



MEMORANDUM

Date: June 08, 2022
To: David Blalock, P.E.
City of Chula Vista
From: Alisa S. Vialpando
Subject: **Otay Ranch Village 8 West Lot 'C' Design Review and Rough Grading Plans:
Master Hydrology, Storm Water Quality/HydroModification Management Plan Compliance, DR22-0006**

The Drainage Study for Otay Ranch Village 8 West Chula Vista Tract No. 19-03 dated October 25, 2019 (Approved by City of Chula Vista December 30, 2019) was prepared for the Village 8 West development and serves as the approved 'Master' Hydrologic and Hydraulic technical report for the site. The report was prepared by Hale Engineering and outlines the approved stormwater measures included in the Rough Grading Plans for Chula Vista Tract No 19-03, Otay Ranch, Village 8 West, (Dwg# 14011, 14012, 14014, 18016, 18024, 18025 & 18041). The Priority Development Project Storm Water Quality Management Plan (SWQMP) for Otay Ranch Village 8 West Chula Vista Tract No. 19-03 dated January 15, 2020 (Approved by City of Chula Vista January 16, 2020) was prepared for the Village 8 West development and serves as the approved 'Master' Pollutant and Hydromodification Flow Control technical report for the site. The report was prepared by Hale Engineering and outlines the approved stormwater measures included in the Rough Grading Plans for Chula Vista Tract No 19-03, Otay Ranch, Village 8 West, (Dwg# 14011, 14012, 14014, 18016, 18024, 18025 & 18041).

Peak flow attenuation, hydromodification and water quality requirements for the overall site is primarily being addressed via regional biofiltration basins. Sizing of each basin was based on the land use of its tributary area. The *Otay Ranch Village 8 West Parcel 'C'* site is tributary to the northern regional basin which discharges into Wolf Canyon, and it was sized to address water quality and hydromodification requirements.

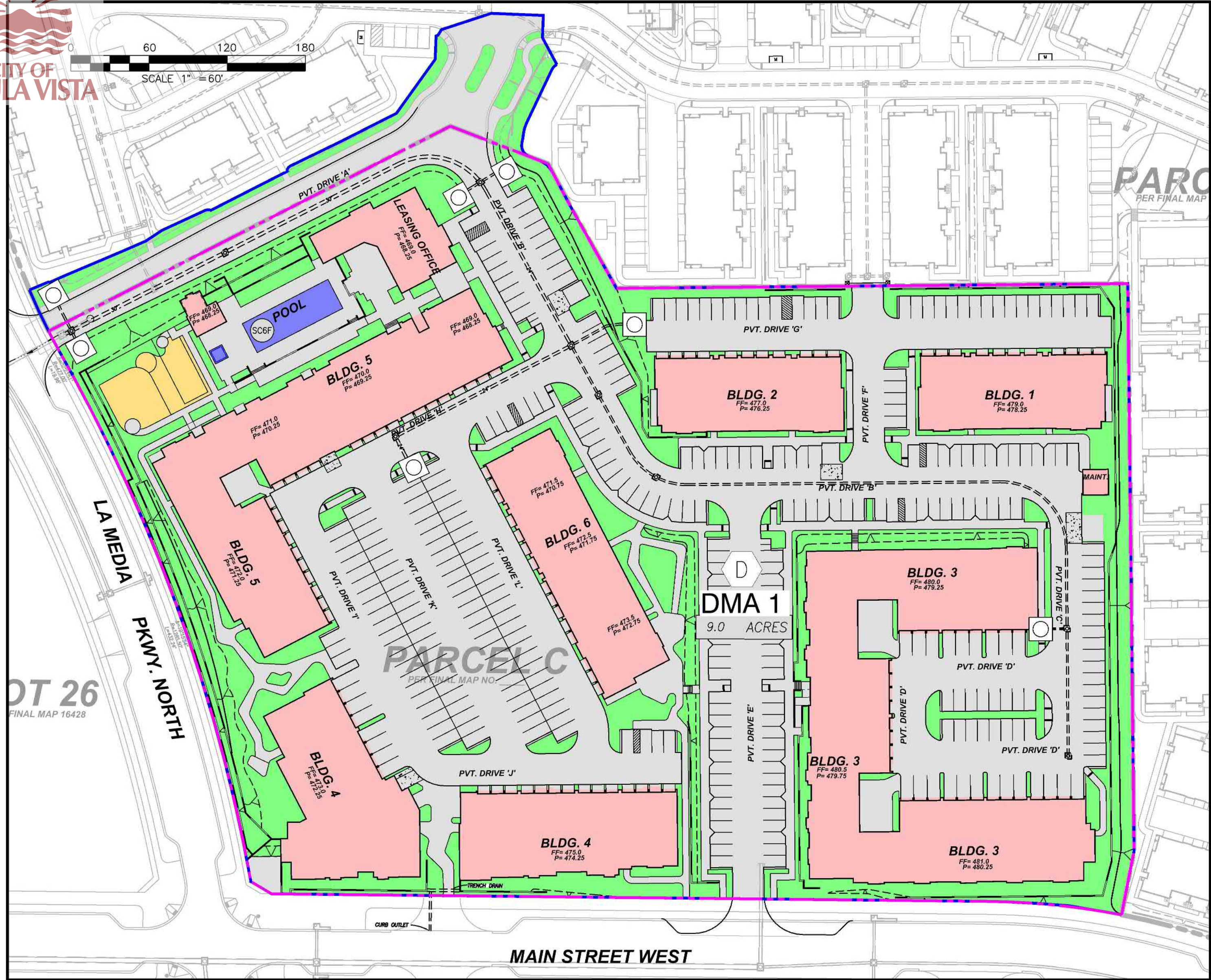
The calculations included in the approved Hale Engineering, Final Engineering, Master Drainage Study and SWQMP referenced above, assumed a composite imperviousness of 80% for the lot associated with the *Otay Ranch Village 8 West Parcel 'C'* site location. The current design plans indicate a composite imperviousness of 78.8% for the lot associated with the *Otay Ranch Village 8 West Parcel 'C'* site location. Therefore, the *Otay Ranch Village 8 West Parcel 'C'* site design layout and proposed Rough Grading Plan is in compliance with the Hydrologic, Hydraulic, and Pollutant and Flow Control assumptions within the approved Master Technical Studies.

Should you have any questions regarding the information contained within this memo, please contact me at (858) 558-4500.

Sincerely,

Alisa S. Vialpando, RCE 47945
President



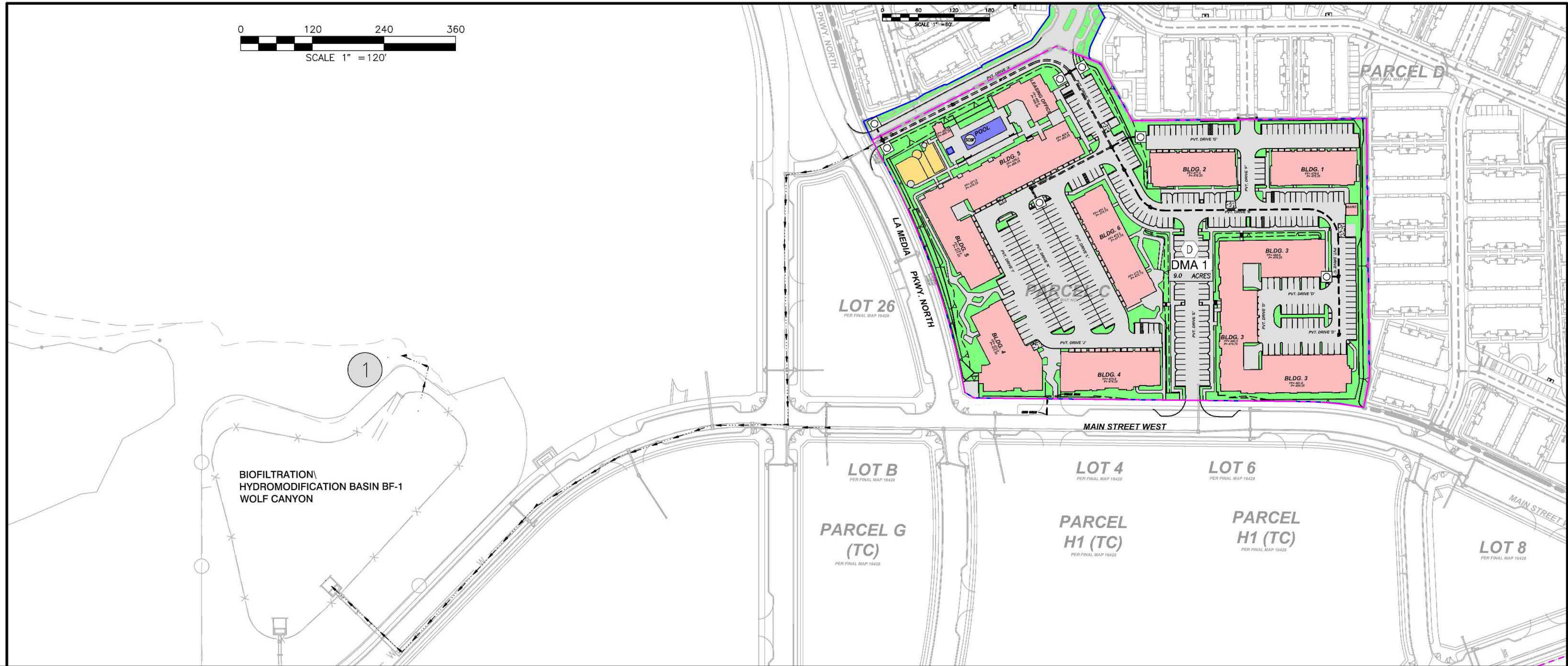


LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- SUBAREA ACREAGE
- DMA 1 DMA ICON
- HYDROLOGIC SOIL TYPE
- POINT OF COMPLIANCE
- IMPERVIOUS - CONCRETE/ASPHALT
- IMPERVIOUS - POOL
- IMPERVIOUS - ROOF/BUILDING
- SEMI PERVIOUS - RECREATIONAL AREA
- PERVIOUS - LANDSCAPE ONSITE

