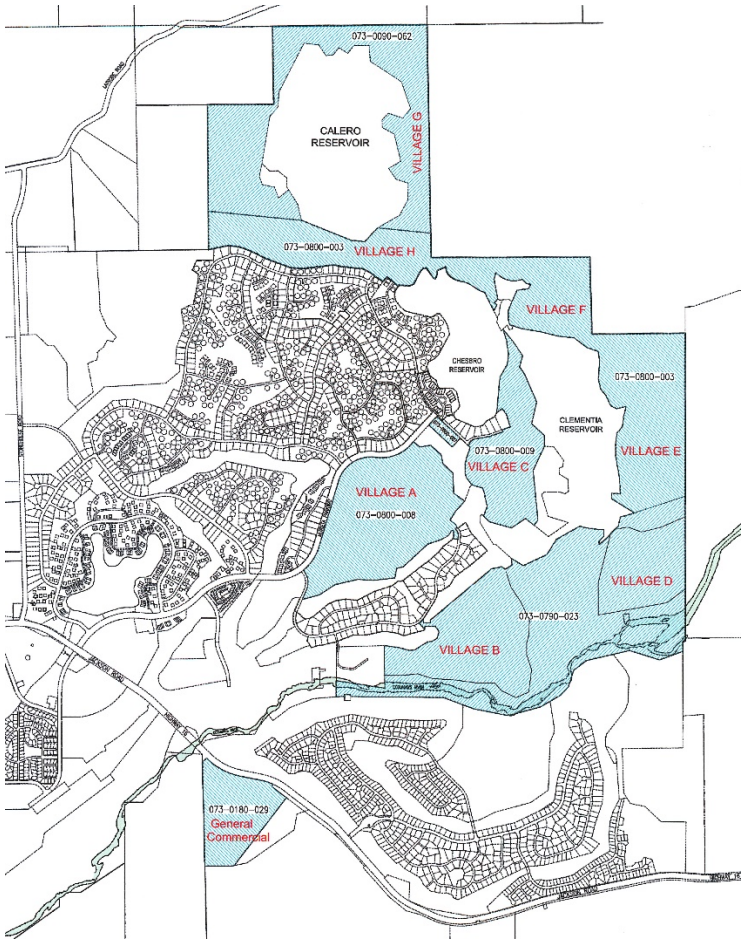
PRELIMINARY SEWER STUDY
FOR
RANCHO MURIETA NORTH

Ranch Murieta- County of Sacramento, California

JUNE, 2018



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I. Introduction and Background

Rancho Murieta is a rural community approximately 25 miles southeast of Sacramento along Highway 16 (Jackson Highway). To date the community consists of mostly residential homes, two golf courses, a private airport, an equestrian center, small supporting commercial developments. Rancho Murieta is divided by the Cosumnes River. This report will focus on the proposed Rancho Murieta North project including previously entitled projects north of the Cosumnes River. Existing and future residential developments for Rancho Murieta South is not part of this analysis.

The Rancho Murieta Community Services District (CSD) owns and operates the sanitary sewer distribution system and a three stage Waste Water Treatment Plant (WWTP) serving the entire Rancho Murieta community. According to the CSD, the WWTP secondary treatment process can accommodate 1.55 million gallons per day (mgd) of dry weather flows and 3.0 mgd of peak wet weather flows, while the tertiary treatment phase can treat up to 2.38 mgd. The WWTP is designed for ultimate build out of 5,200 units. The Rancho Murieta current ultimate build out is projected at approximately 4,500 connections in addition to commercial users. This report will not address the capacity or operation of the CSD Waste Water Treatment Plant.

The CSD design standards and the 2003 Rancho Murieta North Infrastructure Master Plan (Master Plan) dictates the design parameters used in analyzing the sewer distribution system. The intent of this report is to supplement the Master Plan and provided recommendations to the existing and proposed distribution system based on the proposed Rancho Murieta North project.

SHED AREAS

The sewer shed area for Rancho Murieta North is divided into two shed areas (East and West) by the existing infrastructure and topography, refer to Figure 1 on the following page.

The East Shed will include the following proposed and existing developments: The proposed developments of Rancho Murieta North Villages A through F and The Retreats North-East project. The existing developments include Rancho Murieta North Unit 6. The entire East Shed outfalls to the existing sewer lift station constructed with Unit 6 (designated U6-LSB) located just west of the old Granlee Estate just east of the wood pedestrian bridge. The U6-LSB currently only serves the Rancho Murieta North Unit 6 residential development. The CSD Infrastructure Master Plan identifies needed upgrades to the U6-LS6B lift station as specific development are constructed as further explained in this report.

The West Shed outfalls to the existing main lift station (designated LS-U1) located near the existing fire station on Murieta Drive just south of HWY 16. The

lift station LS-U1 currently serves the existing Rancho Murieta North Units 1-4, the Rancho Murieta Equestrian Center, the existing Mobile Village, the airport, various commercial properties and The Retreats West development. The West Shed will include the following proposed developments: The Residences at Murieta Hills East and West, Rancho Murieta North Villages G and H, the Murieta Gardens I commercial/Hotel, and The Murieta Gardens II residential project. The lift station LS-U1 has recently undergone maintenance upgrades (summer 2015) and has the pumping capacity to accommodate the ultimate build out of the West Shed.

