APPENDIX D: PART 1

Project WQMP

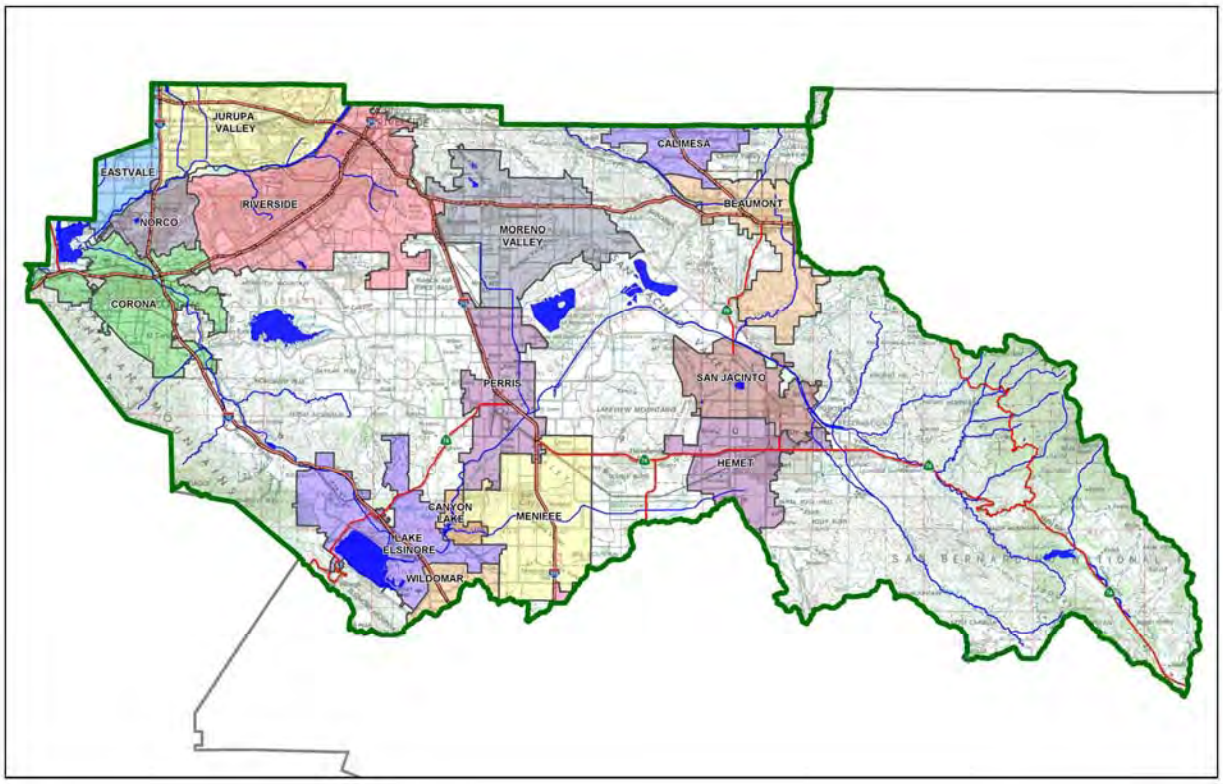
Project Specific Preliminary Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Mikasa Luxury Villas Residential Development Project

Public Works No: GP-2022-02467

Design Review/Case No: PR-2021-001114



☒ **Preliminary**
☐ **Final**

Original Date Prepared: 01/18/2022

Revision Date(s): 12/13/2022, 09/27/2023

Prepared for Compliance with Regional Board Order No. **R8-2010-0033**

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OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for A & L Capital, LLC by Andrew Grechuta, RCE 52312 for the Mikasa Luxury Villas project.

This WQMP is intended to comply with the requirements of the City of Riverside for, Planning Case No. PR-2021-001114 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 Stormwater BMPs 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 Riverside Water Quality Ordinance (Municipal Code Section 14.12.315).

"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."

	12/18/2022
Owner's Signature	Date
A & L Capital, LLC	Developer
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 measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Andrew Grechuta	12/18/2022
Preparer's Signature	Date
Andrew Grechuta	Civil Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: C52312

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Section A: Project and Site Information

Luxury apartment complexes in Riverside

PROJECT INFORMATION	
Type of Project:	Commercial
Ward Area:	Ward Area 6
Community Name:	
Development Name:	Mikasa Luxury Villas
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.920141, -117.479078	
Project Watershed and Sub-Watershed: Santa Ana; Santa Ana River, Reach 3/4	
APN(s): 143-040-011 & 143-040-012	
Map Book and Page No.: Lots 23 & 29 of El Rincon, Book 11, Pages 85 and 86 of maps.	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Apartment complexes
Proposed or Potential SIC Code(s)	6513
Area of Impervious Project Footprint (SF)	174,159
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	Insert text here
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
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	Insert text here.
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	Insert text here.
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 NRCS soils type(s) present on the site (A, B, C and/or D)	B&C
What is the Water Quality Design Storm Depth for the project?	0.63”

A.1 Maps and Site Plans

Appendix 1 includes a map of the local vicinity and existing site. In addition, WQMP Site Plan, located in Appendix 1, includes the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

A.2 Receiving Waters

In order of upstream to downstream, the receiving waters that the project site is tributary to are as follows. A map of the receiving waters is included in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	Hydrologic Unit	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Temescal Creek, Reach 1	801.25	None	REC1, REC2, WARM, WILD	N/A

A.3 Additional Permits/Approvals required for the Project:

Table A.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 (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA 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 Riverside Conditional Use Permit	☐ Y	☒ N
City of Riverside Design Review	☒ Y	☐ N
City of Riverside Building Permit	☒ Y	☐ N
City of Riverside Grading Permit	☒ Y	☐ N
City of Riverside Construction Permit	☒ Y	☐ N

Section B: Optimize Site Utilization (LID Principles)

Site Optimization

Does the project identify and preserve existing drainage patterns? If so, how? If not, why?