DMA CALCULATIONS

| Otay Ranch Village 8 West Parcel 'C' | | | | | | | | | | |
|--|------|-----------------------------|-------------------------------|---------------|--------------------------|----------------|---------------------|--------------------|------------------|---------------------|
| DMA Calculations | | | | H&A Site Plan | | | | Hale SWQMP 1/15/20 | | |
| | %IMP | Runoff Factor Impervious | Runoff Factor Pervious | Area (ac.) | Impervious Area (ac.) | Area (s.f.) | Summation RF x A | Area** (ac.) | Area** (s.f.) | Summation RF x A |
| MF** | 85 | 0.90 | 0.10 | 8.94 | 7.57 | 391221 | | 9.0 | 391221 | 305152 |
| ROOFS | 100 | 0.90 | 0.10 | 2.59 | 2.59 | 112753 | 101478 | | | |
| HARDSCAPED WITHIN PRIVATE REAR YARD* | 100 | | 0.10 | 0.39 | 0.39 | 16913 | 15222 | | | |
| CONCRETE OR ASPHALT | 100 | 0.90 | 0.10 | 4.39 | 4.39 | 191082 | 171974 | | | |
| RECREATIONAL AREA | 10 | 0.90 | 0.30 | 0.08 | 0.01 | 3421 | 1232 | | | |
| POOL | 100 | 0.90 | 0.10 | 0.05 | 0.05 | 1972 | 1775 | | | |
| LANDSCAPE | 10 | 0.90 | 0.10 | 1.49 | 0.15 | 65080 | 11714 | | | |
| COMPOSITE % IMP: | | | | 83.8% | | 83.4% | | 85.0% | 85.0% | |
| Total Areas: | | | | 8.9 | 7.6 | 391221 | 303393 | 9.0 | 391221 | 305152 |
| Weighted Runoff Factors: | | | | | | | 0.78 | | | 0.78 |
| | | | Total Impervious Area (s.f.)= | | | 329569 | | | | |
| Note: | | | | | | | | | | |
| *15% of the building footprint is added as imperviousness to the private rear yard to count for any future hardscaped that could be added by owners | | | | | | | | | | |
| **Since lot lines for Parcels C-A through C-B and D-A through D-C changed to create Parcel C and Parcel D, both with a total area of 26.9 acres, we will only analyze the corresponding portion of Parcel C with an area of 9 acres. The remaining portion with an area of 17.9 acres will be analyzed in the corresponding report for Otay Ranch Village 8 West, Parcel D | | | | | | | | | | |



- SITE DESIGN BMPs**
- SD-2 CONSERVE NATURAL AREAS, SOILS, VEGETATION
 - SD-3 MINIMIZE IMPERVIOUS AREAS
 - SD-4 MINIMIZE SOIL COMPACTION
 - SD-5 IMPERVIOUS AREA DISPERSION
 - SD-7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

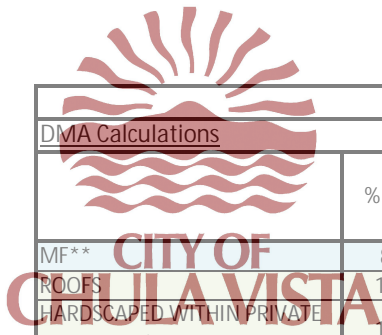
- SOURCE CONTROL BMPs**
- SC-1 PREVENTION OF ILLICIT DISCHARGES TO MS4
 - SC-2 STORM DRAIN STENCILING OR SIGNAGE
 - SC-6 ADDITIONAL BMPs BASED ON POTENTIAL SOURCES OF RUNOFF POLLUTANTS
 - SC-6A ON-SITE STORM DRAIN INLETS
 - SC-6B INTERIOR FLOOR DRAINS AND ELEVATOR SHAFT SUMP PUMPS
 - SC-6D NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
 - SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE
 - SC-6F POOLS, SPAS, PONDS, FOUNTAINS, AND OTHER WATER FEATURES
 - SC-6G FIRE SPRINKLER TEST WATER
 - SC-6P MISCELLANEOUS DRAIN OR WASH WATER
 - SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

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

DMA MAP
COTA VERA PARCEL C
OTAY RANCH VILLAGE 8 WEST
CITY OF CHULA VISTA, CALIFORNIA

MAP
1
OF
1

IMPERVIOUSNESS CALCULATIONS





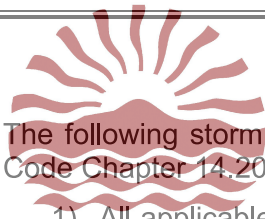
| Otay Ranch Village 8 West Parcel 'C' | | | | | | | | | | |
|---|---------------|-----------------------------|-------------------------------|---------------|--------------------------|----------------|---------------------|--------------------|------------------|---------------------|
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| | | | Total Impervious Area (s.f.)= | | 329569 | | | | | |

Note:

*15% of the building footprint is added as imperviousness to the private rear yard to count for any future hardscaped that could be added by owners

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| | | | |
|---|---|--------------------------------------|--|
|  | Storm Water Requirements Applicability Checklist for All Permit Applications | | Intake Form |
| | | | September 2021 Update |
| Project Information | | | |
| Project Address: Main St. West & La Media Pkwy North | | Project Application # DR22-0006 | |
| Project Name: Otay Ranch Village 8, West Parcel "C" | | APN(s) Portion of 644-070-12 & 14 | |
| Brief Description of Work Proposed: 280 units - Multi-Family Residential, open space with associated infrastructure | | | |
| The project is (select one): | | | |
| <input checked="" type="checkbox"/> New Development Total Impervious Area <u>329,569</u> ft ² | | | |
| <input type="checkbox"/> Redevelopment Total new and/or replaced Impervious Area _____ ft ² <i>(Redevelopment is the creation and/or replacement of impervious surface on an already developed site).</i> | | | |
| <input type="checkbox"/> Other: _____ | | | |
| Name of Person Completing this Form: _____ | | | |
| Role: <input type="checkbox"/> Property Owner <input type="checkbox"/> Contractor <input type="checkbox"/> Architect <input checked="" type="checkbox"/> Engineer <input type="checkbox"/> Other _____ | | | |
| Email: AViaplando@HunsakerSD.com | | Phone: 858-558-4500 | |
| Signature:  | | Date Completed: 09/13/2022 | |
| Answer each section below, starting with Section 1 and progressing through each section. Additional information for determining the requirements is found in the Chula Vista BMP Design Manual available on the City's website at http://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports . | | | |
| SECTION 1: Storm Water BMP Requirements | | | |
| Please answer the following two questions: | | | |
| 1) Does the project involve repair or improvements to an existing building or structure that do not alter the size such as: tenant improvements, interior remodeling, electrical work, fire alarm, fire sprinkler system, HVAC work, gas, plumbing, etc.? | | | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2) Does the project involve routine maintenance activities such as: roof or exterior structure surface replacement; resurfacing existing roadways and parking lots including dig outs, slurry seal, overlay and restriping; repair damaged sidewalks or pedestrian ramps on existing roads without expanding the impervious footprint; routine replacement of damaged pavement, trenching and resurfacing associated with utility work (i.e. sewer, water, gas or electrical laterals, etc.), and pot holing or geotechnical investigation borings? | | | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| CHECK ONE: | | | |
| <input type="checkbox"/> If you answered YES to <u>either</u> question 1 or 2, review and sign " Construction Storm Water BMP Certification Statement " on Page 2. DO NOT complete Sections 2, 3, or 4. The Project is NOT subject to Permanent Storm Water BMP requirements. It IS subject to Construction BMP requirements. | | | |
| <input checked="" type="checkbox"/> If you answered NO to <u>both</u> questions 1 and 2, Skip to Section 2, Page 3. | | | |

**Construction Storm Water BMP Certification Statement**

The following storm water quality protection measures are required by City Chula Vista Municipal Code Chapter 14.20 and the City's Jurisdictional Runoff Management Program.

- 1) All applicable construction BMPs and non-stormwater discharge BMPs shall be installed and maintained for the duration of the project in accordance with the Appendix K "Construction BMP Standards" of the Chula Vista BMP Design Manual.
- 2) Erosion control BMPs shall be implemented for all portions of the project area in which no work has been done or is planned to be done over a period of 14 or more days. All onsite drainage pathways that convey concentrated flows shall be stabilized to prevent erosion.
- 3) Run-on from areas outside the project area shall be diverted around work areas to the extent feasible. Run-on that cannot be diverted shall be managed using appropriate erosion and sediment control BMPs.
- 4) Sediment control BMPs shall be implemented, including providing fiber rolls, gravel bags, or other equally effective BMPs around the perimeter of the project to prevent transport of soil and sediment offsite. Any sediment tracked onto offsite paved areas shall be removed via sweeping at least daily.
- 5) Trash and other construction wastes shall be placed in a designated area at least daily and shall be disposed of in accordance with applicable requirements.
- 6) Materials shall be stored to avoid being transported in storm water runoff and non-storm water discharges. Concrete washout shall be directed to a washout area and shall not be washed out to the ground.
- 7) Stockpiles and other sources of pollutants shall be covered when the chance of rain within the next 48 hours is at least 50%.

I certify that the storm water quality protection measures listed above will be implemented at the project described on Intake Form. I understand that failure to implement these measures may result in monetary penalties or other enforcement actions. This certification is signed under penalty of perjury and does not require notarization.

Name: _____ Title: _____

Signature: _____ Date: _____

SECTION 2: Determine if Project is a Standard Project or Priority Development Project

Is the project in any of the following categories, (a) through (f)?