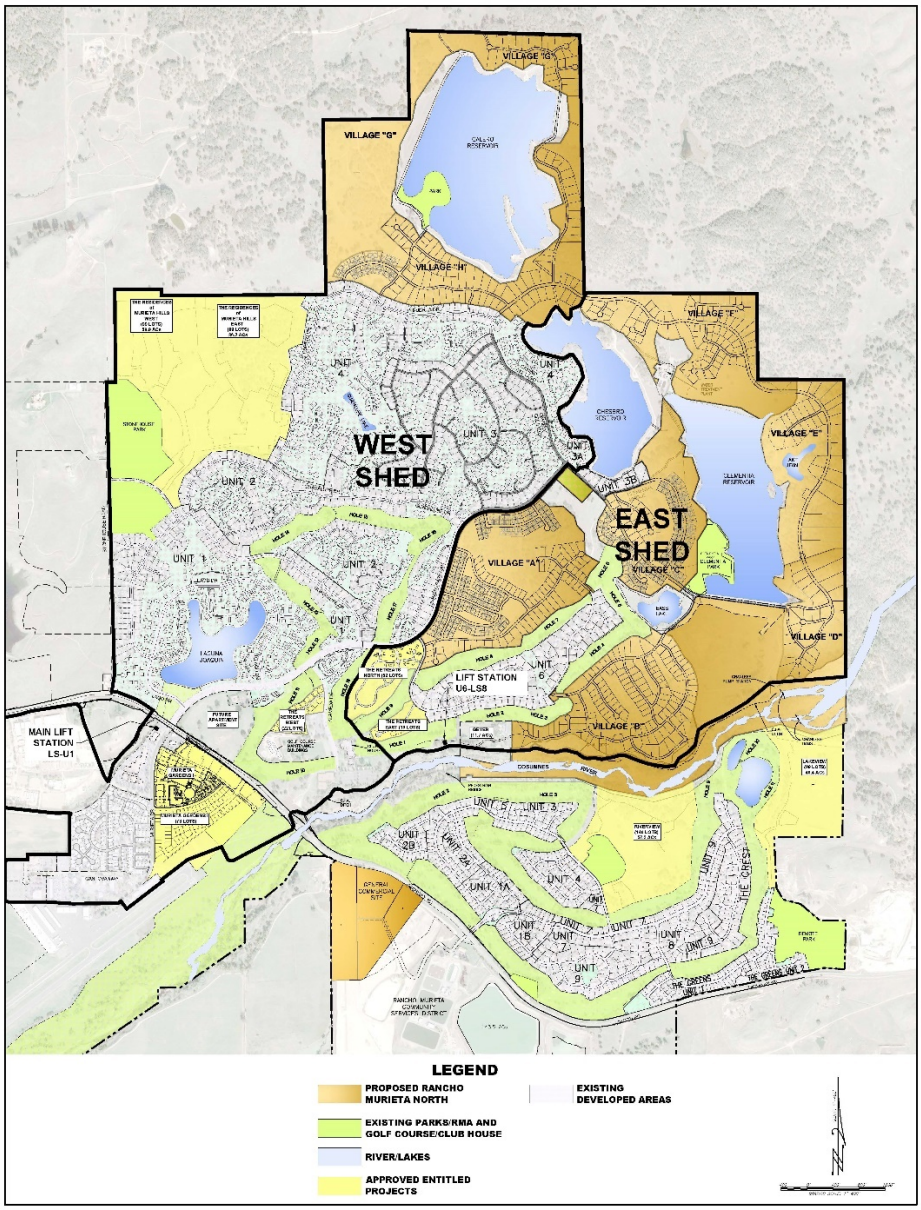


Figure 1: Rancho Murieta North Project Map

II. Methodology

The 2003 Rancho Murieta North Infrastructure Master Plan (Master Plan), by MacKay & Somps, stated that the Sacramento County peaking method along with a local inflow/infiltration (I/I) factor is the most conservative method for designing the sewer infrastructure system. The following is the criteria as outlined in the Master Plan:

- Average Dry Weather Flow (ADWF) = 350 gpd/EDU
- Peaking Factor (PF) = 3.5 – 1.88(ADWF)^0.05, not less than 1.2
- Inflow and Infiltration (I/I) = 1,200 gallons per day per acre
- Peak Wet Weather Flow (PWWF) = ADWF*PF + I/I

For the purpose of consistency Table 1 outlines the different type of Dwelling Units (DUs) that are identified throughout all of Rancho Murieta and prorates them into and Equivalent Dwelling Unit (EDU) per the Brown and Caldwell 2020 Compliance Plan.

Table 1 - Brown & Caldwell EDU Conversions

Lot/User Classification	EDU Factor
Estate > 12,000 sf	1.0
Estate < 12,000 sf	0.9
Circle	0.7
Cottage	0.7
Halfplex	0.5
Townhouse	0.5
Murieta Village (mobile home)	0.3

For a conservative analysis of the sewer distribution systems, all Estate lots will be designated at 1.0 EDU and Murieta Mobile Village will be designated at 0.5 EDU for simplicity. This method will be used to size the proposed sewer distribution pipes and also analyze the capacities within the existing distribution mains.

III. Wastewater Collection Systems

The sewer collector lines are considered to be any pipe that is six to ten inches in diameter. Trunk lines are pipes that are twelve inches in diameter or greater. Collector lines are intended to flow 70% full and trunk lines are intended to flow at 100% full during PWWF conditions. All proposed wastewater lines (both collector and trunk) are considered to be constructed at a minimum pipe slope that will allow for velocity of two feet per second when flowing at their design PWWF flows per the Sacramento Area Sewer District (SASD) standards. The maximum

velocity for the proposed system will be eight feet per second during the PWWF condition.

For constructability and maintenance purposes, the proposed minimum pipe slope shall be the controlling factor so that the system does not get overly deep. It is standard construction and design practice that pipes in the upper reaches of the system are not flowing at their design capacities, thus they have lower velocities. To reduce maintenance in these upper reaches the proposed pipe segment is to have a minimum slope of 0.0070 ft/ft, until the line has a minimum of 6 DUs. For this report, the existing sewer distribution system pipes are assumed to be constructed per their respective plans where the information is available. All pipes are assumed to have a Manning's "n" value of 0.013.

IV. Analysis of Existing Conditions

The East Shed currently only serves Rancho Murieta North Unit 6, which encompasses roughly 46.5 acres will have 110 Estate lots at total build out. The West Shed currently serves Rancho Murieta North Units 1-4, the golf course, clubhouse and support facilities, the Mobile Village park, the equestrian center, airport, The Murieta Inn and several commercial developments which encompass approximately 794.8 acres and 2,350 DUs (1,825 EDUs), refer to Existing Condition Exhibit and spreadsheet calculations in Appendix A. For the purpose of this report The Retreats West and Murieta Gardens I & II are assumed to be fully constructed since both of those projects have started construction.

During the analysis of the West Shed existing distribution pipes, potential system deficiencies have been identified. Refer to the Existing Condition Exhibit and the spreadsheet calculations, in Appendix A. It appears that there are several pipe segments from Node U3-N3 to U1-M that are operating above the design criteria. Collector pipes are designated as "impacted" having a design flow that is above the 0.7 d/D ratio (colored cyan) and "surcharging pipes" have a design flow that exceeds the pipe capacity at its design slope and diameter (colored purple). The district will need to make a determination what action, if any, is necessary to address the current modeled deficiency in their existing system. As previously stated, for a conservative system analysis (pipe sizes/slopes, conveyance) the peaked wet weather flows (PWWF) uses the ADWF flow of 350 gpd per EDU. Upon review of CSD's historical average flows, the actual ADWF is less than 200 gpd per EDU, therefore actual deficiencies are suspect, or may not exist. It is our recommendation that flow meters be installed at strategic locations to monitor the actual flows versus the design flows to determine if there are actual system deficiencies.

Table 2 summarizes the flows at the existing lift stations with the design flows at the outfalls.

Table 2: Existing Flow Summary for Rancho Murieta North

Shed	Area (AC)	Dwelling Unit (DU)	Equivalent Dwelling Unit (EDU)	Q_{ADWF} (MGD)	Peaking Factor	Q_{PDWF} (MGD)	I/I (MGD)	Q_{PWWF} (MGD)
U6-LSB	46.5	110	110.0	0.0385	1.97	0.0759	0.0558	0.1317
LS-U1	794.8	2,350	1,825.0	0.6388	1.74	1.1114	0.9538	2.0651

V. Analysis of Proposed Conditions

The proposed developments will be analyzed by shed area and design options. The project phasing and lift station design will be discussed later in the report.

East Shed Projects

The East Shed sewer distribution design includes pipe size recommendations in conformance with the CSD design standards. No optional alternatives are proposed. The detailed exhibits and spread sheet calculations for the East Shed will be included in each of the West Shed Design Options 1,2 & 3, refer to Appendices B-D.

Table 3 outlines the Ultimate Buildout Flows to U6-LSB.

Table 3: Ultimate Buildout Flows to U6-LSB

Shed	Area (AC)	Dwelling Unit (DU)	Equivalent Dwelling Unit (EDU)	Q_{ADWF} (MGD)	Peaking Factor	Q_{PDWF} (MGD)	I/I (MGD)	Q_{PWWF} (MGD)
U6-LSB	347.5	824	731	0.2559	1.82	0.4653	0.4170	0.8823

The following is a breakdown of the proposed developments in the East Shed:

The Retreats North & East encompasses roughly 23 acres of residential development adding 62 DUs (43.4 EDUs) into the East Shed. This project will consist of six-inch collector pipes that will tie into the existing main in De La Cruz Drive. According to the Master Plan, this project may need to upgrade the pumps in lift station U6-LSB. The Sewer Study for the Retreats North-East confirmed that the existing lift station U6-LSB is capable to handle the flows from the Retreats North-East without an upgrade.