> *The proposed conditions involve full development of the property as attached apartment units as 18 buildings. Drainage patterns will generally remain as in the existing condition, from the center of the property, being a high point, draining towards the public streets. The project will be split into 3 drainage management areas. The water will drain into drainage inlets and will be treated via biotreatment BMP (Filterra). Treat stormwater will be conveyed via parkway drain to the curbs and gutters along Hedrick Ave and Jones Ave.*

Does the project identify and protect existing vegetation? If so, how? If not, why?

> *The proposed conditions involve full development of the property with 24% of proposed pervious area.*

Does the project identify and preserve natural infiltration capacity? If so, how? If not, why?

> *The soil within the project site is silty sand which has a low infiltration rate. Potential liquification of existing soils restrict infiltration.*

Does the project identify and minimize impervious area? If so, how? If not, why?

> *Project's nature does not allow substitution of pavement for landscaping. Landscaping has been proposed to the maximum extent practicable.*

Does the project identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

> *Roof runoff is directed to the proposed paved area to run over as a sheet flow and discharge into on-site proposed biotreatment BMP (Filterra) through underground storm pipe and drainage inlet. The site is not a hillside. Stormwater runoff is diverted/ piped to the drainage inlet/ storage basin areas. Overflow to flow to the public street gutter and catch basin.*

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)	Area (Sq. Ft.)	DMA Type
DMA A1	Concrete or Asphalt	58,000	D
DMA A2	Turf Block	16,946	A
DMA B1	Concrete or Asphalt	62,140	D
DMA B2	Turf Block	18,089	A
DMA C1	Concrete or Asphalt	34,019	D
DMA C2	Turf Block	14,091	A

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA A2	16,946	Sheet flow-landscape area	Sprinklers
DMA B2	18,089	Sheet flow-landscape area	Sprinklers
DMA C2	14,091	Sheet flow-landscape area	Sprinklers

Table C.3 Type 'B', Self-Retaining Areas NOT APPLICABLE

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]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas NOT APPLICABLE

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

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

DMA Name or ID	BMP Name or ID
DMA A1	BMP2- Filterra
DMA B1	BMP2- Filterra
DMA C1	BMP2- Filterra

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (ref: Chapter 2.4.4 of the WQMP Guidance Document)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report is required by the City of Riverside to confirm present and past site characteristics that may affect the use of Infiltration BMPs, see Appendix 3.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☒ Y ☐ N

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 WQMP Guidance Document in Chapter 2.4.5. 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

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?	X	
If Yes, list affected DMAs: A,B,C possible liquification		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs: All DMAs		
…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:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here: A,B,C possible liquification		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs.

D.2 Harvest and Use Assessment

The following conditions apply*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐ Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verified with the City of Riverside).

☐ The Design Capture Volume will be addressed using Infiltration Only BMPs. (Harvest and Use BMPs are still encouraged, but are not required as the Design Capture Volume will be infiltrated or evapotranspired).

☒ None of the above.

Harvest and Use BMPs need not be assessed for the site.

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: N/A

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

The project EIATIA factor: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: N/A

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
N/A	N/A

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: N/A

Project Type: Commercial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

The project TUTIA factor: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: N/A

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
N/A	N/A

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

None

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

The project factor: N/A

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Average Daily non-potable demand (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

For the project, the following applies:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ 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 City of Riverside to discuss this option. If you checked this box, then proceed to Section E to document your alternative compliance measures.

☐ None of the above.

D.4 Feasibility Assessment Summaries

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A1	☐	☐	☐	☒	☐
DMA B1	☐	☐	☐	☒	☐
DMA C1	☐	☐	☐	☒	☐

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume 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 a method approved by the City of Riverside. Utilize the worksheets found in the LID BMP Design Handbook or consult with the City of Riverside to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume 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.3 DCV Calculations for LID 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**	***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]			
DMA A1	*58,000*	*Concrete or Asphalt*	*1*	*0.89*	*51,736*	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA A2	*16,946*	*Turf block*	*0.1*	*0.11*	*1871.8*			
DMA B1	*62,140*	*Concrete or Asphalt*	*1*	*0.89*	*55,429.2*			
DMA B2	*18,089*	*Turf block*	*0.1*	*0.11*	*1998.1*			
DMA C1	*34,019*	*Concrete or Asphalt*	*1*	*0.89*	*30,344.9*			
DMA C2	*14,091*	*Turf block*	*0.1*	*0.11*	*1556.5*			
	$A_T = \Sigma[A]$				Σ= [D] = **142,936.5**	[E] = **0.63**	$[F] = \frac{[D]x[E]}{12}$ = **7444.6**	[G] **8,280**