- (a) New development that **creates 10,000 square feet** or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☒ Yes ☐ No
- (b) Redevelopment project that **creates and/or replaces 5,000 square feet** or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ Yes ☒ No
- (c) New development or redevelopment projects that **creates and/or replaces a combined total of 5,000 square feet** or more of impervious surface (collectively over the entire project site) and support one or more of the following uses: ☒ Yes ☐ No
- (i) **Restaurant.** This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification Code 5812).
 - (ii) **Hillside development projects.** This category includes development on any natural slope that is twenty-five percent or greater.
 - (iii) **Parking Lots.** This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.
 - (iv) **Streets, roads, highways, freeways, and driveways.** This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
- (d) New development or redevelopment project that **creates and/or replaces 2,500 square feet** or more of impervious surface (collectively over the entire project site), discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ Yes ☒ No
- (e) New development or redevelopment project that creates and/or replaces a combined total of 5,000 square feet or more of impervious surface, that support one or more of the following used: ☐ Yes ☒ No
- (i) **Automotive repair shops.** This category is defined as a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.
 - (ii) **Retail gasoline outlets.** This category includes retail gasoline outlets that meet the meet one of the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
- (f) New development or redevelopment that result in the disturbance of **one or more acres** of land and are expected to generate pollutants post construction. **NOTE:** Pollutant generating development projects are those projects that generate pollutants at levels greater than background levels. Background pollutant levels means the pollutants generated from an undeveloped sites. Projects disturbing one or more acres of land are presumed to generate pollutants post construction unless the applicant presents a design that satisfies the City Engineer that pollutants in storm water discharges will not exceed preconstruction background levels. ☒ Yes ☐ No

The project is (select one):

- ☐ If "No" is checked for every category in Section 2, Project is a "Standard Development Project." Site design and source control BMP requirements apply. **Complete and submit Standard SWQMP** (refer to Chapter 4 and Appendix E of the BMP Design Manual for guidance). **Skip to Section 4.**
- ☒ If "Yes" is checked for ANY category in Section 2, Project is a "Priority Development Project (PDP)." **Complete next part, if applicable, and continue to Section 3.**

Complete for PDP Redevelopment Projects ONLY:The total existing (pre-project) impervious area at the project site is: _____ ft² (A)The total proposed newly created or replaced impervious area is _____ ft² (B)

Percent impervious surface created or replaced (B/A) x 100 = _____%

The percent impervious surface created or replaced is (select one based on the above calculation):

☐ Less than or equal to fifty percent (50%) – **only new impervious areas are considered a PDP**
OR☐ Greater than fifty percent (50%) – **the entire project site is considered a PDP*****Continue to Section 3*****SECTION 3: Determine if Project is PDP Exempt****1) Does the project ONLY include new or retrofit sidewalk, bicycle lane or trails that:**

- Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;
- Are designed and constructed to be hydraulically disconnected from paved streets or roads? Or;
- Are designed and constructed with permeable pavements or surfaces in accordance with USEPA Green Streets guidance?

☐ **Yes. Project is PDP Exempt.**☒ **No. Next question**Complete and submit **Standard SWQMP**
(refer to Chapter 4 of the BMP Design Manual
for guidance). **Continue to Section 4.****2) Does the project ONLY include retrofitting or redevelopment of existing paved alleys, streets or roads designed and constructed in accordance with Green Streets standards?**☐ **Yes. Project is PDP Exempt.**☒ **No. Project is a PDP.**Complete and submit Standard SWQMP
(refer to Chapter 4 of the BMP Design Manual
for guidance). **Continue to Section 4.**Site design, source control, and structural
pollutant control BMPs apply. Complete
and submit PDP SWQMP (refer to
Chapters 4, 5 & 6 of the BMP Design
Manual for guidance). **Continue to
Section 4.**

SECTION 4: Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the BMP Design Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP), which is administered by the State Water Resource Control Board.

- 1) Does the project include Building/Grading/Construction permits proposing less than 5,000 square feet of ground disturbance and has less than 5-foot elevation change over the entire project area?

☐ Yes. Review and sign Construction Storm Water Certification Statement on Page 2, *skip questions 2-4* ☒ No; next question

- 2) Does the project propose construction or demolition activity, including but not limited to, clearing grading, grubbing, excavation, or other activity that results in ground disturbance of less than one acre and more than 5,000 square feet?

☐ Yes. Complete & submit Construction Storm Water Pollution Control Plan (CSWPCP), *skip questions 3-4* ☒ No; next question

- 3) Does the project result in the disturbance of an acre or more of total land area and is considered a regular maintenance project performed to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as sewer/storm drain/utility replacement)

☐ Yes. Complete and submit Construction Storm Water Pollution Control Plan (CSWPCP), *skip question 4* ☒ No; next question

- 4) Is the project proposing land disturbance greater than or equal to one acre OR the project is part of a larger common plan of development disturbing 1 acre or more?

☒ Yes. Storm Water Pollution Prevention Plan (SWPPP) is required. Refer to online CASQA or Caltrans Template. Visit the SWRCB web site at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

Note: Projects that result in disturbance of one to five acres of total land area and can demonstrate that there will be no adverse water quality impacts by applying for a Construction Rainfall Erosivity Waiver, may be allowed to submit a CSWPCP in lieu of a SWPPP.



FOR REFERENCE

PDP SWQMP

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

Otay Ranch Village 8 West Chula Vista Tract No. 19-03
644-070-12, 644-070-14 & 644-070-13 (NOT A PART)
Drawing No.s 14011, 14012, 14014, 18016, 18024, 18025, & 18041

ENGINEER OF WORK:

Jill L Gravely, R.C.E. 70843

PREPARED FOR:

HomeFed Village 8, LLC
1903 Wright Place, Suite 220
Carlsbad, CA 92008
(760) 918-8200

PREPARED BY:

Hale Engineering
7910 Convoy Court
San Diego CA, 92111
(858) 715-1420

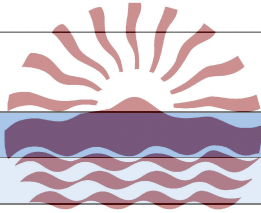
DATE: 1/15/2020



Sandra Hernandez 01/16/2020

Approved By: City of Chula Vista
(print Name & Sign)

Date:



Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6)?

- ☒ Yes, hydromodification management flow control structural BMPs required.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

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

Note: If "No" answer has been selected the SWQMP must include an exhibit that shows the storm water conveyance system from the project site to an exempt water body. The exhibit should include details about the conveyance system and the outfall to the exempt water body.

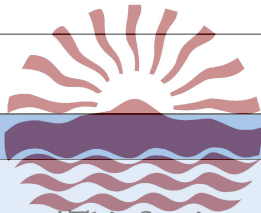
Critical Coarse Sediment Yield Areas*

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

Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint?

- ☐ Yes
- ☒ No

Description / Additional Information:



Form I-3B Page 9 of 10

Flow Control for Post-Project Runoff*

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

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project HMP Exhibit.

POC #1 is the point of confluence for the Wolf Canyon hydromodification management basin.

Has a geomorphic assessment been performed for the receiving channel(s)?

- ☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)
- ☐ Yes, the result is the low flow threshold is 0.1Q2
- ☐ Yes, the result is the low flow threshold is 0.3Q2
- ☐ Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Discussion / Additional Information: (optional)



HMP Exemption Exhibit

Attach this Exhibit (if Applicable) that shows direct storm water runoff discharge from the project site to HMP exempt area. Include project area, applicable underground storm drains line and/or concrete lined channels, outfall information and exempt waterbody. Reference applicable drawing number(s). **Exhibit must be provided on 11"x17" or larger paper.**



DMA TABLES FOR OTAY RANCH VILLAGE 8 WEST

SOUTH AND NORTH BASIN

CHULA VISTA, CA

SOUTH BASIN

1. LOT BREAK DOWN BY AREA TYPE

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|-----------------|-------------------|----------------------|------|------|
| | | Total | MF | Open |
| M | 8.3 | 8.3 | 7.1 | 1.2 |
| O | 8.7 | 8.7 | 7.8 | 0.9 |
| Q | 11.1 | 11.1 | 9.9 | 1.2 |
| U | 15.6 | 15.6 | 15.6 | 0 |
| R-A Through R-C | 5.5 | 5.5 | 4.6 | 0.9 |
| SUBTOTAL: | 49.2 | 49.2 | 45.0 | 4.2 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | | | |
|-----------|-------------------|----------------------|------|------|---------------------|------|
| | | Total | SF | Open | Drains Off-Site/NAP | Road |
| P | 25.4 | 24.2 ^A | 17.9 | 0.2 | 0 | 6.1 |
| V | 19.1 | 19.1 | 12.4 | 1.9 | 0.9 | 3.9 |
| SUBTOTAL: | 44.5 | 43.3 | 30.3 | 2.1 | 2.3 | 10.0 |

A 1.2 AC OF NEIGH. P DRAIN NORTH, SEE TABLE TO THE RIGHT
24.2 AC +1.2 AC = **25.4 AC**

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|----------|-------------------|----------------------|------|-----------------|
| | | Total | S | Drains Off-Site |
| S | 11.1 | 11.1 | 10.5 | 0.6 |
| SUBTOTAL | 11.1 | 11.1 | 10.5 | 0.6 |

| Lot | Gross Area per TM | Gross Area per SWQMP | |
|----------|-------------------|----------------------|-----|
| | | Total | P |
| T | 5.5 | 5.5 | 5.5 |
| SUBTOTAL | 5.5 | 5.5 | 5.5 |

| Lot | Gross Area per TM | Total | Gross Area per SWQMP | Drains Off-Site/NAP |
|----------|-------------------|-------|----------------------|---------------------|
| Y | 15.6 | 15.6 | NAP | 15.6 |
| OS-1 | 9.8 | 9.8 | 6.6 | 3.2 |
| OS-2 | 5 | 5 | NAP | 5 |
| OS-3 | 3.2 | 3.2 | NAP | 3.2 |
| OS-4 | 4.2 | 4.2 | 4.2 | 0 |
| OS-7 | 1.6 | 1.6 | 1.6 | 0 |
| SUBTOTAL | 39.4 | 39.4 | 12.44 | 26.96 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|--------------|-------------------|----------------------|------------------------|---------------------|
| | | Total | Streets - Drains South | Drains Off-Site/NAP |
| Right-of-Way | 34.8 | 19.9 ^B | 15 | 4.9 |
| Subtotal | 34.8 | 19.9 | 15 | 4.9 |

B 14.9 ACRES DRAINS TO THE NORTH BASIN. SEE TABLE TO THE RIGHT
19.8 AC + 19.9 AC = **34.8 AC**

| Lot | Gross Area per TM | Gross Area per SWQMP | | | |
|-----------|-------------------|----------------------|--------------|------|---------------------|
| | | Total | OFFSITE RES. | OPEN | OPEN - DRAINS NORTH |
| Reservoir | 19.2 | 19.2 | 16.4 | 1.7 | 1.1 |
| Subtotal | 19.2 | 19.2 | 16.4 | 1.7 | 1.1 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|-----------------|-------------------|----------------------|----------|------|
| | | Total | CM (90%) | Open |
| L-A Through L-D | 14 | 0.5 ^C | 0 | 0.5 |