Village A encompasses 94.5 acres of which 55 acres will be developed into residential homes adding 215 lots (71 lot and 144 clusters) to the East Shed. The total Equivalent Dwelling Units (EDU) being added from Village A are 156.8 EDU's as the clusters have a dwelling unit factor of 0.7. This project will have two sub shed areas and consist of six-inch collector pipes that tie into the existing system of Rancho Murieta North Unit 6. The Master Plan calls for Lift Station U6-LSB to get a full upgrade (wet well, pumps) in which the new lift station will be connected to the existing ten-inch force main that was previously constructed with Unit 6. The existing ten-inch force main currently does not connect to the WWTP. A new 12-inch force main will be required to connect to and extend the existing 10-inch force main to the WWTP paralleling the existing 12-inch force main that serves the west shed. With Village A, the U6-LSB wet well will need to be sized for the ultimate build out conditions of the east shed. The lift station pump sizes could be set up to be upgraded as the upstream projects develop, discussed later in this report.

Village B encompasses approximately 74.3 acres of which 55.7 acres will be developed into residential homes adding 136 DUs (136 EDUs) into the East Shed. The steepness of the terrain may require some of the homes to require a grinder pump service. The majority of the system will consist of six-inch collectors with and eight to ten-inch backbone collector that will convey the flows from the proposed lift stations. The hilly terrain and designing for the future developments call for the construction of two lift stations (LS-B1 and LS-B2) on Lot E and Lot H, respectively. The flows from LS-B1 will be conveyed to a ten-inch collector pipe that will gravity through the old Granlee Estate thru an existing 20' wide sewer easement to the existing Lift Station U6-LSB.

Village C encompasses 63.3 acres of which 32 acres will be developed into residential homes adding 128 DUs (24 lots and 104 clusters) into the East Shed. The total Equivalent Dwelling Units (EDU) being added from Village C are 96.8 EDU's as the clusters have a dwelling unit factor of 0.7. The system will consist of six-inch collector lines and two lift stations. LS-C1 located within the existing park property and LS-C2 on Lot C will handle the lots adjoining Bass Lake. LS-C1 will also be sized to receive the flows form LS-D1. The flows from LS-C1 will be conveyed via a six-inch force main across Bass Lake Dam and into Village B to LS-B2

Village D encompasses 38.4 acres of which 32 acres will be developed into residential homes adding 28 DUs (42 EDUs) into the East Shed. The steepness of the terrain may require some of the homes to require a grinder pumps. The majority of the system will consist of six-inch collector lines that tie into an eight-inch backbone collector that conveys flows to the proposed lift station (LS-D1). The flows from LS-D1 will be conveyed via a six-inch force main that will cross the Lake Clementia Damn to lift station LS-C1 in Village C.

Village E encompasses 63.1 acres of which 39.4 acres will be developed into residential homes adding 32 DUs (32 EDUs) to the East Shed. The majority of the system will consist of six-inch collectors that with outfall into eight-inch collector that will convey flows to Village D. The hilly terrain and being adjacent to Lake Clementia result in the need to construct three small lift stations LS-E1, LS-E2 and LS-E3. In-lieu of small lift station that only serve few lots, an alternate sewer system could be developed where each lot connects their own grinder pump system to a low pressure pump sewer service which connects to a 2-inch force main which then connects to a sewer manhole, This alternate system could reduce the number of minor LS's. The CSD would maintain the low pressure sewer system.

Village F encompasses 77.1 acres of which 40.6 acres will be developed into residential homes adding 90 DUs (90 EDUs) into the East Shed. Being the uppermost reach of the East Shed the system will consist entirely of six-inch collectors. The hilly terrain and being adjacent to Lake Clementia result in the need to construct three lift stations LS-F1, LS-F2 and LS-F3.
For LS-F3, again there could be an alternate low pressure sewer system developed which could reduce the need for this small LS that only serves a few lots. Each lot within the alternate sewer system area would connect their own grinder pump system to a low pressure pump sewer service which connects to a 2-inch force main which then connects to a sewer manhole, The CSD would maintain the low pressure sewer system.

West Shed Projects

The West Shed already has a significant amount of existing development in Rancho Murieta North Units 1-4. For the purpose of this report The Residences at Murieta Hills East & West, the proposed school and park on Escuela, the future multi-family development, Village G and Village H are all going to be treated as infill projects. The Retreats West and Murieta Gardens I & II are going to be assumed as existing. The Master Plan detailed two separate options on how the developed flows are to be handled. This report will add one additional design option for consideration.

The projects to the south of Hwy 16 in the west shed (Murieta Gardens I & II, Equestrian Center, Airport, Mobile Village and various commercial developments) have been included in the calculations in order to show the impact on the existing system that serves the area. Analysis of the pipe systems in the west shed and south of Hwy 16 is beyond the scope of this report.

A brief description of the three infill projects will be followed by the analysis of the three design options:

The Residences at Murieta Hills (East and West) encompass 146.1 acres of which 74.4 acres will be developed into residential homes adding 198 DUs (198 EDUs) to the West Shed. The topography of the site calls for a lift station LS-R1 to be constructed. For the purpose of this report the existing park to the southwest, the future school and park expansion to the south will sewer into LS-R1. The flows that go into LS-R1 and where those flows will outfall is the discussion of Options 1-3, which will be discussed in detail later.

Village H encompasses 70 acres of which 55 acres will be developed into residential homes adding 116 DUs (84 lots and 32 clusters) into the West Shed. The total Equivalent Dwelling Units (EDU) being added from Village H are 106.4 EDU's as the clusters have a dwelling unit factor of 0.7. The entire system will consist of six inch collector lines. The topography of the area will call for the construction of two lift stations LS-H1 on the western side of Village H and LS-H2 on the north easterly edge of Village H at the Village G boundary. The outfall of this Village H from LS-H1 will be discussed in Options 1 & 3 below.

Village G encompasses 112.2 acers of which 26.1 acres will be developed into residential homes adding 50 DUs (50 EDUs) to the West Shed. Being the uppermost reach of the West Shed will make the entire collector system six inch in size. Lift station LS-G1 will need to be constructed the in order to cross the eastern Lake Calero Damn with minimal trenching. Once across the dam the sewer can then gravity into the Village H system.

West Shed Outfall Option 1

Option 1 is the same as Alternate 1 in the Master Plan. In this option the flows from Villages G and H are connected into the existing six inch force main that is stubbing into Village H from Rancho Murieta North Unit 4 that is in Del Cerro Drive. This force main would convey the flows into the Residences at Tierras Drive which would then gravity to the proposed LS-R1. LS-R1 would lift the combined flows of Village G, Village H, The Residences East and West, the future school and the existing/future parks to the existing eight inch stub in Escuela Drive and into the existing system in Rancho Murieta North Unit 1.

Table 4: Flows to LS-R1 for Option 1

Shed	Area (AC)	Dwelling Unit (DU)	Equivalent Dwelling Unit (EDU)	Q_{ADWF} (MGD)	Peaking Factor	Q_{PDWF} (MGD)	I/I (MGD)	Q_{PWWF} (MGD)
LS-R1	256.1	509	499.4	0.1748	1.85	0.3234	0.3073	0.6307

The Design Option 1 Exhibit in Appendix B shows pipes that are impacted in light blue and pipes that are surcharging in violet, as described earlier in this report. Pipes that are surcharging would need to be upgraded in size or slope to be brought into compliance. Pipes that are impacted have the option of being left as is with approval of the CSD or being upgraded like the pipes that are surcharging. This option is contingent upon The Residences being built prior to Villages H and G in order to have LS-R1 constructed and the infrastructure for those projects in place to tie into. Spreadsheet calculations and a full scale shed map can be located in Appendix B. The district will need to make a determination what action, if any, is necessary to address the current modeled deficiency in their existing system. As previously stated, for a conservative system analysis (pipe sizes/slopes, conveyance) the peaked wet weather flows (PWWF) uses the ADWF flow of 350 gpd per EDU. Upon review of CSD's historical average flows, the actual ADWF is less than 200 gpd per EDU, therefore actual deficiencies are suspect, or may not exist. It is our recommendation that flow meters be installed at strategic locations to monitor the actual flows versus the design flows to determine if there are actual system deficiencies.

