storm drain.

IMPORTANT: The discharge of pollutants into the street, gutter, storm drain system or waterways - without a permit or waiver - is strictly prohibited by local ordinances, state and federal law. Violations may result in monetary fines and enforcement actions.

Helpful telephone numbers and links

Riverside County Water Agencies:

City of Banning	(951) 922-3130
City of Beaumont/Cherry Valley	(951) 845-9581
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
City of Corona	(951) 736-2263
City of Hemet	(951) 765-3710
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Jurupa Community Services District	(951) 685-7434
Lee Lake Water	(951) 658-3241
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Riverside Co. Service Area #51	(760) 227-3203
Rubidoux Community Services District	(951) 684-7580
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

CALL 1-800-506-2555 to:

- Report clogged storm drains or illegal storm drain disposal from residential, industrial, construction and commercial sites into public streets, storm drains and/or water bodies.
- Find out about our various storm drain pollution prevention materials.
- Locate the dates and times of Household Hazardous Waste (HHW) Collection Events.
- Request adult, neighborhood, or classroom presentations.
- Locate other County environmental services.
- Receive grasscycling information and composting workshop information.

Or visit our
Riverside County Flood Control and Water Conservation District
website at: www.rcflood.org

Other links to additional storm drain pollution information:

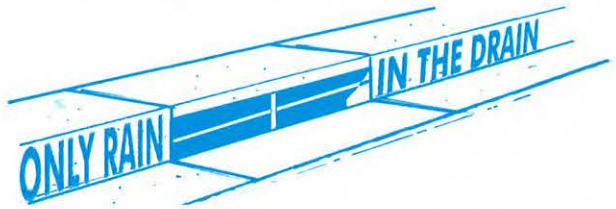
- County of Riverside Environmental Health: www.rivcoeh.org
- State Water Resources Control Board: www.waterboards.ca.gov
- California Stormwater Quality Association: www.casqa.org
- United States Environmental Protection Agency (EPA): www.epa.gov/compliance/assistance (compliance assistance information)

Riverside County's, "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

Guidelines for Maintaining your...

Swimming Pool, Jacuzzi and Garden Fountain

Where does the water go?



Pool, Jacuzzi and Fountain wastewater and rain water runoff (also called stormwater) that reach streets can enter the storm drain and be conveyed directly into local streams, rivers and lakes.

A storm drain's purpose is to prevent flooding by carrying rain water away from developed areas. Storm drains are not connected to sanitary sewers systems and treatment plants!

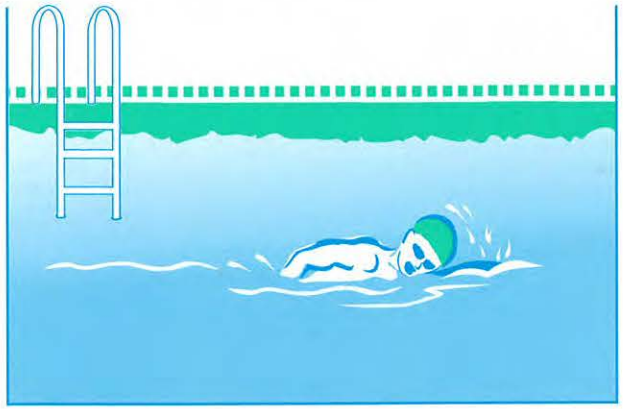
Wastewater, from residential swimming pools, Jacuzzis, fishponds and fountains, often contains chemicals used for sanitizing or cleansing purposes. Toxic chemicals (such as chlorine or copper-based algaecides) may pollute the environment when discharged into a storm drain system.

The Cities and County of Riverside have adopted ordinances that prohibit the discharge of wastewater to the street and storm drain system.

Discharge Regulations

Regulatory requirements for discharging wastewater from your pool may differ from city to city. Chlorinated water should not be discharged into the street, storm drain or surface waters. Check with your water agency to see if disposal to the sanitary sewer line is allowed for pool discharges (see reverse for Riverside County sewer agencies).

If allowed, a hose can be run from the pool Jacuzzi, or fountain to the private sewer cleanout, washing machine drain or a sink or bathtub.



If you cannot discharge to the sewer, you may drain your fountain, pool, or jacuzzi to your landscaping by following these guidelines:

First, reduce or eliminate solids (e.g. debris, leaves or dirt) in the pool water and allow the chemicals in the pool water to dissipate before draining the pool (this could take up to 7 days, verify using a home pool test kit).

Second, slowly drain to a landscaped area away from buildings or structures. Control the flow to prevent soil erosion; it may take more than one day to empty. Do not allow sediment to enter the street, gutter or storm drain.

Maintenance & Chemicals

Cleaning Filters

Filter rinse water and backwash must be discharged to the sanitary sewer, on-site septic tank and drain field system (if properly designed and adequately sized), or a seepage pit. Alternatively, rinse water or backwash may be diverted to landscaped or dirt areas. Filter media and other non-hazardous solids should be picked up and disposed of in the trash.