C 13.5 ACRES DRAINS TO THE NORTH BASIN. SEE TABLE TO THE LEFT
13.5 AC+0.5 AC = **14.0 AC**

2. DESIGN CAPTURE VALUE CALCULATIONS

| DMA DATA - SOUTH BASIN | | | | | | | | | | |
|------------------------|-----------|--------------|----------------------|---------------|---------------------------|--------------------|---------------|---------------------------|----------------|--------|
| LAND USE | AREA (AC) | % IMPERVIOUS | IMPERVIOUS AREA (AC) | RUNOFF FACTOR | AREA X RUNOFF FACTOR (AC) | PERVIOUS AREA (AC) | RUNOFF FACTOR | AREA X RUNOFF FACTOR (AC) | EFFECTIVE AREA | % DCV |
| OFFSITE-RES | 16.4 | 40 | 6.56 | 0.90 | 5.90 | 9.84 | 0.10 | 0.98 | 6.89 | 7.09 |
| MULTI-FAMILY (MF) | 45.0 | 85 | 38.24 | 0.90 | 34.42 | 6.75 | 0.10 | 0.67 | 35.09 | 36.13 |
| ROADS | 26.8 | 90 | 24.12 | 0.90 | 21.71 | 2.68 | 0.10 | 0.27 | 22.06 | 22.71 |
| SINGLE-FAMILY (SF) | 30.3 | 75 | 22.73 | 0.90 | 20.45 | 7.58 | 0.10 | 0.76 | 21.21 | 21.84 |
| SCHOOL (SC) | 10.5 | 80 | 8.43 | 0.90 | 7.59 | 2.11 | 0.10 | 0.21 | 7.80 | 8.03 |
| LANDSCAPE/OPEN SPACE | 26.5 | 0 | 0.00 | 0.90 | 0.00 | 26.50 | 0.10 | 2.65 | 2.65 | 2.73 |
| PARK (P) | 5.5 | 20 | 1.10 | 0.90 | 0.99 | 4.41 | 0.10 | 0.44 | 1.43 | 1.47 |
| TOTAL | 161.1 | | 101.27 | | 91.14 | 59.87 | | 5.99 | 97.13 | 100.00 |

WEIGHTED RUNOFF FACT 97.1/161.1 = 0.60

NORTH BASIN

1. LOT BREAK DOWN BY AREA TYPE

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|-------------------|-------------------|----------------------|----------|------------------|
| | | Total | CM (90%) | Open |
| B | 1.2 | 1.2 | 1.2 | 0 |
| H1-A Through H1-D | 7.5 | 7.5 | 7.5 | 0 |
| H-2 | 1.2 | 1.2 | 1.0 | 0.2 |
| L-A Through L-D | 14 | 0.5 ^D | 0 | 0.5 ^C |
| Subtotal | 23.9 | 23.9 | 23.2 | 0.7 |

D 0.5 ACRES DRAINS TO THE SOUTH BASIN. SEE TABLE TO THE LEFT
13.5 AC+0.5 AC = **14.0 AC**

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|----------|-------------------|----------------------|----------|------|
| | | Total | CM (93%) | Open |
| F | 2.8 | 2.8 | 2.7 | 0.1 |
| W | 2.3 | 2.3 | 1.7 | 0.6 |
| Subtotal | 5.1 | 5.1 | 4.4 | 0.7 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | | |
|-----------------|-------------------|----------------------|----------|------|---------------------|
| | | Total | MF (80%) | Open | Drains Off-Site/NAP |
| A | 15.1 | 15.1 | 13.9 | 0.0 | 1.2 |
| C-A Through C-B | 7.5 | 7.5 | 7.5 | 0 | 0 |
| D-A Through D-C | 19.4 | 19.4 | 16.8 | 2.6 | 0 |
| Subtotal | 42 | 41.93 | 38.1 | 2.6 | 0 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | |
|----------|-------------------|----------------------|----------|------|
| | | Total | MF (84%) | Open |
| I | 6.1 | 6.07 | 4.7 | 1.4 |
| J | 5.5 | 5.5 | 5.3 | 0.2 |
| Subtotal | 11.6 | 11.57 | 10 | 1.57 |

| Lot | Gross Area per TM | Gross Area per SWQMP | | | |
|----------|-------------------|----------------------|------|------|------|
| | | Total | SF | Open | Road |
| N | 20.1 | 20.1 | 13.6 | 1.2 | 5.3 |
| P | 25.4 | 1.2 ^E | 0.9 | 0 | 0.3 |
| Subtotal | 45.5 | 21.3 | 14.5 | 1.2 | 5.6 |

E 24.2 AC OF NEIGH. P DRAIN SOUTH, SEE TABLE TO THE LEFT
24.2 AC +1.2 AC = **25.4 AC**

| Lot | Gross Area per TM | Gross Area per SWQMP | |
|----------|-------------------|----------------------|-----|
| | | Total | P |
| G1 | 2.3 | 2.3 | 2.3 |
| G2 | 0.5 | 0.5 | 0.5 |
| Subtotal | 2.8 | 2.8 | 2.8 |

| Lot | Gross Area per TM | Gross Area per SWQMP | |
|--------------|-------------------|----------------------|------------------------|
| | | Total | Streets - Drains North |
| Right-of-Way | 34.8 | 14.9 ^F | 14.9 |
| Subtotal | 34.8 | 34.8 | 14.9 |

F 19.9 ACRES DRAIN TO SOUTH BASIN. SEE TABLE LEFT
14.9 AC + 19.9 AC = **34.8 AC**

| Lot | Gross Area per TM | Total | Gross Area per SWQMP | Drains Off-Site/NAP |
|----------|-------------------|-------|----------------------|---------------------|
| OS-5 | 2.7 | 2.7 | 2.7 | 0 |
| OS-6 | 0.1 | 0.1 | 0 | 0.1 |
| OS-8 | 2.1 | 2.1 | 0 | 2.1 |
| E | 5.1 | 5.1 | 5.1 | 2.1 |
| Subtotal | 10 | 10 | 7.8 | 4.3 |

2. DESIGN CAPTURE VALUE CALCULATIONS

| DMA DATA - NORTH BASIN | | | | | | | | | | |
|--------------------------|-----------|--------------|----------------------|---------------|---------------------------|--------------------|---------------|---------------------------|----------------|--------|
| LAND USE | AREA (AC) | % IMPERVIOUS | IMPERVIOUS AREA (AC) | RUNOFF FACTOR | AREA X RUNOFF FACTOR (AC) | PERVIOUS AREA (AC) | RUNOFF FACTOR | AREA X RUNOFF FACTOR (AC) | EFFECTIVE AREA | % DCV |
| COMMERCIAL (CM) | 23.2 | 90 | 20.88 | 0.90 | 18.79 | 2.32 | 0.10 | 0.23 | 19.02 | 21.6 |
| COMMERCIAL - LOTS F, W | 4.4 | 93 | 4.09 | 0.90 | 3.68 | 0.31 | 0.10 | 0.03 | 3.71 | 4.2 |
| MULTI-FAMILY (MF) | 38.1 | 80 | 30.50 | 0.90 | 27.45 | 7.63 | 0.10 | 0.76 | 28.22 | 32.0 |
| MULTI-FAMILY - LOTS I, J | 10.0 | 84 | 8.40 | 0.90 | 7.56 | 1.60 | 0.10 | 0.16 | 7.72 | 8.8 |
| ROADS | 20.5 | 90 | 18.45 | 0.90 | 16.61 | 2.05 | 0.10 | 0.21 | 16.81 | 19.1 |
| SINGLE FAMILY (SF) | 14.5 | 75 | 10.88 | 0.90 | 9.79 | 3.63 | 0.10 | 0.36 | 10.15 | 11.5 |
| LANDSCAPE/OPEN SPACE | 18.7 | 0 | 0.00 | 0.90 | 0.00 | 18.67 | 0.10 | 1.87 | 1.87 | 2.1 |
| PARK | 2.8 | 20 | 0.56 | 0.90 | 0.50 | 2.23 | 0.10 | 0.22 | 0.73 | 0.8 |
| TOTAL | 132.2 | | 93.76 | | 84.38 | 38.43 | | 3.84 | 88.23 | 100.00 |

WEIGHTED RUNOFF FACT 88.23/132.2 = 0.67



DMA TABLES FOR VILLAGE 8 WEST
SOUTH AND NORTH BASIN
OTAY RANCH, VILLAGE 8 WEST
CHULA VISTA TRACT NO. 19-08
CITY OF CHULA VISTA, CALIFORNIA