West Shed Outfall Option 2

Option 2 is the same as Alternate 2 in the Master Plan. In this option the flows from Villages G and H are connected into the existing six inch force main that is stubbing into Village H from Rancho Murieta North Unit 4 that is in Del Cerro Drive. This force main would convey the flows into the Residences at Tierras Drive which would then gravity to the proposed LS-R1.

Table 5: Flows to LS-R1 for Option 2

Shed	Area (AC)	Dwelling Unit (DU)	Equivalent Dwelling Unit (EDU)	Q_{ADWF} (MGD)	Peaking Factor	Q_{PDWF} (MGD)	I/I (MGD)	Q_{PWWF} (MGD)
LS-R1	256.1	509	499.4	0.1748	1.85	0.3234	0.3073	0.6307

In Option 2, LS-R1 would lift the combined flows of Village G, Village H, The Residences, future school and the existing/future parks in a new six inch force main to the existing twelve inch force main in Stonehouse Road. The Master Plan called for the new six inch force main to the inserted into an existing abandoned twelve inch sewer force main turning it into a casing and connected directly to LS-U1. See figure 2 below.

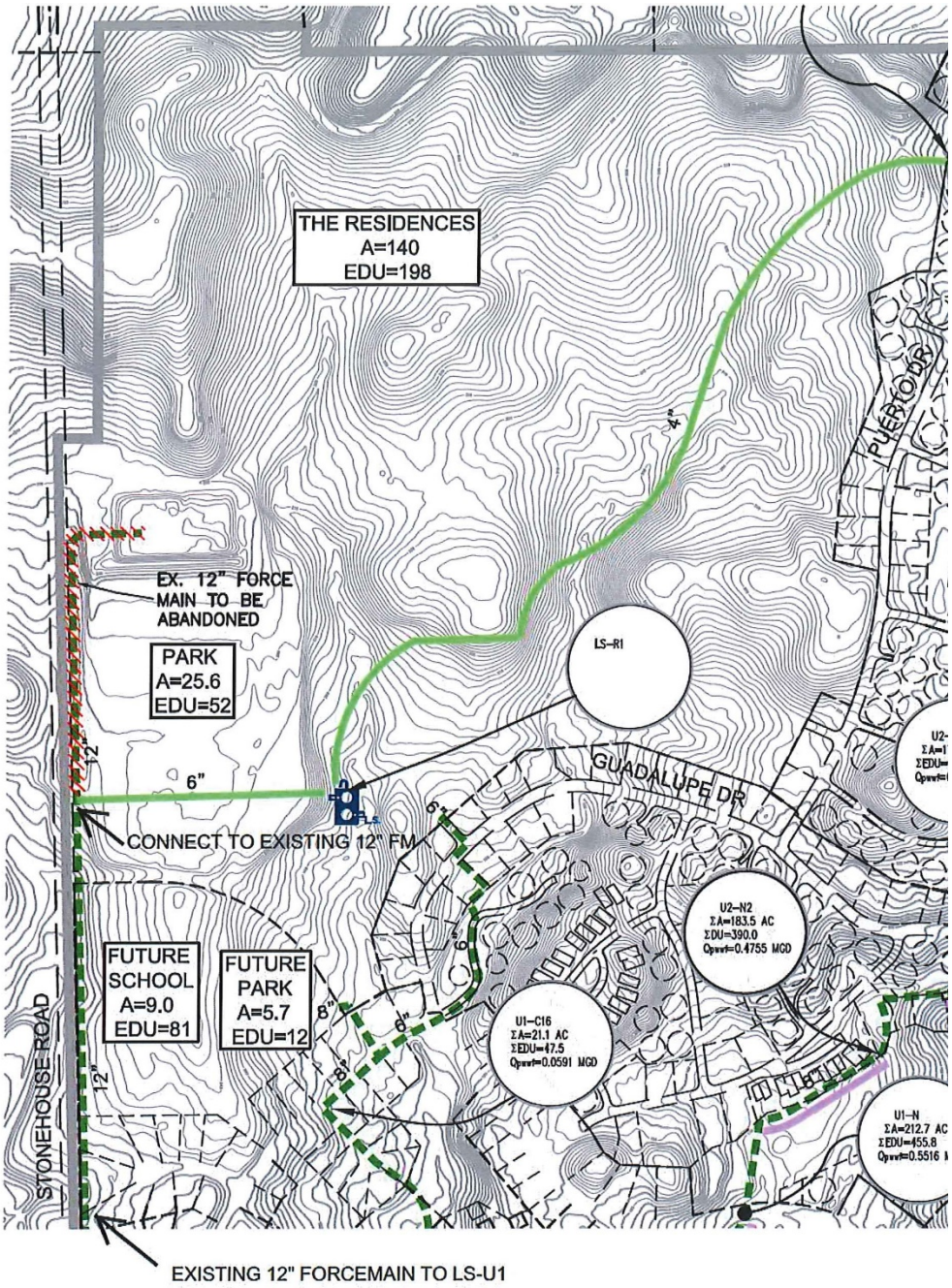


Figure 2: West Shed Outfall Option 2

It should also be noted that Stonehouse Road is scheduled to be realigned and connect to Hwy 16 at Lone Pine Road. Constructability and the realignment may deem using the existing twelve inch force main as a casing infeasible. Constructing a new six inch force main within the Stonehouse Road alignment and using the existing twelve inch force main where it crosses Highway 16 is an alternative design.

As of the writing of this report, it has been determined by the RMCSD that the existing abandoned 12" sewer force main that exists along the easterly side of Stonehouse Road is intended to be used as part of the districts Recycle Water System so the West Shed Outfall Option 2 is no longer being considered therefor the spreadsheet calculation and exhibits are not provided. Should this option be again considered, or the possibility of constructing a new force main along Stonehouse Road be considered then spreadsheet calculation and exhibits can be provided.

West Shed Outfall Option 3

Option 3. In this option the flows from Villages G and H are connected into the existing six inch gravity sewer main that is stubbing into Village H at Del Cerro Drive in Rancho Murieta North Unit 4. This sewer main conveys the flows through Rancho Murieta North Unit 4 around Guadalupe Lake, thus splitting the flows. LS-R1 would lift the combined flows of The Residences, future school and the existing/future parks to the existing eight inch stub in Escuela Drive and into the existing system in Rancho Murieta North Unit 1.

Table 6: Flows to LS-R1 for Option 3

Shed	Area (AC)	Dwelling Unit (DU)	Equivalent Dwelling Unit (EDU)	Q_{ADWF} (MGD)	Peaking Factor	Q_{PDWF} (MGD)	I/I (MGD)	Q_{PWWF} (MGD)
H OUT	75.8	166	156.4	0.0547	1.94	0.1064	0.0910	0.1973
LS-R1	180.3	343	343	0.1201	1.88	0.2258	0.216	0.4422

The Design Option 3 Exhibit in Appendix C shows pipes that are impacted in light blue and pipes that are surcharging in violet. Pipes that are surcharging would need to be upgraded in size or slope to be brought into compliance. Pipes that are impacted have the option of being left as it with approval of CSD or being upgraded like the pipes that are surcharging. This option allows Villages G and H to move forward in construction independently from The Residences East and/or West. This Design Option would also allow for the Residences East and/or West to have the ability to still pump directly to LS-U1 as discussed in Design Option 2, if that was deemed more suitable for their design. Spreadsheet calculations and a full scale shed map is located in Appendix C.

Commercial Property

The Rancho Murieta North project includes a 40 acre undeveloped commercial site located on the south side of Hwy 16 just west of the WWTP. The site was previously used by the Operating Engineers Local 3 heavy equipment training grounds. The proposed specific uses for this site are not determined at this time. A minor sewer lift station is intended to service this site and pump directly to the WWTP holding ponds, see exhibit for Option 3 Exhibit in Appendix C for a possible alignment of a lift station. The sewer demand for the 40 acre commercial development is anticipated to be approximately 160 EDU's.