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A of the WQMP Guidance Document

[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to confirmation of LID waiver approval by the Regional Board). For the project, the following applies:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Regional Board and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

If 1st box is checked, then remove entirely the following subsections E.1 through E.4

If 2nd box is checked, then list affected DMAs here with a brief narrative.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

The project does create a Hydrologic Condition of Concern, not meeting the criteria for HCOC Exemption as shown below:

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The City of Riverside has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the City of Riverside

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

Results included in Table F.1 below and hydrologic analysis included in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Flow (CFS)	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (Prado Dam, Santa Ana River) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

F.2 HCOC Mitigation

As an alternative to the HCOC Exemption Criteria above, HCOC criteria is considered mitigated if the project meets one of the following conditions, as indicated:

☐ a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

☐ b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

☐ c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

☒ d. None of the above.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

The following table identifies the potential sources of runoff pollutants for this project and specifies how they are addressed through permanent controls and operational BMPs:

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Roadways	Provide storm drain stenciling and signage (S1)	Education for property owners, tenants, and occupants (N1)
Residential Lots	Driveways of minimal widths.	Activity Restrictions (N2)
Irrigated landscaped areas	Use efficient irrigation system and landscape design. (S4)	Irrigation System and Landscape Management (N3) Common Area Litter Control (N4)
Parking Lot		Street Sweeping (N5)
		Drainage Facility Inspection and Maintenance (N6)

Section H: Construction Plan Checklist

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Plan Sheet Number(s)	Latitude / Longitude
BMP 1	ADS Flexstorm inlet filter	WQMP Exhibit	33.920380, -117.479927 33.920217, -117.479929 33.920069, -117.479942
BMP 2	Filterra	WQMP Exhibit	33.920021, -117.480197 33.921050, -117.480221 33.919819, -117.477979

Section I: Operation, Maintenance and Funding

As required by the City of Riverside, the following Operation, Maintenance and Funding details are provided as summarized:

1. A means to finance and implement facility maintenance 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.
3. An outline of general maintenance requirements for the Stormwater BMPs 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.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance.

See Appendix 9 for a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on site, and an agreement assigning responsibility for maintenance and providing for inspections and certification.

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

Maintenance Mechanism:

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

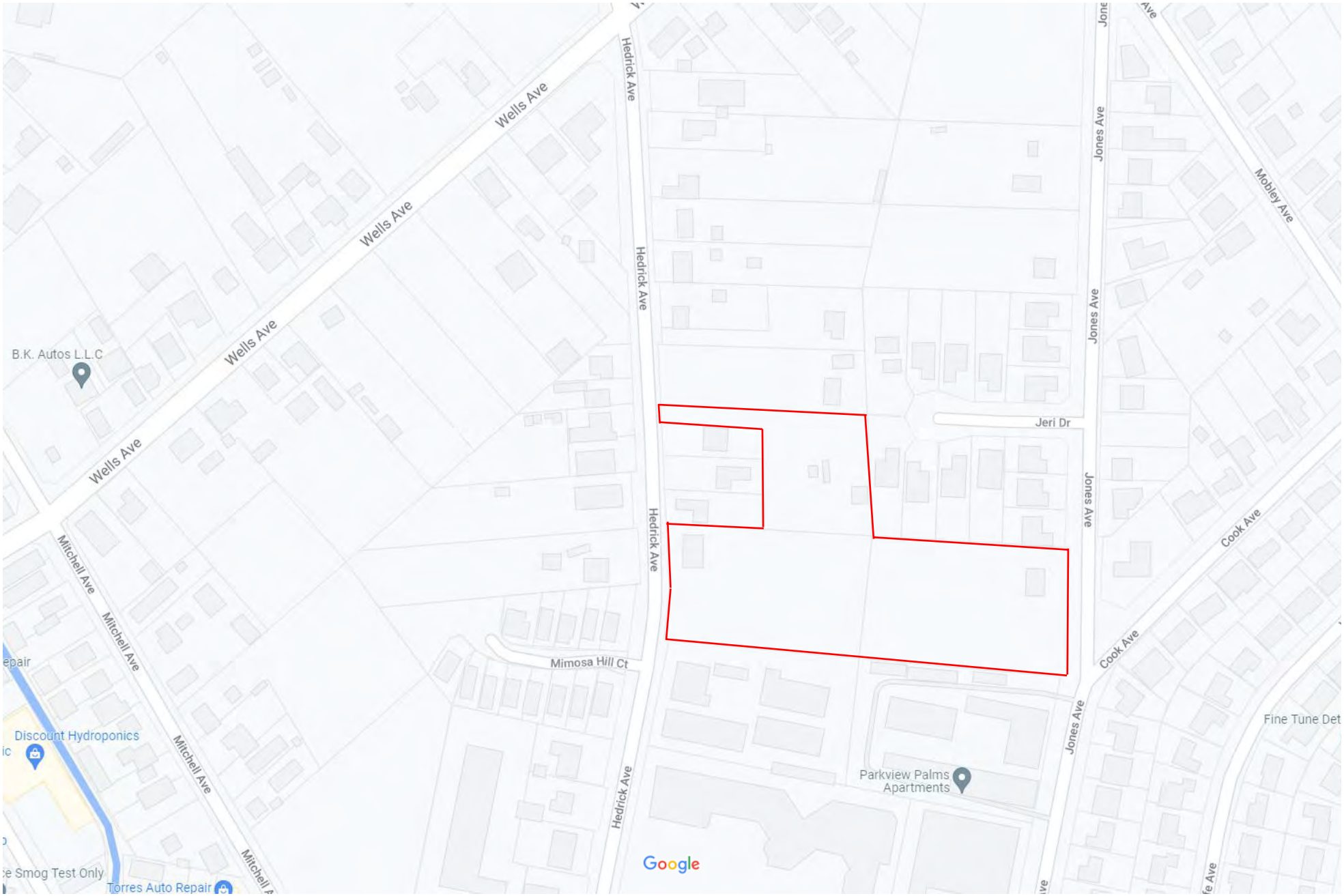
☒ Y ☐ N

Operation and Maintenance Plan and Maintenance Mechanism is included in Appendix 9. Educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP are included in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Google Maps



Map data ©2022 Google 100 ft

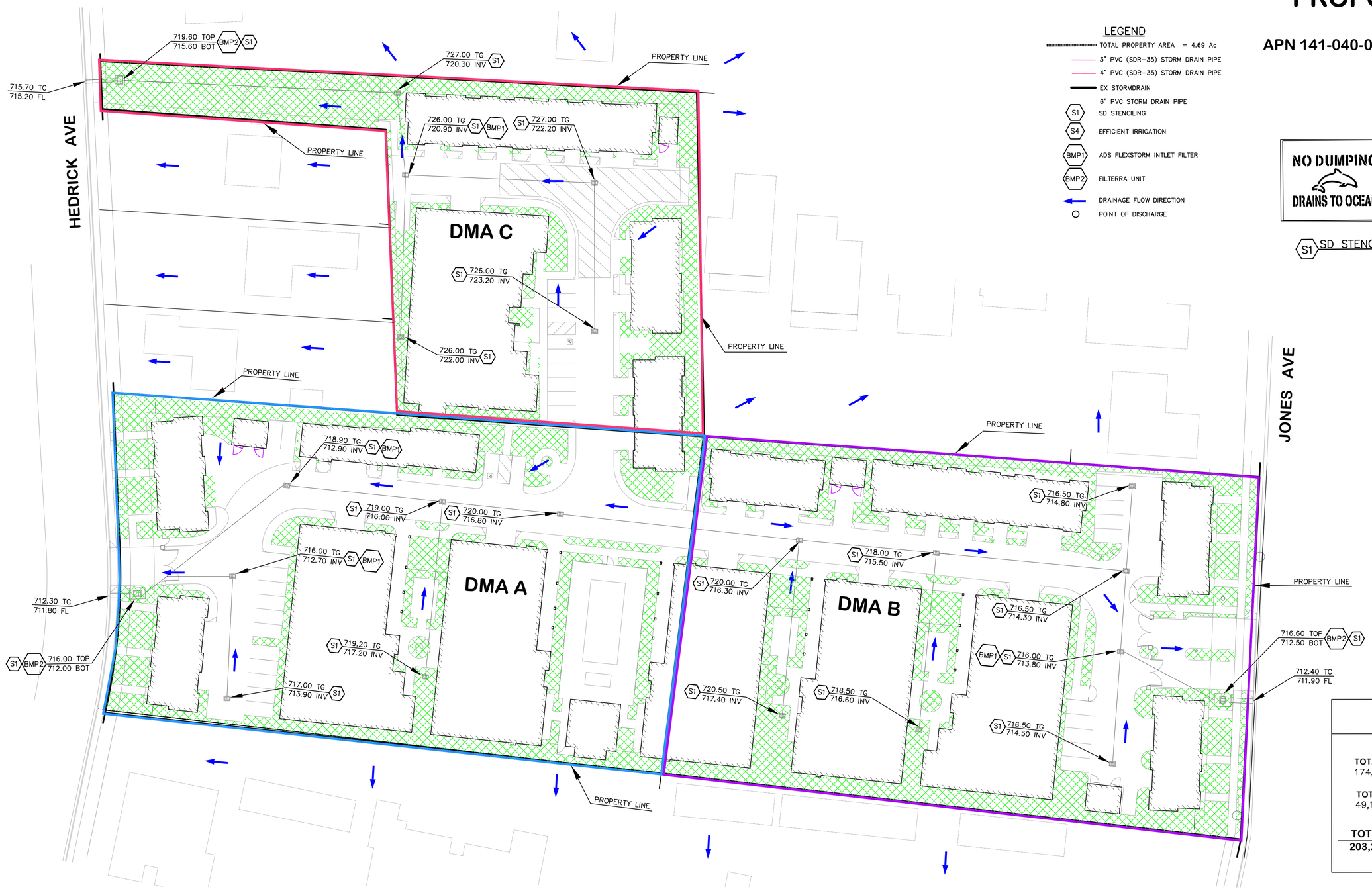
PRELIMINARY WQMP SITE PLAN

PROPOSED CONDITION
MIKASA VILLAS

APN 141-040-010, 143-040-011 & 143-040-012

4663 Hedrick Ave

Riverside, CA 92505



LEGEND

- TOTAL PROPERTY AREA = 4.69 Ac
- 3" PVC (SDR-35) STORM DRAIN PIPE
- 4" PVC (SDR-35) STORM DRAIN PIPE
- EX STORMDRAIN
- 6" PVC STORM DRAIN PIPE
- S1 SD STENCILING
- S4 EFFICIENT IRRIGATION
- BMP1 ADS FLEXSTORM INTLET FILTER
- BMP2 FILTERRA UNIT
- DRAINAGE FLOW DIRECTION
- POINT OF DISCHARGE