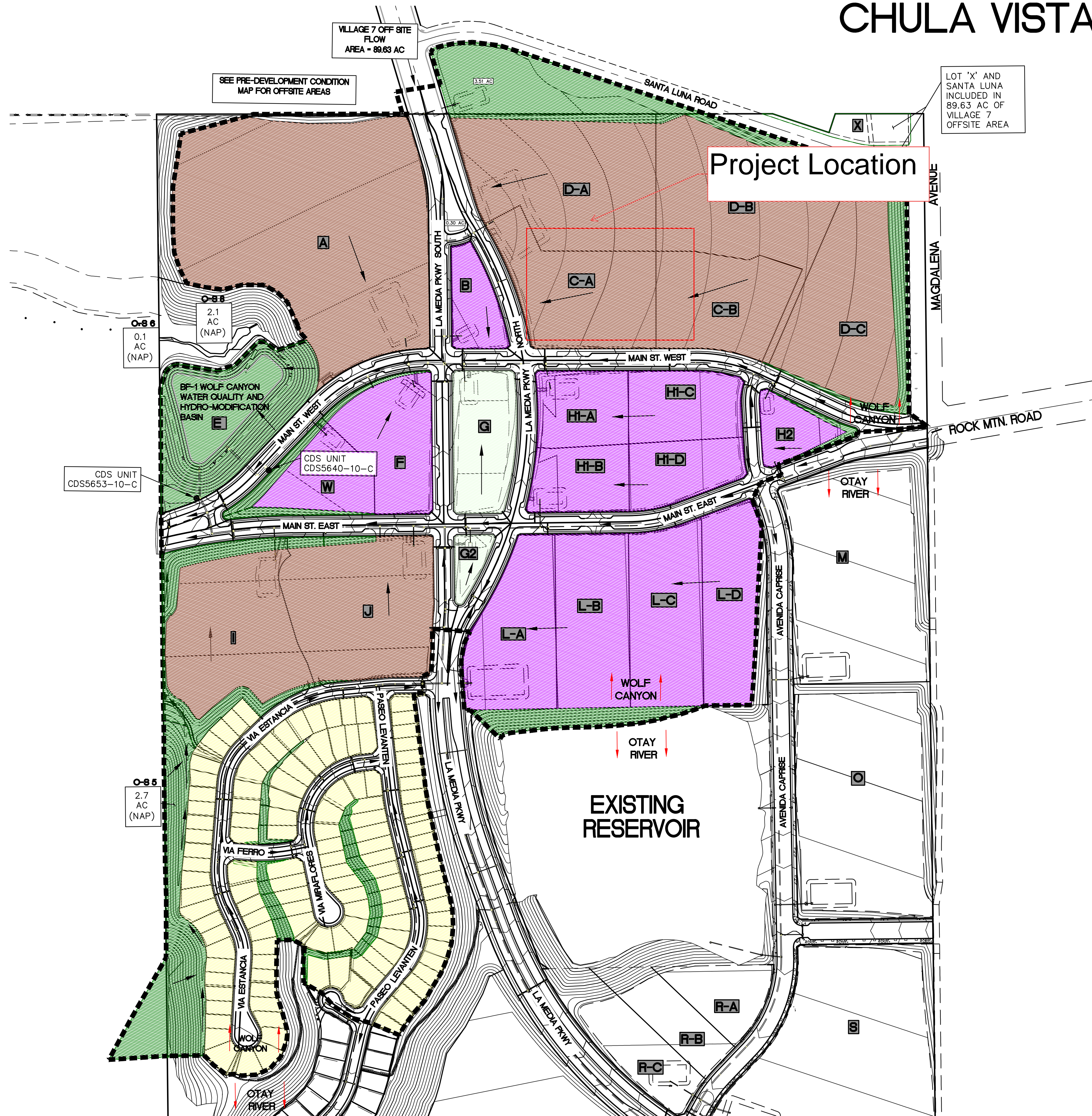
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DMA EXHIBIT FOR OTAY RANCH VILLAGE 8 WEST

NORTH BASIN

CHULA VISTA, CA



LEGEND

| | |
|---------------------------------------|----------------------|
| LOT DESIGNATION | |
| PROPOSED SINGLE FAMILY [SF] | [X] |
| PROPOSED MULTI FAMILY [MF] | [Hatched Box] |
| PROPOSED COMMERCIAL [CM] | [Hatched Box] |
| PROPOSED PARK [P] | [Hatched Box] |
| PROPOSED OPEN SPACE/LANDSCAPING | [Hatched Box] |
| DRAINAGE BASIN BOUNDARY | [Dashed Line] |
| PROPOSED PUBLIC STORM DRAIN (18" MIN) | [Thick Solid Line] |
| PROPOSED PUBLIC STORM DRAIN INLET | [Square with Circle] |
| PROPOSED PUBLIC STORM DRAIN CLEANOUT | [Circle with Cross] |
| PROPOSED PUBLIC STORM CDS UNIT | [Circle with X] |

PROJECT INFORMATION

1. HYDROLOGIC SOIL GROUP: A, C AND D
2. DEPTH TO GROUND WATER > 20'
3. NO CRITICAL COARSE SEDIMENT AREAS ARE WITHIN THE PROJECT BOUNDARIES.

SOURCE CONTROL

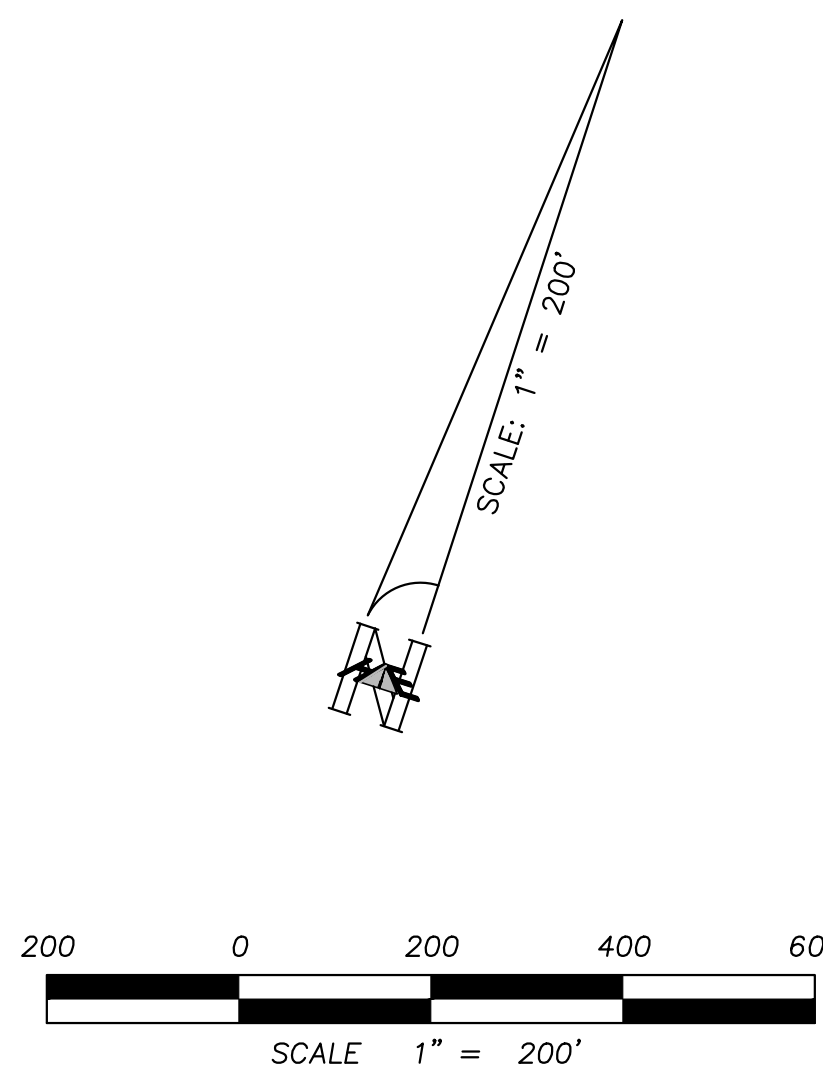
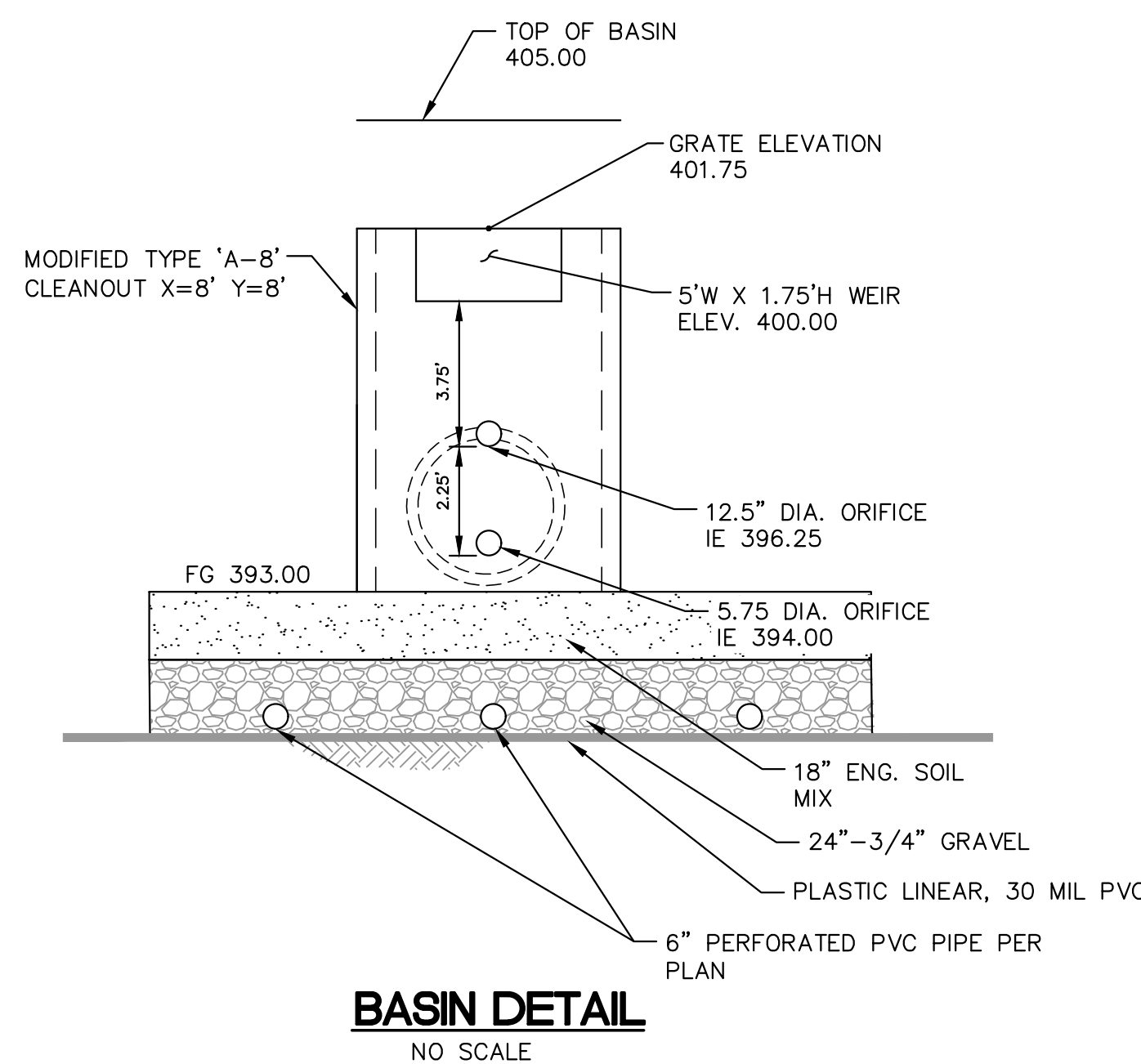
- SC-1: PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
- SC-2: STORM DRAIN STENCILING
- SC-6: ADDITIONAL BMP'S
 - ONSITE STORM DRAIN INLETS
 - LANDSCAPE/OUTDOOR PESTICIDE USE
 - PLAZAS, SIDEWALKS AND PARKING LOTS