VI. Lift Stations/Phasing

This section of the report will focus on the critical path items for the existing and proposed lift stations from least critical (upper reach) to most critical (lower reach) within each shed area. For the purpose of this report, SASD standards are being considered for the lift station designs. Rough pump designs were performed using GrundFOS product selector (www.grundfos.com), given the design flow and an estimated head of 100 feet. The pumps and wet well sizing would have to be finalized during the design phase.

West Shed Lift Stations

Currently there are two existing lift stations in the West Shed: The main lift station LS-U1 on Murieta Drive near the fire station, the minor lift station at the intersection of Cantova Way and Murieta Drive. To date, there is no plan to update any of these lift stations as they were built for the ultimate condition. LS-U1 has recently gone through a wet-well upgrade. Any further upgrades would be at the discretion of the CSD.

There are four proposed lift stations to be built in the West Shed: LS-G1 in Village G, LS-H1 and LS-H2 in Village H, and LS-R1 in the Residences East and West. Table 7 gives a summary of the lift stations.

Table 7 - West Shed Lift Station Summary

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-G1	0.0506	35.1	2 – 5HP Lead/Lag
LS-H1	0.1973	137.0	2 – 15HP Lead/Lag
LS-H2	0.1123	78.0	2 – 5HP Lead/Lag
LS-R1 Options 1	0.6307	438	2 – 30HP Lead/Lag
LS-R1 Option 3	0.4422	307.1	2 – 25HP Lead/Lag

Due to these lift stations being at the upper to middle of the shed reach it is not feasible to phase the construction or pump configuration therefore each lift station should be designed for the ultimate condition.

East Shed Lift Stations

Currently there are only three existing lift stations in the East Shed: Unit 6 has a LS-6A, LS-6B and Unit 3B has a small lift station. The CSD has expressed a desire to abandon LS-6A if possible. The only viable option for this lift station to be abandoned is to construct a gravity line from the lift station to the proposed Village B. Due to cultural and natural resources in the proposed alignment and construction cost, it is recommended that LS-6A stay in service.
The minor lift station serving Rancho Murieta Unit 3B has a possibility to be abandoned and rout the gravity sewer flows into Village C. This would need to be considered during the design phase of Village C.

There are eleven proposed lift stations to be built in the East Shed: LS-F1, LS-F2 & LS-F3 in Village F; LS-E1, LS-E2 & LS-E3 in Village E; LS-D1 in Village D; LS-C1 & LS-C2 in Village C; and LS-B1 & LS-B2 in Village B. The existing lift station LS-6B is recommended to be upgraded and replaced at different stages of development as outlined in the Master Plan. Table 8 gives a summary of the lift stations in the upper reaches of the East Shed and a rough estimate of the ultimate pump configuration given the design flow and preliminary estimates head of 50-100 feet. The pumps and wet well sizing would have to be finalized during the design phase.

Table 8 - East Shed Lift Station Summary (Ultimate Design)

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-F3	0.0107	7.4	2 – 4HP Lead/Lag
LS-F2	0.0662	46	2 – 7.5HP Lead/Lag
LS-F1	0.1080	75.0	2 – 7.5HP Lead/Lag
LS-E3	0.1155	80.2	2 – 10HP Lead/Lag
LS-E2	0.1511	104.9	2 – 10HP Lead/Lag
LS-E1	0.1706	118.5	2 – 15HP Lead/Lag
LS-D1	0.2252	156.4	2 – 15HP Lead/Lag
LS-C2	0.0530	36.8	2 – 4HP Lead/Lag

Due to these lift stations being at the upper to middle of the shed reach it is not feasible to phase the construction or pump configuration and each lift station should be designed for the ultimate condition. As previously stated there is a potential alternate to small lift stations serving only a few lots where a small low pressure force main system can be installed so each grinder pump would connect to a low-pressure sewer service. Each lot would contribute to the small force main flow which would connect to a gravity sewer manhole or a lift station. This alternate system could be designed in-lieu of LS F-3. Further analysis for this alternate could be made available upon request to consider the viability.

The remaining proposed lift stations will need to have to wet wells designed for the ultimate build out condition, but would have the option of upgrading the pumps as development progresses. This will allow the pumps to operate at the highest efficiency and allow for monitoring of real flows within the system that will be monitored by the CSD. Tables 9 through 12 will show possible phasing for lift stations LS-C1, LS-B2, LS-B1 and LS-6B, respectively.

Table 9 - East Shed Lift Station – C1 Phasing Summary

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-C1	0.1237	85.9	2 – 7.5HP Lead/Lag
LS-C1 plus Village D	0.19	131	2 – 15HP Lead/Lag
LS-C1 plus Villages D & E	0.26	180.3	2 – 15HP Lead/Lag
LS-C1 Ultimate	0.3441	239	2 – 25HP Lead/Lag

Table 10 - East Shed Lift Station – B2 Phasing Summary

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-B2	0.069	48.0	2 – 4HP Lead/Lag
LS-B2 plus Village C	0.193	134	2 – 15HP Lead/Lag
LS-B2 plus Villages C & D	0.259	180	2 – 15HP Lead/Lag
LS-B2 plus Villages C, D & E	0.329	228	2 – 25HP Lead/Lag
LS-B2 Ultimate	0.413	286	2 – 25HP Lead/Lag

Table 11 - East Shed Lift Station – B1 Phasing Summary

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-B1 plus LS-B2	0.17	118	2 – 15HP Lead/Lag
LS-B1 plus LS-B2 & Village C	0.293	203	2 – 15HP Lead/Lag
LS-B1 plus LS-B2 & Villages C&D	0.359	249	2 – 25HP Lead/Lag
LS-B1 plus LS-B2 & Villages C,D&E	0.429	297	2 – 25HP Lead/Lag
LS-B1 Ultimate	0.513	356	2 – 25HP Lead/Lag

Table 12 - East Shed Lift Station – 6B Phasing Summary

Lift Station Designation	Design Flow Q_{pwwf} (Mgd)	Design Flow Q_{pwwf} (gpm)	Pump Configuration
LS-6B Existing	0.1317	91.5	2 – 7.5HP Lead/Lag
LS-6B plus Retreats N & E	0.1717	119.2	2 – 10HP Lead/Lag
LS-6B plus Retreats & Village A	0.3535	245	2 – 25HP Lead/Lag
LS-6B plus Retreats & Villages A&B	0.523	363	2 – 30HP Lead/Lag
LS-6B plus Retreats & Villages A-C	0.646	448	2 – 30HP Lead/Lag
LS-6B Ultimate	0.8823	612	2 – 50HP Lead/Lag

VII. Recycled Water Program

The CSD has implemented a recycle water program in conjunction to the 2020 compliance plan. The following projects within Rancho Murieta North will be participating in the Recycled Water Program: The Residences East & West, The Retreats (North, East & West), Village A, Village B, Village C and Murieta Gardens I & II, See figure 3. These projects in conjunction with the North and South Golf Courses, Stonehouse and Esquela Park sites are to dispose of the treated wastewater to be in compliance with permit. If necessary the CSD has the Van Vleck spray fields available for excess sewer disposal. The CSD's recycled water program addresses the disposal requirements for the Rancho North Project and is not a part of this report.