NO DUMPING
DRAINS TO OCEAN

S1 SD STENCIL

SCALE: 1"=30'

DMA A	
74,946 SF 1.72 Ac	
DMA A-1 58,000 SF	77%
DMA A-2 16,946 SF	23%

PROPOSED FILTERRA (FTPD0710-D) UNIT
DIMENSIONS: 7' X 10'
REQUIRED QBMP = 0.2 CFS
TREATMENT RATE = 0.28 CFS

DMA B	
80,229 SF 1.84 Ac	
DMA B-1 62,140 SF	77%
DMA B-2 18,089 SF	23%

PROPOSED FILTERRA (FTPD08105-D) UNIT
DIMENSIONS: 8' X 10.5'
REQUIRED QBMP = 0.3 CFS
TREATMENT RATE = 0.34 CFS

DMA C	
48,110 SF 1.10 Ac	
DMA C-1 34,019 SF	71%
DMA C-2 14,091 SF	29%

PROPOSED FILTERRA (FTPD0606-D) UNIT
DIMENSIONS: 6' X 6'
REQUIRED QBMP = 0.1 CFS
TREATMENT RATE = 0.14 CFS

TOTAL SITE AREA	
203,285 SF 4.66 Ac	
TOTAL IMPERVIOUS AREA 174,159 SF	86%
TOTAL PERVIOUS AREA 49,126 SF	24%
TOTAL CALCULATED AREA 203,285 SF 4.67 Ac	100%

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227-2600
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BENCHMARK: DESIGNATION: 2C-101-75

DESCRIBED BY OCS 2003-FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPED "2C-101-75", SET IN THE NORTHEASTERLY CORNER OF A 4 FT. BY 7 FT. CONCRETE CATCH BASIN.
MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSENTION OF BUENA VISTA AVENUE AND VAN BUREN STREET, 370 FT. NORTHERLY OF THE CENTERLINE OF BUENA VISTA. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

ELEVATION 312.589 FT

BASIS OF BEARINGS:

THIS SURVEY WAS BASED ON THE EASTERLINE OF ANNA MARIE, BEING N89°59'32"W AS SHOWN ON PARCEL MAP NO. 2009-118 IN THE CITY OF YORBA LINDA, COUNTY OF ORANGE, STATE OF CALIFORNIA

LOT DESCRIPTION:

REGISTERED PROFESSIONAL ENGINEER
ANDREW GRECHUTA
No. C52312
CIVIL
STATE OF CALIFORNIA

G & G ENGINEERING, INC.
1251 N. MANASSERO ST., STE. 402
ANAHEIM, CA 92807
PHONE: (714) 970-7220
FAX: (714) 970-7244
EMAIL: INFO@MYGNG.COM
CIVIL ENGINEERING
LAND PLANNING
LAND SURVEYING
APPROVED BY ANDREW GRECHUTA 09-27-2023
ANDREW GRECHUTA DATE
R.C.E. NO C52312 EXP. DATE: 12-31-22

REV	BY	DESCRIPTION	DATE	ACCP'D

DESIGNED BY: AG DRAWN BY: MN CHECKED BY: AG

CONTENT:
WQMP SITE PLAN

OWNER: TONY BARBER

4663 HEDRICK AVE
RIVERSIDE, CA 92886

SCALE:
AS SHOWN

SHEET 1 OF 1

JOB No: 910

Appendix 2: Construction Plans

Grading and Drainage Plans

PRELIMINARY GRADING PLAN
FOR MIKASA LUXURY VILLAS

LEGEND

- PROPERTY LINE
- RETAINING WALL
- FLOW LINE DIRECTION
- 2% SURFACE SLOPE
- A CROSS-SECTION

SITE ADRESS:

4618 JONES AVENUE
RIVERSIDE, CA 92505
&
4663 HEDRICK AVENUE
RIVERSIDE, CA 92505
&
4705 HEDRICK AVENUE
RIVERSIDE, CA 92505

PROJECT TEAM:

OWNER/DEVELOPER: A&L CAPITAL, LLC
P.O. BOX 893130
TEMECULA, CA 92589

DESIGNER: HUGO E. LEPE
CENTURY HERITAGE BUILDERS, INC.
1240 N VAN BUREN ST. #209
ANAHEIM, CA 92807
TEL: 714-844-2494

CIVIL ENGINEER: ANDREW GRECHUTA
G&G ENGINEERING INC.
1251 N MANASSERO ST. #402
ANAHEIM, CA 92807
CONTACT: ANDREW GRECHUTA
TEL: 714-970-7220

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN IS SITUATED IN THE COUNTY OF RIVERSIDE, STAGE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

LOTS 23 AND 29 OF EL RINCON, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11, PAGES 85 & 86 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