Algaecides

Avoid using copper-based algaecides unless absolutely necessary. Control algae with chlorine, organic polymers or other alternatives to copper-based pool chemicals. Copper is a heavy metal that can be toxic to aquatic life when you drain your pool.

Chemical Storage and Handling

- Use only the amount indicated on product labels
- Store chlorine and other chemicals in a covered area to prevent runoff. Keep out of reach of children and pets.
- Chlorine kits, available at retail swimming pool equipment and supply stores, should be used to monitor the chlorine and pH levels before draining your pool.
- Chlorine and other pool chemicals should never be allowed to flow into the gutter or storm drain system.

Take unwanted chemicals to a Household Hazardous Waste (HHW) Collection Event. There's no cost for taking HHW items to collection events – it's FREE! Call **1-800-506-2555** for a schedule of HHW events in your community.

Adopt a pet from your local animal shelter or adoption centers at pet stores. A variety of animals, from purebred tomixe d breed are waiting for loving arms and good homes. Consider volunteering at your local animal shelters. Volunteers, donations, food, newspapers, old towels and linens are needed to help the animals.

RIVERSIDE COUNTY
ANIMAL SHELTER LOCATIONS:

BLYTHE
16450 West Hobson Way
Blythe, CA 92225
760-921-7857

HEMET
800 South Sanderson
Hemet, CA 92545
909 925-8025

INDIO
45-355 Van Buren
Indio, CA 92201
760-347-2319

RIVERSIDE
5950 Wilderness Avenue
Riverside, CA 92504
909-358-7387

FOR ALL OTHER AREAS
CALL 1-888-636-7387

Riverside County gratefully acknowledges the City of Los Angeles Stormwater Program for the design concept of this brochure.

What's the Scoop?

TIPS FOR A HEALTHY PET AND A HEALTHIER ENVIRONMENT

CREATE A HEALTHY ENVIRONMENT in and around your home by following these simple pet practices. Your pet, family and neighbors will appreciate their clean comfortable surroundings.

HOUSEHOLD PETS

We all love our pets, but pet waste is a subject everyone likes to avoid. Pet waste left on trails, sidewalks, streets, and grassy areas is immediately flushed into the nearest waterway when it rains. Even if you can't see water near you, the rain or waste water WASHES all that PET WASTE and BACTERIA INTO THE STORMDRAIN, where it travels to your neighborhood creek or lake untreated. These animal droppings also contain nutrients that can promote the growth of algae, if they enter our streams and lakes. The risk of STORMWATER CONTAMINATION INCREASES, if pet wastes is allowed to accumulate in animal pen areas or left on sidewalks, streets, or driveways where runoff can carry them to storm sewers.

Some of the DISEASES THAT CAN SPREAD from pet waste are:
Campylobacteriosis — a bacterial infection that causes diarrhea in humans.
Salmonellosis — the most common bacterial infection transmitted to humans from animals.
Toxocarisis — roundworms transmitted from animals to humans.

Flies and other pest insects can also increase when pet waste is disposed of improperly, becoming a nuisance and adding yet another vector for disease transmission.

WHAT CAN YOU DO?

- SCOOP up pet waste and flush it down the toilet.
- NEVER DUMP pet waste into a storm drain or catch basin.
- USE the complimentary BAGS or mutt mitts offered in dispensers at local parks.
- CARRY EXTRA BAGS when walking your dog and make them available to other pet owners who are without.
- TEACH CHILDREN how to properly clean up after a pet.
- TELL FRIENDS AND NEIGHBORS about the ill effects of animal waste on the environment. Encourage them to clean up after pets.

Did You Know . . .
that Californians illegally dump about 80 million gallons of motor oil each year?

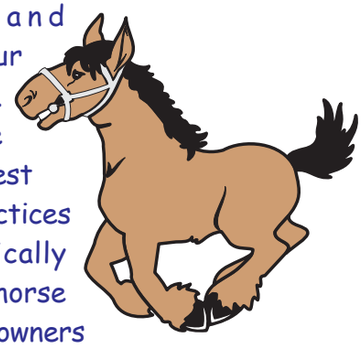
Many communities have "Scoop the Poop" laws that govern pet waste cleanup. Some of these laws specifically require anyone who walks an animal off of their property to carry a bag, shovel, or scooper. Any waste left by the animal must be cleaned up immediately. CALL YOUR LOCAL CODE ENFORCEMENT OFFICER to find out more about pet waste regulations.

Pets are only one of the many fixtures of suburban America that add to water pollution. Lawn fertilizers, rinse water from driveways and motor oil commonly end up in streams and lakes. **CALL 1-800-506-2555 FOR HOUSEHOLD HAZARDOUS WASTE COLLECTION LOCATION AND DATES.** Maintain your automobile to avoid leaks. Dispose of used vehicle fluids properly. Your pets can be poisoned if they ingest gas, oil or antifreeze that drips onto the pavement or is stored in open containers.