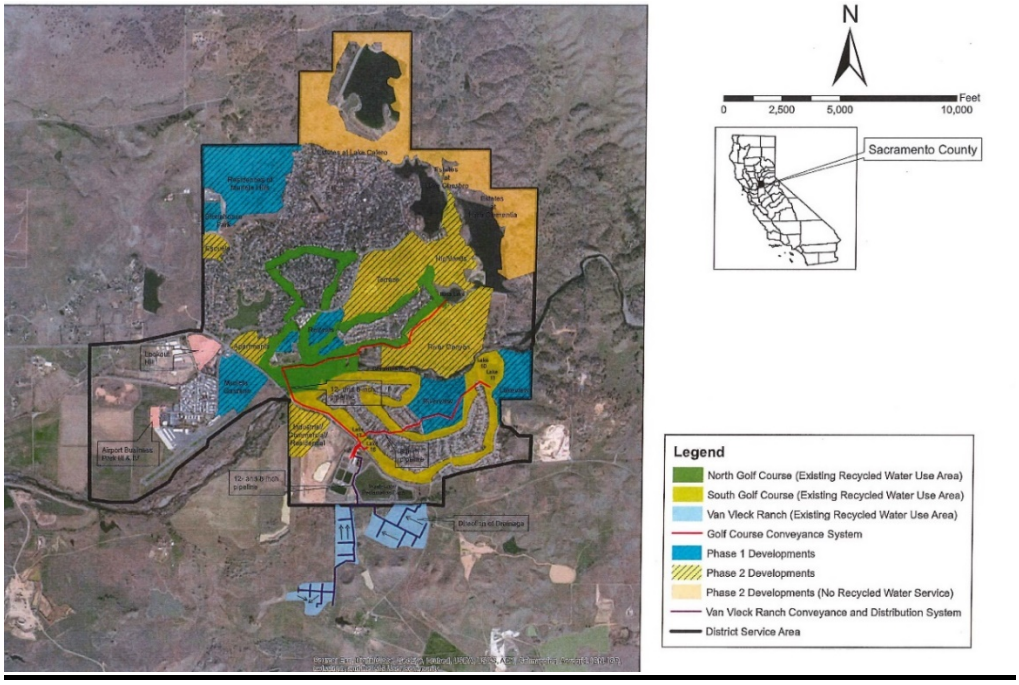


Figure 3: Recycled Water Use Area- provided by CSD

VIII. Conclusion

The Rancho Murieta CSD infrastructure sewer collection system is adequate to accommodate the added flows form the Rancho Murieta North project with the recommendations outlined in this report. Design Option 3 is considered the preferred option in the West Shed. This option is preferred as it allows for the proposed future developments to move forward independently of already entitled projects. This option also has to ability to work with the CSD to address potential deficient pipes within their existing system. The strategic placement of sewer flow meters within the existing sewer mains at the potential areas of concern would confirm average dry weather flows and peak wet weather flow in order to properly evaluate solutions to potential deficient sewer lines.

Appendix A

Existing Conditions Shed Map & Spreadsheet Calculations

RANCHO MURIETA NORTH
SEWER INFRASTRUCTURE CALCULATIONS
EAST SHED - EXISTING CONDITIONS

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS														PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
LS6A	6S	9.5	**9.5**	22	**22**	1.0	0	**0**	0.7	0	**0**	0.5	22.0	**22.0**	**0.0077**	2.09	0.0161	0.0114	**0.0275**	FM	4	2900	N/A
6S	6R	0.0	**9.5**	0	**22**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**22.0**	**0.0077**	2.09	0.0161	0.0114	**0.0275**	0.0300	6	401	
6R	6Q	0.0	**9.5**	0	**22**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**22.0**	**0.0077**	2.09	0.0161	0.0114	**0.0275**	0.0410	6	202	
6Q	6P	0.0	**9.5**	0	**22**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**22.0**	**0.0077**	2.09	0.0161	0.0114	**0.0275**	0.0490	6	180	
6P	6O	0.0	**9.5**	0	**22**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**22.0**	**0.0077**	2.09	0.0161	0.0114	**0.0275**	0.0450	6	252	
6O	6N	8.7	**18.2**	18	**40**	1.0	0	**0**	0.7	0	**0**	0.5	18.0	**40.0**	**0.0140**	2.05	0.0286	0.0218	**0.0505**	0.0260	6	180	
6N	6M	0.0	**18.2**	0	**40**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**40.0**	**0.0140**	2.05	0.0286	0.0218	**0.0505**	0.0450	6	188	
6M	6L	0.0	**18.2**	0	**40**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**40.0**	**0.0140**	2.05	0.0286	0.0218	**0.0505**	0.0280	6	335	
6L	6K	0.0	**18.2**	0	**40**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**40.0**	**0.0140**	2.05	0.0286	0.0218	**0.0505**	0.0260	6	215	
6K	6J	0.0	**18.2**	0	**40**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**40.0**	**0.0140**	2.05	0.0286	0.0218	**0.0505**	0.0100	6	164	
6J	6I	4.9	**23.1**	12	**52**	1.0	0	**0**	0.7	0	**0**	0.5	12.0	**52.0**	**0.0182**	2.03	0.0369	0.0277	**0.0646**	0.0050	8	170	
6I	6H	0.0	**23.1**	0	**52**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**52.0**	**0.0182**	2.03	0.0369	0.0277	**0.0646**	0.0050	8	169	
6H	6G	4.4	**27.5**	12	**64**	1.0	0	**0**	0.7	0	**0**	0.5	12.0	**64.0**	**0.0224**	2.01	0.0451	0.0330	**0.0781**	0.0099	8	204	
6G	6F	6.4	**33.9**	17	**81**	1.0	0	**0**	0.7	0	**0**	0.5	17.0	**81.0**	**0.0284**	1.99	0.0565	0.0407	**0.0972**	0.0035	8	435	
6F	6E	0.0	**33.9**	0	**81**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**81.0**	**0.0284**	1.99	0.0565	0.0407	**0.0972**	0.0328	8	312	
6E	6D	4.9	**43.6**	13	**105**	1.0	0	**0**	0.7	0	**0**	0.5	13.0	**105.0**	**0.0368**	1.97	0.0725	0.0523	**0.1249**	0.0035	8	210	
6D	6C	1.3	**46.5**	3	**110**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**110.0**	**0.0385**	1.97	0.0759	0.0558	**0.1317**	0.0035	10	70	
6C	6B	0.0	**46.5**	0	**110**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**110.0**	**0.0385**	1.97	0.0759	0.0558	**0.1317**	0.0133	10	252	
6B	6A	0.0	**46.5**	0	**110**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**110.0**	**0.0385**	1.97	0.0759	0.0558	**0.1317**	0.0040	10	232	
6A	LS-6B	0.0	**46.5**	0	**110**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**110.0**	**0.0385**	1.97	0.0759	0.0558	**0.1317**	0.0320	10	40	
LS-6B																							
6E4	6E3	0.0	**0.0**	0	**0**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**0.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0100	8	2387	
6E3	6E2	0.0	**0.0**	0	**0**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**0.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0110	8	140	
6E2	6E1	2.4	**2.4**	6	**6**	1.0	0	**0**	0.7	0	**0**	0.5	6.0	**6.0**	**0.0021**	2.18	0.0046	0.0029	**0.0075**	0.0039	8	238	
6E1	6E	2.4	**4.8**	5	**11**	1.0	0	**0**	0.7	0	**0**	0.5	5.0	**11.0**	**0.0039**	2.14	0.0082	0.0058	**0.0140**	0.0060	8	133	
6E																							
6D2	6D1	0.6	**0.6**	1	**1**	1.0	0	**0**	0.7	0	**0**	0.5	1.0	**1.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0330	6	175	
6D1	6D1	1.0	**1.6**	1	**2**	1.0	0	**0**	0.7	0	**0**	0.5	1.0	**2.0**	**0.0007**	2.25	0.0016	0.0019	**0.0035**	0.0050	6	179	
6D																							