ASSESSOR'S PARCEL NUMBER: 143-040-011 AND 143-040-012 AND 143-040-010

AREA:

EXISTING NUMBER OF LOTS:	3 LOTS
EXISTING AREA:	3.54 ACRES
LOT 23	1.72 ACRES
LOT 29	1.82 ACRES
LOT 29	1.82 ACRES

PLAN DATE: 06-04-23

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MIKASA LUXURY VILLAS
4618 JONES AVE & 4663 HEDRICK AVE
RIVERSIDE, CA 92505

G & G ENGINEERING, INC.
1251 N. MANASSERO ST., STE. 402
ANAHEIM, CA 92807
CIVIL ENGINEERING
LAND PLANNING
LAND SURVEYING
PHONE: (714) 970-7220
FAX: (714) 970-7244
EMAIL: INFO@MYGNG.COM

PREPARED UNDER SUPERVISION OF:

ANDREW GRECHUTA — DATE

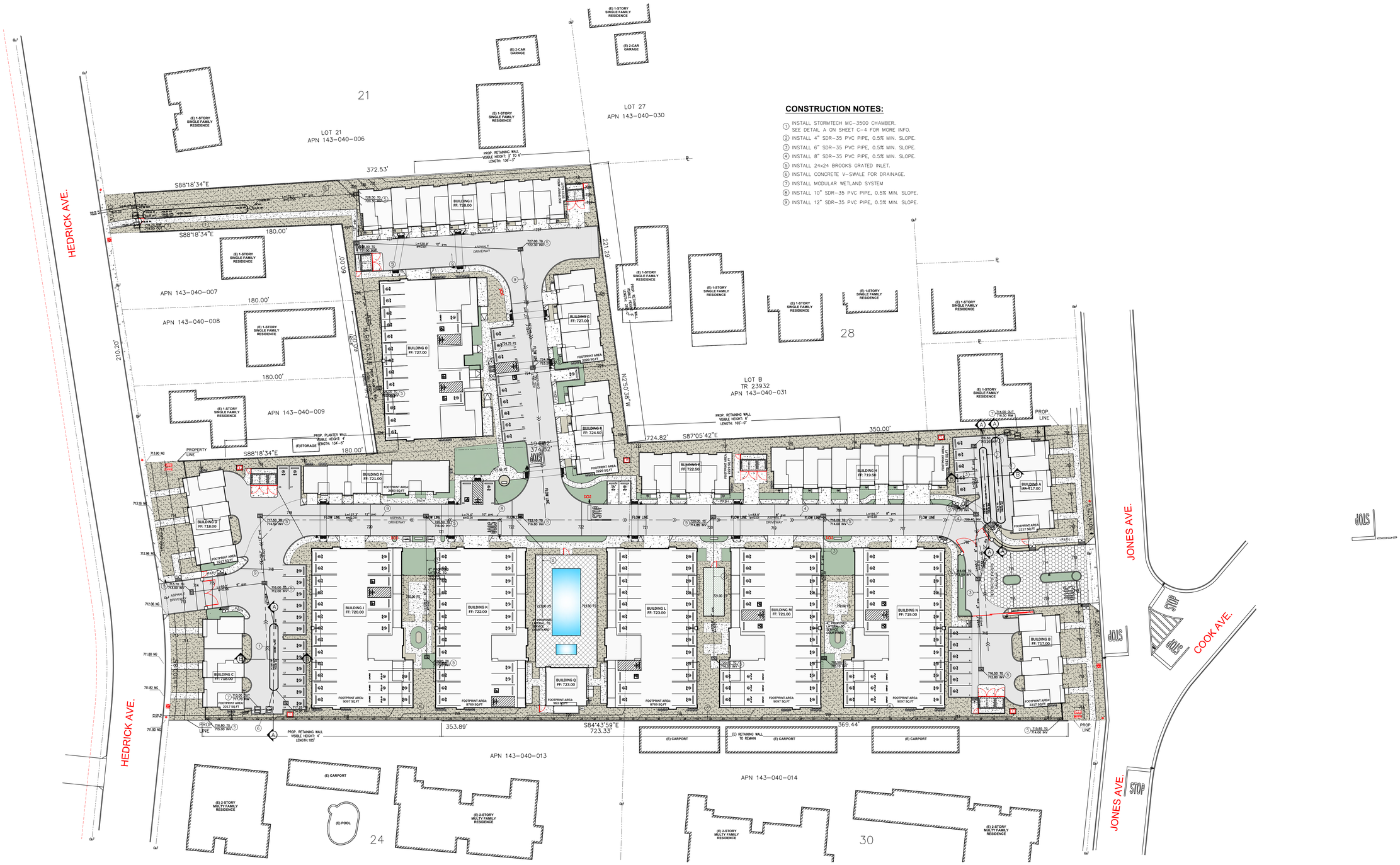
R.C.E. NO. C523312 — EXP. DATE: 12-31-23

REVISIONS

PRELIMINARY GRADING PLAN

SHEET NO.
C-2

PRELIMINARY STORM DRAIN PLAN FOR MIKASA LUXURY VILLAS



CONSTRUCTION NOTES:

1. INSTALL STORMTECH MC-3500 CHAMBER. SEE DETAIL A ON SHEET C-4 FOR MORE INFO.
2. INSTALL 4" SDR-35 PVC PIPE, 0.5% MIN. SLOPE.
3. INSTALL 6" SDR-35 PVC PIPE, 0.5% MIN. SLOPE.
4. INSTALL 8" SDR-35 PVC PIPE, 0.5% MIN. SLOPE.
5. INSTALL 24x24 BROOKS GRATED INLET.
6. INSTALL CONCRETE V-SWALE FOR DRAINAGE.
7. INSTALL MODULAR WETLAND SYSTEM
8. INSTALL 10" SDR-35 PVC PIPE, 0.5% MIN. SLOPE.
9. INSTALL 12" SDR-35 PVC PIPE, 0.5% MIN. SLOPE.