SITE DESIGN BMP'S

- SD-1: MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES
- SD-2: CONSERVE NATURAL AREAS, SOILS, VEGETATION
- SD-3: MINIMIZE IMPERVIOUS AREAS
- SD-4: MINIMIZE SOIL COMPACTION
- SD-5: IMPERVIOUS AREA DISPERSION
- SD-7: LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

STRUCTURAL BMP'S

- BIOFILTRATION / HYDROMODIFICATION BASIN
- FLOW-THRU PRE-TREATMENT DEVICES (CDS UNITS)



DMA EXHIBIT FOR VILLAGE 8 WEST
NORTH BASIN
OTAY RANCH, VILLAGE 8 WEST
CHULA VISTA TRACT NO. 19-03
CITY OF CHULA VISTA, CALIFORNIA

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Insert Completed Form I-6: Summary of PDP Structural BMPs

<https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports>

Project Name: Otay Ranch Village 8 West

| Summary of PDP Structural BMPs | Form I-6 |
|---|----------|
| PDP Structural BMPs | |
| <p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p> | |
| <p>PDP structural BMPs must be verified by City at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity (see Section 7 of the manual).</p> | |
| <p>Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p> | |

Project Name: Otay Ranch Village 8 West

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

Otay Ranch Village 8 West includes two regional biofiltration basins. The northern basin, which filters runoff to Wolf Canyon, is located in the northwest corner of the site (Lot E) and addressed both water quality and hydromodification. The south basin, treats runoff to the Otay River, and is located directly south of the site, at the point of discharge into Otay River. In-line CDS units provide pre-treatment for both basins.

Per Section 5.1 of the manual, the following questions were used to determine the optimal choice of BMPs for the project:

Are there any Self-Mitigating, De Minimus, or Self Retaining DMAs on-site? No.

What is the estimated DCV for the project? The DCVs for the Wolf Canyon and the Otay River tributary areas are calculated in Attachment 1B. DCVs are calculated assuming typically impervious areas for the area at full build-out.

Is Harvest and Use feasible? No, there are no opportunities for Harvest and Reuse on-site.

Is infiltration feasible? No, the on-site soils are not conducive for infiltration BMP usage.

Can BMPs be sized for the DCV? Yes, see BMP calculations in for BF-1 Wolf Canyon and B-1 Otay River included in Attachment 1E.

FINAL



Drainage Study

For
Otay Ranch
Village 8 West

Chula Vista Tract No. 19-03



Jill Gravely, P.E.
R.C.E. # 70843
Expiration Date: June 30, 2021

Prepared For
Homefed Village 8, LLC
1903 Wright Place, Suite 220
Carlsbad, CA 92008
(760) 602-3777

Prepared By
Hale Engineering
7910 Convoy Court
San Diego, CA 92111
(858) 715-1420

Date: October 25, 2019



Approved by: SH
Date: 12-30-2019



Executive Summary

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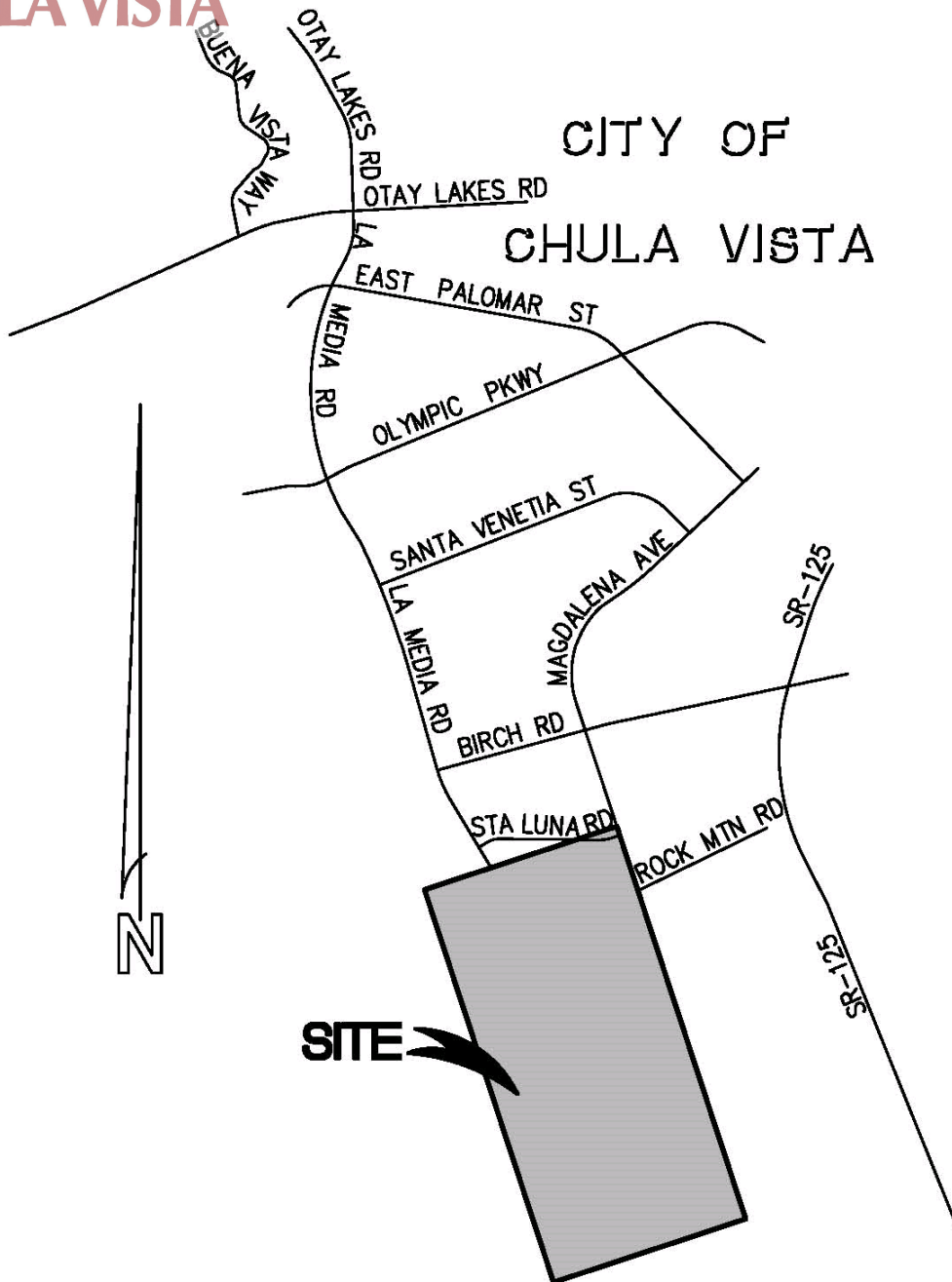
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APPENDIX D

DEVELOPED CONDITIONS HYDROLOGY – WOLF CANYON

CITY OF
CHULA VISTA



APPENDIX D4
DEVELOPED CONDITIONS HYDROLOGY – WOLF CANYON
PROPOSED Q50

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE

Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT

2003,1985,1981 HYDROLOGY MANUAL

(c) Copyright 1982-2016 Advanced Engineering Software (aes)

Ver. 23.0 Release Date: 07/01/2016 License ID 1508

CITY OF
CHULA VISTA

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* GRADING P1 CC 3 HYDRO *

* Q50 *

*

FILE NAME: TC-Q50.DAT

TIME/DATE OF STUDY: 10:48 05/24/2019

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 50.00

6-HOUR DURATION PRECIPITATION (INCHES) = 2.200

SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00

SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95

SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD

NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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)

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.281
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 85
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7203
 SUBAREA AREA(ACRES) = 1.19 SUBAREA RUNOFF(CFS) = 1.17
 TOTAL AREA(ACRES) = 93.9 TOTAL RUNOFF(CFS) = 221.91
 TC(MIN.) = 12.08

FLOW PROCESS FROM NODE 783.00 TO NODE 172.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 427.53 DOWNSTREAM(FEET) = 426.08
 FLOW LENGTH(FEET) = 288.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 66.0 INCH PIPE IS 51.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.12
 ESTIMATED PIPE DIAMETER(INCH) = 66.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 221.91
 PIPE TRAVEL TIME(MIN.) = 0.43 Tc(MIN.) = 12.52
 LONGEST FLOWPATH FROM NODE 0.00 TO NODE 172.00 = 437.10 FEET.

FLOW PROCESS FROM NODE 172.00 TO NODE 172.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

FLOW PROCESS FROM NODE 172.00 TO NODE 172.00 IS CODE = 13

>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

=====

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

INITIAL SUBAREA FLOW LENGTH(FEET) = 613.00

UPSTREAM ELEVATION(FEET) = 463.28

DOWNSTREAM ELEVATION(FEET) = 457.05

ELEVATION DIFFERENCE(FEET) = 6.23

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.194

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 60.16

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN T_c CALCULATION!

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796

NOTE: RAINFALL INTENSITY IS BASED ON T_c = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 5.85

TOTAL AREA(ACRES) = 1.16 TOTAL RUNOFF(CFS) = 5.85

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796

NOTE: RAINFALL INTENSITY IS BASED ON T_c = 5-MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8700

SUBAREA AREA(ACRES) = 0.44 SUBAREA RUNOFF(CFS) = 2.22

TOTAL AREA(ACRES) = 1.6 TOTAL RUNOFF(CFS) = 8.07

T_c (MIN.) = 3.19

FLOW PROCESS FROM NODE 170.00 TO NODE 171.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 448.71 DOWNSTREAM(FEET) = 446.86

FLOW LENGTH(FEET) = 184.79 MANNING'S N = 0.013

DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.0 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.42

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 8.07

PIPE TRAVEL TIME(MIN.) = 0.48 T_c (MIN.) = 3.67

LONGEST FLOWPATH FROM NODE 170.00 TO NODE 171.00 = 797.79 FEET.

PIPE-FLOW(CFS) = 34.17

PIPE TRAVEL TIME(MIN.) = 0.01 Tc(MIN.) = 3.72

LONGEST FLOWPATH FROM NODE 139.00 TO NODE 146.00 = 1285.34 FEET.

FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8552

SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 2.02

TOTAL AREA(ACRES) = 7.3 TOTAL RUNOFF(CFS) = 36.19

TC(MIN.) = 3.72

FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8559

SUBAREA AREA(ACRES) = 0.36 SUBAREA RUNOFF(CFS) = 1.82

TOTAL AREA(ACRES) = 7.7 TOTAL RUNOFF(CFS) = 38.00

TC(MIN.) = 3.72

FLOW PROCESS FROM NODE 146.00 TO NODE 147.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 453.12 DOWNSTREAM(FEET) = 449.32

FLOW LENGTH(FEET) = 81.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 16.81

ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1

FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 93
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7882
 SUBAREA AREA(ACRES) = 16.05 SUBAREA RUNOFF(CFS) = 72.57
 TOTAL AREA(ACRES) = 17.6 TOTAL RUNOFF(CFS) = 80.63
 TC(MIN.) = 3.67

FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 85
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7383
 SUBAREA AREA(ACRES) = 2.01 SUBAREA RUNOFF(CFS) = 3.50
 TOTAL AREA(ACRES) = 19.7 TOTAL RUNOFF(CFS) = 84.13
 TC(MIN.) = 3.67

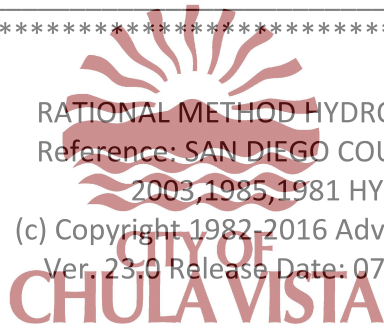
FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

50 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.796
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 93
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7497
 SUBAREA AREA(ACRES) = 7.47 SUBAREA RUNOFF(CFS) = 33.77
 TOTAL AREA(ACRES) = 27.1 TOTAL RUNOFF(CFS) = 117.90
 TC(MIN.) = 3.67



APPENDIX D5
DEVELOPED CONDITIONS HYDROLOGY – WOLF CANYON
PROPOSED Q100



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE

Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT

2003, 1985, 1981 HYDROLOGY MANUAL

(c) Copyright 1982-2016 Advanced Engineering Software (aes)

Ver. 23.0 Release Date: 07/01/2016 License ID 1508

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* TOWNCENTER NORTH *

* Q100 *

FILE NAME: TC-Q50.DAT

TIME/DATE OF STUDY: 15:14 05/28/2019

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00

6-HOUR DURATION PRECIPITATION (INCHES) = 2.500

SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00

SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95

SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD

NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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 0.0312 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)

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.730
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 85
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7849
 SUBAREA AREA(ACRES) = 1.19 SUBAREA RUNOFF(CFS) = 1.33
 TOTAL AREA(ACRES) = 93.9 TOTAL RUNOFF(CFS) = 274.89
 TC(MIN.) = 12.08

FLOW PROCESS FROM NODE 783.00 TO NODE 172.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 427.53 DOWNSTREAM(FEET) = 426.08
 FLOW LENGTH(FEET) = 288.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 72.0 INCH PIPE IS 55.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.76
 ESTIMATED PIPE DIAMETER(INCH) = 72.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 274.89
 PIPE TRAVEL TIME(MIN.) = 0.41 Tc(MIN.) = 12.49
 LONGEST FLOWPATH FROM NODE 0.00 TO NODE 172.00 = 437.10 FEET.

FLOW PROCESS FROM NODE 172.00 TO NODE 172.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

FLOW PROCESS FROM NODE 172.00 TO NODE 172.00 IS CODE = 13

>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

=====

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

INITIAL SUBAREA FLOW LENGTH (FEET) = 613.00

UPSTREAM ELEVATION (FEET) = 463.28

DOWNSTREAM ELEVATION (FEET) = 457.05

ELEVATION DIFFERENCE (FEET) = 6.23

SUBAREA OVERLAND TIME OF FLOW (MIN.) = 3.194

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 60.16

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN T_c CALCULATION!

100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 6.587

NOTE: RAINFALL INTENSITY IS BASED ON $T_c = 5$ -MINUTE.

SUBAREA RUNOFF (CFS) = 6.65

TOTAL AREA (ACRES) = 1.16 TOTAL RUNOFF (CFS) = 6.65

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 81

>>>> ADDITION OF SUBAREA TO MAINLINE PEAK FLOW <<<<<

100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 6.587

NOTE: RAINFALL INTENSITY IS BASED ON $T_c = 5$ -MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8700

SUBAREA AREA (ACRES) = 0.44 SUBAREA RUNOFF (CFS) = 2.52

TOTAL AREA (ACRES) = 1.6 TOTAL RUNOFF (CFS) = 9.17

T_c (MIN.) = 3.19

FLOW PROCESS FROM NODE 170.00 TO NODE 171.00 IS CODE = 31

>>>> COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA <<<<<

>>>> USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<

ELEVATION DATA: UPSTREAM (FEET) = 448.71 DOWNSTREAM (FEET) = 446.86

FLOW LENGTH (FEET) = 184.79 MANNING'S N = 0.013

DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.3 INCHES

PIPE-FLOW VELOCITY (FEET/SEC.) = 6.56

ESTIMATED PIPE DIAMETER (INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW (CFS) = 9.17

PIPE TRAVEL TIME (MIN.) = 0.47 T_c (MIN.) = 3.66

LONGEST FLOWPATH FROM NODE 170.00 TO NODE 171.00 = 797.79 FEET.

FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 93
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7882
 SUBAREA AREA(ACRES) = 16.05 SUBAREA RUNOFF(CFS) = 82.46
 TOTAL AREA(ACRES) = 17.6 TOTAL RUNOFF(CFS) = 91.63
 TC(MIN.) = 3.66

FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 85
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7383
 SUBAREA AREA(ACRES) = 2.01 SUBAREA RUNOFF(CFS) = 3.97
 TOTAL AREA(ACRES) = 19.7 TOTAL RUNOFF(CFS) = 95.60
 TC(MIN.) = 3.66

FLOW PROCESS FROM NODE 171.00 TO NODE 171.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
 SOIL CLASSIFICATION IS "C"
 S.C.S. CURVE NUMBER (AMC II) = 93
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.7497
 SUBAREA AREA(ACRES) = 7.47 SUBAREA RUNOFF(CFS) = 38.38
 TOTAL AREA(ACRES) = 27.1 TOTAL RUNOFF(CFS) = 133.98
 TC(MIN.) = 3.66

PIPE-FLOW(CFS) = 38.83

PIPE TRAVEL TIME(MIN.) = 0.01 T_c (MIN.) = 3.69

LONGEST FLOWPATH FROM NODE 139.00 TO NODE 146.00 = 1285.34 FEET.

FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587

NOTE: RAINFALL INTENSITY IS BASED ON T_c = 5-MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8552

SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 2.29

TOTAL AREA(ACRES) = 7.3 TOTAL RUNOFF(CFS) = 41.12

 T_c (MIN.) = 3.69

FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587

NOTE: RAINFALL INTENSITY IS BASED ON T_c = 5-MINUTE.

STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700

SOIL CLASSIFICATION IS "C"

S.C.S. CURVE NUMBER (AMC II) = 98

AREA-AVERAGE RUNOFF COEFFICIENT = 0.8559

SUBAREA AREA(ACRES) = 0.36 SUBAREA RUNOFF(CFS) = 2.06

TOTAL AREA(ACRES) = 7.7 TOTAL RUNOFF(CFS) = 43.19

 T_c (MIN.) = 3.69

FLOW PROCESS FROM NODE 146.00 TO NODE 147.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 453.12 DOWNSTREAM(FEET) = 449.32

FLOW LENGTH(FEET) = 81.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.9 INCHES

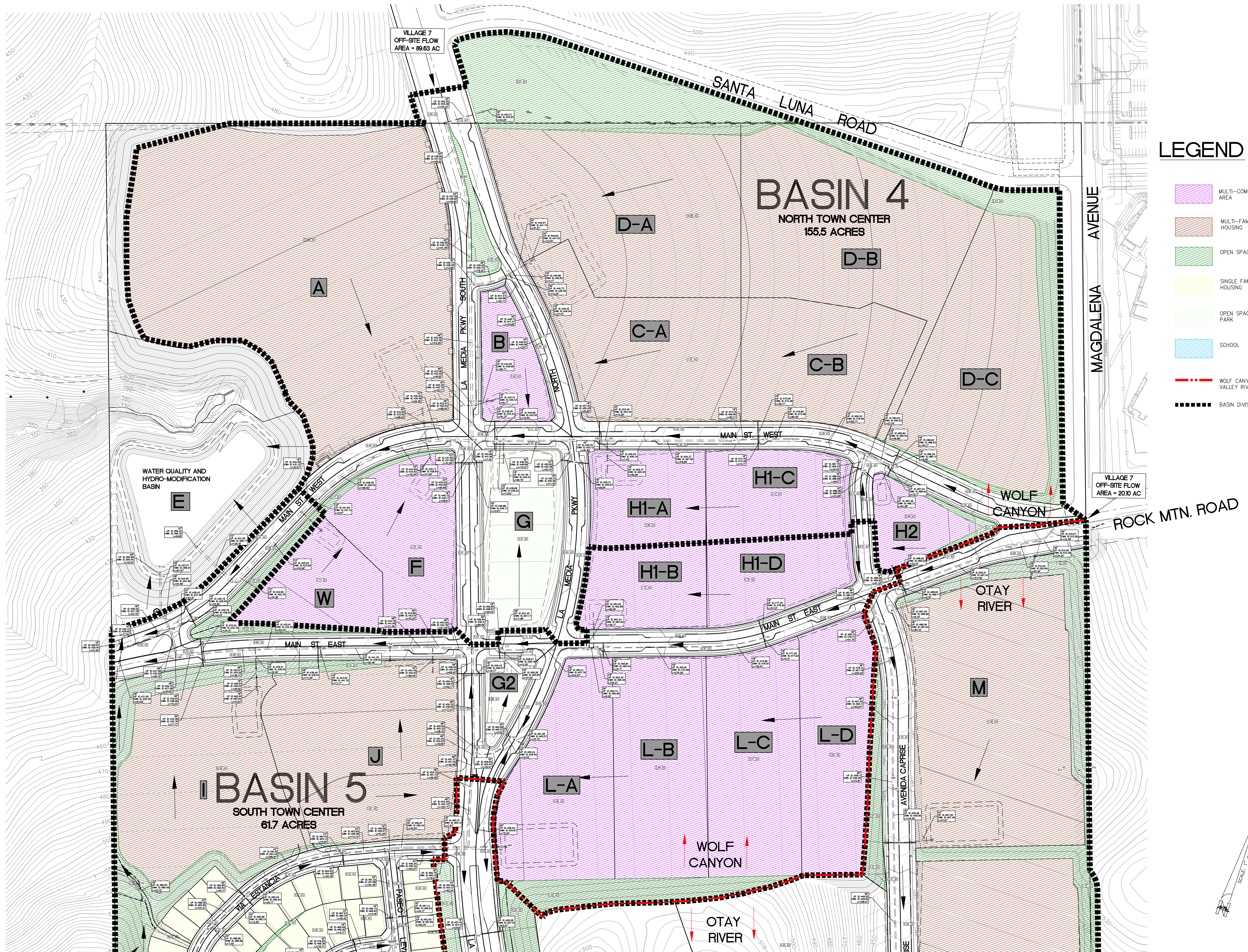
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.14

ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1



APPENDIX F

DEVELOPED CONDITIONS DRAINAGE MAP



LEGEND

- MULTI-COMMERCIAL AREA
- MULTI-FAMILY HOUSING
- OPEN SPACE
- SINGLE FAMILY HOUSING
- OPEN SPACE: PARK
- SCHOOL
- WOLF CANYON AND OTAY VALLEY RIVER DIVISION
- BASIN DIVISION

M E M O R A N D U M



Date: August 10, 2022
To: David Blalock, P.E.
 City of Chula Vista
From: Alisa S. Vialpando
Subject: **Otay Ranch Village 8 West Lot 'D' Design Review and Rough Grading Plans:**
Master Hydrology, Storm Water Quality/HydroModification Management Plan Compliance, DR21-xx

The Drainage Study for Otay Ranch Village 8 West Chula Vista Tract No. 19-04 dated October 25, 2019 (Approved by City of Chula Vista December 30, 2019) was prepared for the Village 8 West development and serves as the approved 'Master' Hydrologic and Hydraulic technical report for the site. The report was prepared by Hale Engineering and outlines the approved stormwater measures included in the Rough Grading Plans for Chula Vista Tract No 19-03, Otay Ranch, Village 8 West, (Dwg# 14011, 14012, 14014, 18016, 18024, 18025 & 18041). The Priority Development Project Storm Water Quality Management Plan (SWQMP) for Otay Ranch Village 8 West Chula Vista Tract No. 19-04 dated January 15, 2020 (Approved by City of Chula Vista January 16, 2020) was prepared for the Village 8 West development and serves as the approved 'Master' Pollutant and Hydromodification Flow Control technical report for the site. The report was prepared by Hale Engineering and outlines the approved stormwater measures included in the Rough Grading Plans for Chula Vista Tract No 19-03, Otay Ranch, Village 8 West, (Dwg# 14011, 14012, 14014, 18016, 18024, 18025 & 18041).

Peak flow attenuation, hydromodification and water quality requirements for the overall site is primarily being addressed via regional biofiltration basins. Sizing of each basin was based on the land use of its tributary area. The *Otay Ranch Village 8 West Parcel 'D'* site is tributary to the northern regional basin which discharges into Wolf Canyon, and it was sized to address water quality and hydromodification requirements.

The calculations included in the approved Hale Engineering, Final Engineering, Master Drainage Study and SWQMP referenced above, assumed a composite imperviousness of 80% for the lot associated with the *Otay Ranch Village 8 West Parcel 'D'* site location. The current design plans indicate a composite imperviousness of 70.4% for the lot associated with the *Otay Ranch Village 8 West Parcel 'D'* site location. Therefore, the *Otay Ranch Village 8 West Parcel 'D'* site design layout and proposed Rough Grading Plan is in compliance with the Hydrologic, Hydraulic, and Pollutant and Flow Control assumptions within the approved Master Technical Studies.

Should you have any questions regarding the information contained within this memo, please contact me at (858) 558-4500.

Sincerely,

Alisa S. Vialpando, RCE 47945
 President



LEGEND

- PROJECT BOUNDARY
- DMA BOUNDARY
- 00.00 ACRES SUBAREA ACREAGE
- DMA 1 DMA ICON
- IMPERVIOUS - ROOF
- IMPERVIOUS - CONCRETE/ASPHALT
- PERVIOUS - DG OR SIMILAR
- LANDSCAPE/SELF TREATING AREAS
- POOL AREA - ASSUMED IMPERVIOUS FOR CALCULATIONS

| Otay Ranch Village 8 West, Parcel 'D' | | | | | | | | | | |
|---------------------------------------|------|--------------------------|------------------------|-------------------------------|-----------------------|-------------|-------------------|-------------|--------------|------------------|
| DMA Calculations | | | H&A Site Plan | | | | H&A SWQMP 1/15/20 | | | |
| | %IMP | Runoff Factor Impervious | Runoff Factor Pervious | Area (ac.) | Impervious Area (ac.) | Area (s.f.) | Summation RF x A | Area* (ac.) | Area* (s.f.) | Summation RF x A |
| ME* | 80 | 0.90 | 0.10 | 17.9 | 12.6 | 739191 | | 17.9 | 778799 | 576312 |
| ROOFS | 100 | 0.90 | 0.10 | 5.33 | 5.33 | 232025 | 208823 | | | |
| CONCRETE OR ASPHALT | 100 | 0.90 | 0.10 | 7.21 | 7.21 | 314168 | 282751 | | | |
| DECOMPOSED GRANITE | 0 | 0.90 | 0.10 | 0.02 | 0.00 | 824 | 82 | | | |
| LANDSCAPE | 0 | 0.90 | 0.10 | 5.27 | 0.00 | 229372 | 22937 | | | |
| POOL/SELF-RETAINING | 100 | 0.90 | 0.10 | 0.1 | 0.1 | 2411 | 2170 | | | |
| COMPOSITE % IMP: | | | | 70.4% | 70.4% | | | 80.0% | 80.0% | |
| Total Areas: | | | | 17.9 | 12.6 | 516763 | | 17.9 | 778799 | 576312 |
| Weighted Runoff Factors: | | | | | | | 0.66 | | | 0.74 |
| | | | | Total Impervious Area (s.f.)= | | 548604 | | | | |

Note:
*Since lot lines for Parcels C-A through C-B and D-A through D-C changed to create Parcel C and Parcel D, both with a total area of 26.9 acres, we will only analyze the portion of Parcel D corresponding to an area of 17.9 acres. The remain portion with an area of 9 acres will be analyzed in the corresponding report for Otay Ranch Village 8 West, Parcel C

SOURCE CONTROL BMPs

- SC-1 PREVENTION OF ILLICIT DISCHARGES TO MS4
- SC-2 STORM DRAIN STENCILING OR SIGNAGE
- SC-6 ADDITIONAL BMPs BASED ON POTENTIAL SOURCES OF RUNOFF POLLUTANTS
 - SC-6A ON-SITE STORM DRAIN INLETS
 - SC-6B INTERIOR FLOOR DRAINS AND ELEVATOR SHAFT SUMP PUMPS
 - SC-6D NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
 - SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE
 - SC-6F POOLS, SPAS, PONDS, FOUNTAINS, AND OTHER WATER FEATURES
 - SC-6G FIRE SPRINKLER TEST WATER
 - SC-6P MISCELLANEOUS DRAIN OR WASH WATER
 - SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS

- D HYDROLOGIC SOIL TYPE
- 1 POINT OF COMPLIANCE

SITE DESIGN BMPs

- SD-2 CONSERVE NATURAL AREAS, SOILS, VEGETATION
- SD-3 MINIMIZE IMPERVIOUS AREAS
- SD-4 MINIMIZE SOIL COMPACTION
- SD-5 IMPERVIOUS AREA DISPERSION
- SD-7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

REFERENCE ONLY

PREPARED BY:



PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(619)558-4500 - FX(619)558-1414

DMA MAP
VILLAGE 8 WEST
PARCEL 'D'

CITY OF CHULA VISTA, CALIFORNIA

DMA CALCULATIONS

REFERENCE ONLY

| Otay Ranch Village 8 West, Parcel 'D' | | | | | | | | | | |
|---------------------------------------|------|-----------------------------|-------------------------------|---------------|--------------------------|----------------|---------------------|--------------------|-----------------|---------------------|
| DMA Calculations | | | | H&A Site Plan | | | | Hale SWQMP 1/15/20 | | |
| | %IMP | Runoff Factor Impervious | Runoff Factor Pervious | Area (ac.) | Impervious Area (ac.) | Area (s.f.) | Summation RF x A | Area* (ac.) | Area* (s.f.) | Summation RF x A |
| MF* | 80 | 0.90 | 0.10 | 17.9 | 12.6 | 739191 | | 17.9 | 778799 | 576312 |
| ROOFS | 100 | 0.90 | 0.10 | 5.33 | 5.33 | 232025 | 208823 | | | |
| CONCRETE OR ASPHALT | 100 | 0.90 | 0.10 | 7.21 | 7.21 | 314168 | 282751 | | | |
| DECOMPOSED GRANITE | 0 | 0.90 | 0.10 | 0.02 | 0.00 | 824 | 82 | | | |
| LANDSCAPE | 0 | 0.90 | 0.10 | 5.27 | 0.00 | 229372 | 22937 | | | |
| POOL/SELF RETAINING | 100 | 0.90 | 0.10 | 0.1 | 0.1 | 2411 | 2170 | | | |
| COMPOSITE % IMP: | | | | 70.4% | | 70.4% | | 80.0% | 80.0% | |
| Total Areas: | | | | 17.9 | 12.6 | 778799 | 516763 | 17.9 | 778799 | 576312 |
| Weighted Runoff Factors: | | | | | | | 0.66 | | | 0.74 |
| | | | Total Impervious Area (s.f.)= | | 548604 | | | | | |

Note:

*Since lot lines for Parcels C-A through C-B and D-A through D-C changed to create Parcel C and Parcel D, both with a total area of 26.9 acres, we will only analyze the corresponding portion of Parcel D with an area of 17.9 acres. The remaining portion with an area of 9 acres will be analyzed in the corresponding report for Otay Ranch Village 8 West, Parcel C