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS																PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
U4-N24	U4-N23	0.6	**0.6**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0007	**0.0023**	0.0320	6	67	
U4-N23	U4-N22	0.7	**1.3**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0016	**0.0054**	0.0080	6	300	
U4-N22	U4-N21	0.7	**2.0**	2	**7**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**7.0**	**0.0025**	2.17	0.0053	0.0024	**0.0077**	0.0340	6	206	
U4-N21	U4-N20	0.8	**2.8**	2	**9**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**9.0**	**0.0032**	2.15	0.0068	0.0034	**0.0101**	0.0050	6	158	
U4-N20	U4-N19	2.5	**5.3**	4	**13**	1.0	3	**3**	0.7	0	**0**	0.5	6.1	**15.1**	**0.0053**	2.12	0.0112	0.0064	**0.0175**	0.0410	6	385	
U4-N19	U4-N18	2.1	**7.4**	1	**14**	1.0	5	**8**	0.7	0	**0**	0.5	4.5	**19.6**	**0.0069**	2.10	0.0144	0.0089	**0.0233**	0.0730	6	349	
U4-N18	U4-N17	2.1	**9.5**	6	**20**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**25.6**	**0.0090**	2.08	0.0186	0.0114	**0.0300**	0.0360	6	304	
U4-N17	U4-N16	1.8	**11.3**	5	**25**	1.0	0	**8**	0.7	0	**0**	0.5	5.0	**30.6**	**0.0107**	2.07	0.0221	0.0136	**0.0357**	0.0200	6	237	
U4-N16	U4-N15	0.2	**11.5**	1	**26**	1.0	0	**8**	0.7	0	**0**	0.5	1.0	**31.6**	**0.0111**	2.06	0.0228	0.0138	**0.0366**	0.0190	6	210	
U4-N15	U4-N14	2.5	**14.0**	6	**32**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**37.6**	**0.0132**	2.05	0.0270	0.0168	**0.0438**	0.0420	6	426	
U4-N14	U4-N13	3.7	**17.7**	3	**35**	1.0	1	**9**	0.7	9	**9**	0.5	8.2	**45.8**	**0.0160**	2.04	0.0326	0.0212	**0.0539**	0.0448	6	176	
U4-N13	U4-N12	4.9	**22.6**	9	**44**	1.0	0	**9**	0.7	0	**9**	0.5	9.0	**54.8**	**0.0192**	2.02	0.0388	0.0271	**0.0659**	0.0280	6	168	
U4-N12	U4-N11	1.4	**24.0**	0	**44**	1.0	4	**13**	0.7	0	**9**	0.5	2.8	**57.6**	**0.0202**	2.02	0.0407	0.0288	**0.0695**	0.0180	6	147	
U4-N11	U4-N10	8.8	**32.8**	5	**49**	1.0	14	**27**	0.7	0	**9**	0.5	14.8	**72.4**	**0.0253**	2.00	0.0507	0.0394	**0.0901**	0.0035	8	282	
U4-N10	U4-N9	2.0	**34.8**	0	**49**	1.0	4	**31**	0.7	0	**9**	0.5	2.8	**75.2**	**0.0263**	2.00	0.0526	0.0418	**0.0944**	0.0035	8	147	
U4-N9	U4-N8	6.3	**41.1**	0	**49**	1.0	15	**46**	0.7	0	**9**	0.5	10.5	**85.7**	**0.0300**	1.99	0.0597	0.0493	**0.1090**	0.0035	8	126	
U4-N8	U4-N7	4.6	**45.7**	4	**53**	1.0	6	**52**	0.7	0	**9**	0.5	8.2	**93.9**	**0.0329**	1.98	0.0652	0.0548	**0.1200**	0.0035	8	211	
U4-N7	U4-N6	0.0	**45.7**	0	**53**	1.0	0	**52**	0.7	0	**9**	0.5	0.0	**93.9**	**0.0329**	1.98	0.0652	0.0548	**0.1200**	0.0035	8	219	
U4-N6	U4-N5	4.3	**50.0**	0	**53**	1.0	9	**61**	0.7	0	**9**	0.5	6.3	**100.2**	**0.0351**	1.98	0.0694	0.0600	**0.1294**	0.0035	8	293	
U4-N5	U4-N4	1.6	**51.6**	0	**53**	1.0	0	**61**	0.7	6	**15**	0.5	3.0	**103.2**	**0.0361**	1.98	0.0714	0.0619	**0.1333**	0.0035	8	206	
U4-N4	U4-N3	0.8	**52.4**	0	**53**	1.0	0	**61**	0.7	3	**18**	0.5	1.5	**104.7**	**0.0366**	1.97	0.0723	0.0629	**0.1352**	0.0035	8	254	
U4-N3	U4-N2	0.7	**53.1**	0	**53**	1.0	1	**62**	0.7	0	**18**	0.5	0.7	**105.4**	**0.0369**	1.97	0.0728	0.0637	**0.1365**	0.1084	8	85	
U4-N2	U4-N1	3.6	**56.7**	0	**53**	1.0	3	**65**	0.7	0	**18**	0.5	2.1	**107.5**	**0.0376**	1.97	0.0742	0.0680	**0.1422**	0.0039	8	260	
U4-N1	U3-N3	8.7	**65.4**	0	**53**	1.0	3	**68**	0.7	20	**38**	0.5	12.1	**119.6**	**0.0419**	1.96	0.0822	0.0785	**0.1607**	0.0083	8	322	
U3-N3	U3-N2	54.0	**119.4**	70	**123**	1.0	44	**112**	0.7	43	**81**	0.5	122.3	**241.9**	**0.0847**	1.91	0.1616	0.1433	**0.3049**	0.0035	8	208	
U3-N2	U3-N1	0.9	**120.3**	0	**123**	1.0	3	**115**	0.7	0	**81**	0.5	2.1	**244.0**	**0.0854**	1.91	0.1630	0.1444	**0.3073**	0.0035	8	211	
U3-N1	U2-N9	9.2	**129.5**	18	**141**	1.0	12	**127**	0.7	0	**81**	0.5	26.4	**270.4**	**0.0946**	1.90	0.1798	0.1554	**0.3352**	0.0035	8	101	
U2-N9	U2-N8	1.4	**130.9**	0	**141**	1.0	4	**131**	0.7	0	**81**	0.5	2.8	**273.2**	**0.0956**	1.90	0.1816	0.1571	**0.3387**	0.0200	8	175	
U2-N8	U2-N7	1.6	**132.5**	0	**141**	1.0	5	**136**	0.7	0	**81**	0.5	3.5	**276.7**	**0.0968**	1.90	0.1838	0.1590	**0.3428**	0.0130	8	315	
U2-N7	U2-N6	6.9	**139.4**	18	**159**	1.0	0	**136**	0.7	0	**81**	0.5	18.0	**294.7**	**0.1031**	1.89	0.1953	0.1673	**0.3626**	0.0163	8	269	
U2-N6	U2-N5	8.8	**148.2**	17	**176**	1.0	4	**140**	0.7	8	**89**	0.5	23.8	**318.5**	**0.1115**	1.89	0.2104	0.1778	**0.3882**	0.0242	8	194	
U2-N5	U2-N4	29.1	**177.3**	26	**202**	1.0	33	**173**	0.7	12	**101**	0.5	55.1	**373.6**	**0.1308**	1.87	0.2451	0.2128	**0.4578**	0.0035	8	267	
U2-N4	U2-N3	1.7	**179.0**	3	**205**	1.0	1	**174**	0.7	0	**101**	0.5	3.7	**377.3**	**0.1321**	1.87	0.2474	0.2148	**0.4622**	0.0418	8	252	
U2-N3	U2-N2	3.1	**182.1**	3	**208**	1.0	6	**180**	0.7	0	**101**	0.5	7.2	**384.5**	**0.1346**	1.87	0.2519	0.2185	**0.4704**	0.0188	8	196	
U2-N2	U2-N1	1.4	**183.5**	0	**208**	1.0	0	**180**	0.7	11	**112**	0.5	5.5	**390.0**	**0.1365**	1.87	0.2553	0.2202	**0.4755**	0.0050	8	480	
U2-N1	U1-N	19.3	**202.8**	17	**225**	1.0	21	**201**	0.7	20	**132**	0.5	41.7	**431.7**	**0.1511**	1.86	0.2814	0.2434	**0.5247**	0.0190	8	300	
U1-N	U1-M	9.9	**212.7**	15	**240**	1.0	13	**214**	0.7	0	**132**	0.5	24.1	**455.8**	**0.1595**	1.86	0.2964	0.2552	**0.5516**	0.0050	8	400	
U1-M	U1-L	10.1	**222.8**	6	**246**	1.0	21	**235**	0.7	0	**132**	0.5	20.7	**476.5**	**0.1668**	1.85	0.3092	0.2674	**0.5766**	0.0150	8	393	
U1-L	U1-K	13.1	**235.9**	0	**246**	1.0	21	**256**	0.7	35	**167**	0.5	32.2	**508.7**	**0.1780**	1.85	0.3292	0.2831	**0.6123**	0.0030	10	340	
U1-K	U1-J	1.2	**435.6**	0	**405**	1.0	0	**513**	0.7	5	**309**	0.5	2.5	**918.6**	**0.3215**	1.80	0.5785	0.5227	**1.1012**	0.0015	15	240	
U1-J	U1-I	1.0	**436.6**	0	**405**	1.0	0	**513**	0.7	6	**315**	0.5	3.0	**921.6**	**0.3226**	1.80	0.5803	0.5239	**1.1042**	0.0015	15	426	
U1-I	U1-H	3.9	**440.5**	0	**405**	1.0	4	**517**	0.7	21	**336**	0.5	13.3	**934.9**	**0.3272**	1.80	0.5883	0.5286	**1.1169**	0.0015	15	250	
U1-H	U1-G	11.9	**452.4**	0	**405**	1.0	30	**547**	0.7	0	**336**	0.5	21.0	**955.9**	**0.3346**	1.80	0.6008	0.5429	**1.1437**	0.0015	15	260	
U1-G	U1-F	63.2	**515.6**	10	**415**	1.0	27	**574**	0.7	38	**374**	0.5	47.9	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	365	
U1-F	U1-E	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	220	
U1-E	U1-D	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	390	
U1-D	U1-C	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0077	15	275	
U1-C	U1-B	0.0	**607.8**	0	**525**	1.0	0	**671**	0.7	0	**411**	0.5	0.0	**1200.2**	**0.4201**	1.78	0.7462	0.7294	**1.4756**	0.0015	18	425	
U1-B	U1-A	0.0	**607.8**	0	**525**	1.0	0	**671**	0.7	0	**411**	0.5	0.0	**1200.2**	**0.4201**	1.78	0.7462	0.7294	**1.4756**	0.0015	18	50	
U1-A [5]	LS-U1	187.0	**794.8**	475	**1000**	1.0	79	**750**	0.7	189	**600**	0.5	624.8	**1825.0**	**0.6388**	1.74	1.1114	0.9538	**2.0651**	0.0025	21	170	
LS-U1																							