PLAN DATE: 07-27-23

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MIKASA LUXURY VILLAS
4618 JONES AVE & 4663 HEDRICK AVE
& 4705 HEDRICK AVE
RIVERSIDE, CA 92505

G & G ENGINEERING, INC.
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ANAHEIM, CA 92807
CIVIL ENGINEERING
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LAND SURVEYING
PHONE: (714) 970-7220
FAX: (714) 970-7244
EMAIL: INFO@MYGNG.COM

PREPARED UNDER SUPERVISION OF:
ANDREW GRECHUTA — DATE
R.C.E. NO. C523312 — EXP. DATE: 12-31-23

REVISIONS

PRELIMINARY STORM DRAIN PLAN

SHEET NO.
C-3

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

See Soils Report

Appendix 4: Historical Site Conditions

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

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Flow Rate, Q_{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	G&G Engineering, Inc.	Date	9/20/2023
Designed by	Andrew Grechuta	Case No	
Company Project Number/Name	Mikasa Luxury Villas		

BMP Identification

BMP NAME / ID: BMP 2- FILTERRA

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMA A1	*58000*	*Concrete or Asphalt*	*1*	*0.89*	*51736*			
DMA A2	*16946*	*Turf block*	*0.1*	*0.110458*	*1871.8*			
	74946		***Total***		**53607.8**	**0.20**	***0.2***	***0.28***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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	G&G Engineering, Inc.	Date	9/20/2023
Designed by	Andrew Grechuta	Case No	
Company Project Number/Name	Mikasa Luxury Villas		

BMP Identification

BMP NAME / ID: BMP 2- FILTERRA

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Rainfall Intensity (in/hr)	Design Flow Rate (cfs)	Proposed Flow Rate (cfs)
DMA B1	62140	Concrete or Asphalt	1	0.89	55428.9			
DMA B2	18089	Turf block	0.1	0.110458	1998.1			
	80229	Total			57427	0.20	0.3	0.34

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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	G&G Engineering, Inc.	Date	9/20/2023
Designed by	Andrew Grechuta	Case No	
Company Project Number/Name	Mikasa Luxury Villas		

BMP Identification

BMP NAME / ID: BMP 2- FILTERRA

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

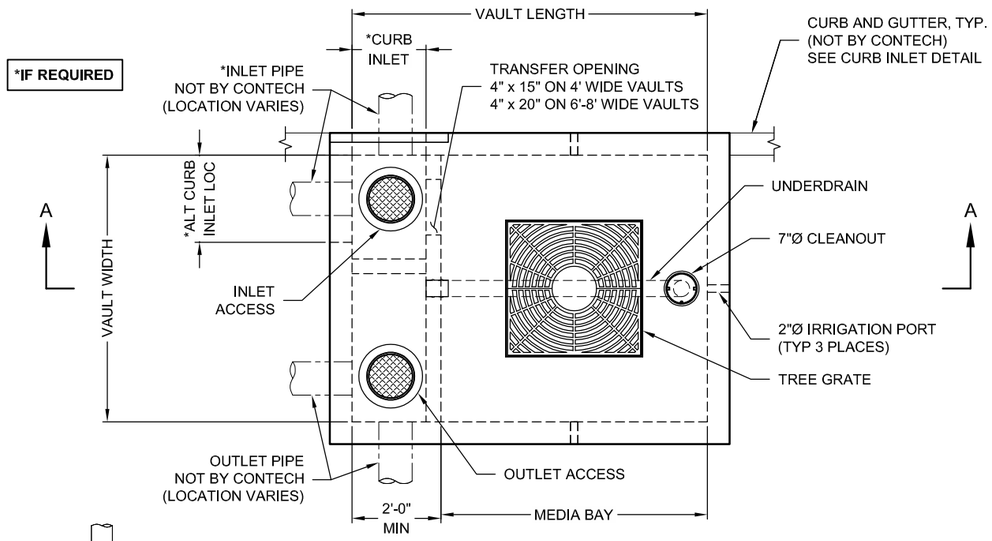
Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

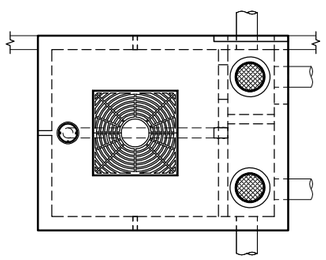
DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMA C1	*34019*	*Concrete or Asphalt*	*1*	*0.89*	*30344.9*			
DMA C2	*14091*	*Turf block*	*0.1*	*0.110458*	*1556.5*			
	48110		***Total***		**31901.4**	**0.20**	***0.1***	***0.14***