NEVER HOSE VEHICLE FLUIDS into the street or gutter. USE ABSORBENT MATERIALS such as cat litter to clean-up spills. SWEEP UP used absorbent materials and place in the trash.

HORSES AND LIVESTOCK

Fortunate enough to own a horse or livestock? You, too, can play a part in protecting and cleaning up our water resources. The following are a few simple Best Management Practices (BMPs) specifically designed for horse owners and landowners with horses.



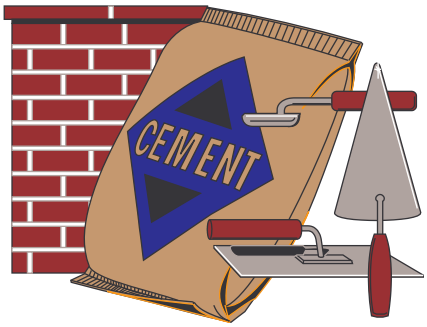
- STORE your manure properly. Do not store unprotected piles of manure in places where runoff may enter streams, or flood waters may wash the manure away. Place a cover or tarp over the pile to keep rainwater out.
- CHECK with your local conservation district to design manure storage facilities to protect water quality. These structures usually consist of a concrete pad to protect ground water and a short wall on one or two sides to make manure handling easier.
- TRY composting – A vegetative cover placed around buildings or on steeper slopes can help minimize erosion and absorb nutrients while improving the appearance of your property. In addition, avoid costlier erosion controls, vegetative covers will provide animals with better traction during wet or icy conditions.

- KEEP animals out of steams – Designed stream crossings provide a safe, easy way for horses and livestock to ford streams. Fencing encourages the use of the crossing instead of the streambed to navigate streams. This will allow vegetation to stabilize stream banks and reduce sediment pollution.
- MOW pastures to proper height, six inches is typically recommended.
- Material STORAGE SAFETY TIPS – Many of the chemicals found in barns require careful handling and proper disposal. When using these chemicals, be certain to follow these common sense guidelines:
  - Buy only what you need.
  - Treat spills of hoof oils like fuel spill. Use kitty litter to soak up the oil and dispose in a tightly sealed plastic bag.
  - Store pesticides in a locked, dry, well-ventilated area.
  - Protect stored fertilizer and pesticides from rain and surface water.

Call 1-800-506-2555 to locate your local conservation district to find out what to do with your current backyard manure pile, how to re-establish a healthy pasture, what to do about weeds, and what grasses grow best in your soils.

Thank you for doing your part to protect your watershed, the environment, and the equestrian way of life in your community!

FRESH CONCRETE & MORTAR APPLICATION



Cement, cement wash, gravel, asphalt, solvents, and motor oil from fresh concrete and mortar activities often make their way into the San Bernardino County storm drain system and DO NOT GET TREATED before reaching the Santa Ana River. These wastes pollute our drinking water, and make our waters unhealthy and unsafe for people and wildlife.

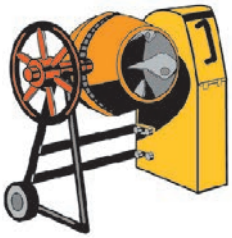
Follow these practices to help prevent stormwater pollution...

General Business Practices...

Schedule excavation and grading work during dry weather, and in case it rains, prevent materials from contacting stormwater by storing them under cover. Also, secure open bags of cement to keep wind-blown cement powder away from streets, gutters and storm drains.

During Construction...

Prevent mortar and cement from entering the storm drains by placing erosion controls (i.e., berms or temporary vegetation) down-slope to capture runoff. When breaking up paving, be sure to pick up all pieces and recycle them at a crushing company; small amounts of excess dry concrete, grout and mortar can be disposed of in the trash. Setup small mixers on tarps or heavy drop cloths to allow for easy cleanup of debris. REMEMBER: Never bury waste material -- recycle or dispose of it as hazardous waste. Call 386-8401 for recycling and disposal information.



Handling Materials & Wastes...

Minimize wastes when ordering materials by ordering only the amounts needed to complete the job. Whenever possible, use recycled or recyclable materials. Recycle broken asphalt, concrete, wood, and cleared vegetation. Unrecyclable materials must be taken to an appropriate landfill or disposed of as hazardous waste. For recycling and disposal information, call 386-8401.

Cleaning up...

When cleaning up after driveway or sidewalk construction, wash concrete dust onto designated dirt areas, not down the driveway or into the street or storm drain. Also, wash out concrete mixers and equipment only in specified wash-out areas, where the water flows into containment ponds. Cement washwater can be recycled by pumping it back into cement mixers for reuse. REMEMBER: Never dispose of cement washout into driveways, streets, gutters, storm drains or drainage ditches.

For more information, call your city's stormwater representative