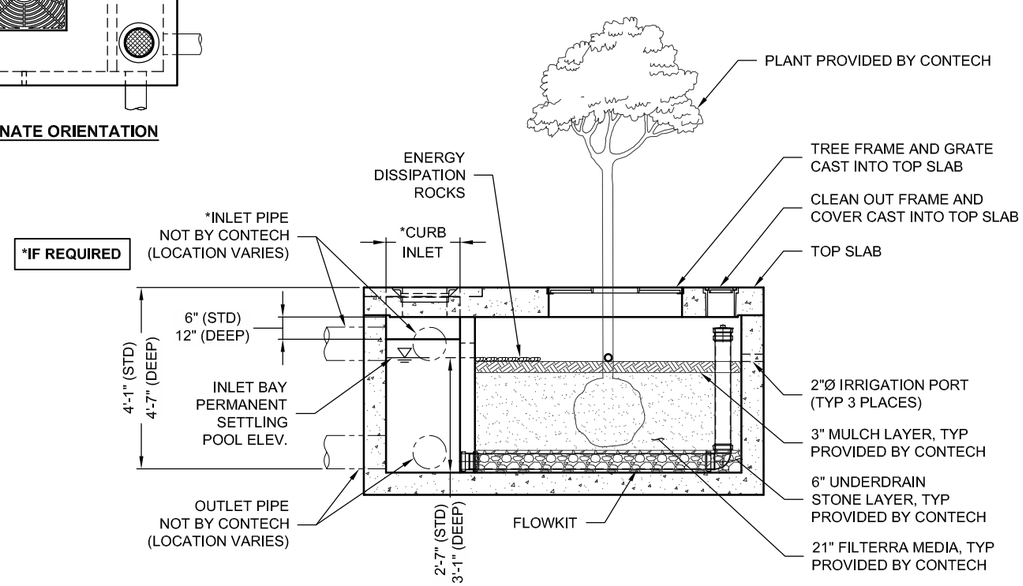
Notes:



PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION.

FTPD STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404	N/A CA	4 x 4	4 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD04045	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0406	N/A MID-ATL	4 x 6	4 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD045058	MID-ATL ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0604	ALL	6 x 4	6 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0606	ALL	6 x 6	6 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0608	ALL	6 x 8	6 x 10	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0610	ALL	6 x 10	6 x 12	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0710	ALL	7 x 10	7 x 13	2'-6"	2.1	24"/24"	(1) 4' x 4'
FTPD08105	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"/24"	(1) 4' x 4'
FTPD08125	ALL	8 x 12.5	8 x 16	3'-0"	2.5	24"/24"	(2) 4' x 4'

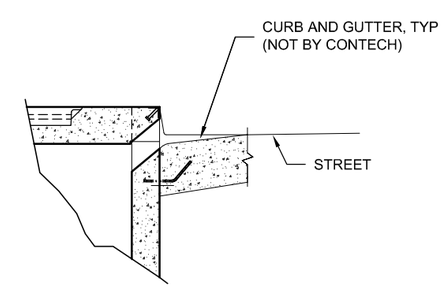
N/A = NOT AVAILABLE

FTPD-D DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-D	N/A CA	4 x 4	4 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD04045-D	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0406-D	N/A MID-ATL	4 x 6	4 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD045058-D	MID-ATL ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0604-D	ALL	6 x 4	6 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0606-D	ALL	6 x 6	6 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0608-D	ALL	6 x 8	6 x 10	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0610-D	ALL	6 x 10	6 x 12	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0710-D	ALL	7 x 10	7 x 13	2'-6"	6.8	24"/24"	(1) 4' x 4'
FTPD08105-D	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"/24"	(1) 4' x 4'
FTPD08125-D	ALL	8 x 12.5	8 x 16	3'-0"	8.2	24"/24"	(2) 4' x 4'

N/A = NOT AVAILABLE

*MAX BYPASS FLOW IS INTERNAL WEIR FLOW . SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE CURB INLET FLOW CAPACITY



CURB INLET DETAIL

filterra

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,625,485; 7,425,261; 7,533,412. RELATED FOREIGN PATENTS.

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FILTERRA PEAK DIVERSION (FTPD)
CONFIGURATION DETAIL

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FTPD - PEAK DIVERSION\FTPD\LAYOUT DETAILS\DWG\FTPD - FILTERRA PEAK DIVERSION CONFIG DTL.DWG 11/16/2017 3:04 PM

		Filterra Type			
Media bed	175 in/hr (cfs)	FT	FTPD	FTIBC	FTBSV
4x4	0.065	X	X	X	X
4x6 / 6x4	0.097	X	X		
4x8 / 8x4	0.097	X		X	X
6x6	0.146		X		
4x13 / 13x4	0.211	X		X	X
8x8	0.259	X			
8x10 / 10x8	0.324	X			
6x8 / 8x6	0.194	X		X	X
6x12 / 12x6	0.292	X		X	X
8x10.5	0.340		X		
8x12	0.389	X		X	X
8x12.5	0.405		X		
14x8	0.454	X		X	X
16x8	0.519	X		X	X
18x8	0.583	X		X	X
20x8	0.648	X		X	X
22x8	0.713	X		X	X