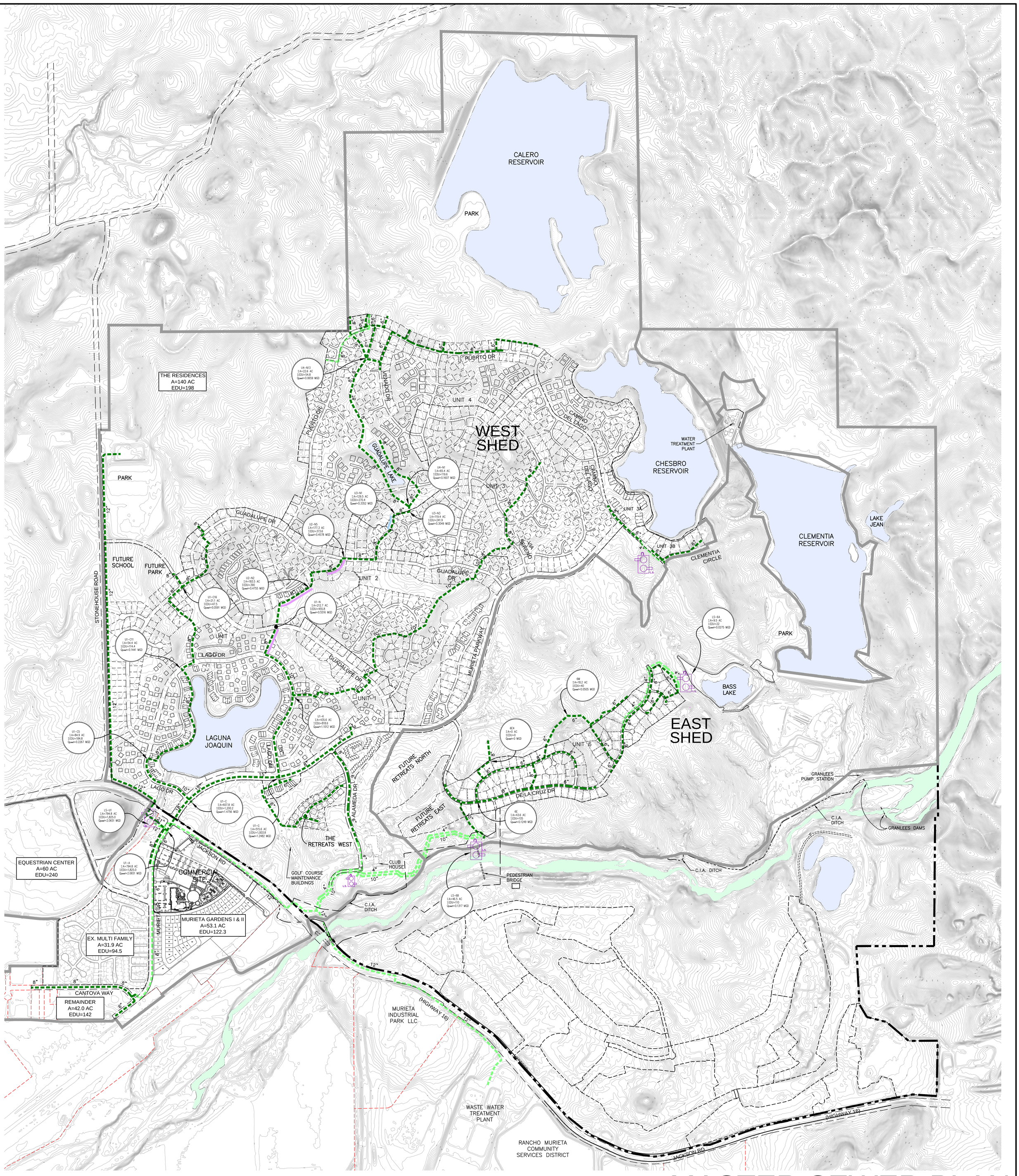
FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS															PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
U3-K13	U3-K12	17.3	**17.3**	8	**8**	1.0	15	**15**	0.7	32	**32**	0.5	34.5	**34.5**	**0.0121**	2.06	0.0248	0.0208	**0.0456**	0.0200	6	212	
U3-K12	U3-K11	1.3	**18.6**	1	**9**	1.0	2	**17**	0.7	0	**32**	0.5	2.4	**36.9**	**0.0129**	2.05	0.0265	0.0223	**0.0488**	0.0083	6	322	
U3-K11	U3-K10	19.8	**38.4**	24	**33**	1.0	12	**29**	0.7	29	**61**	0.5	46.9	**83.8**	**0.0293**	1.99	0.0584	0.0461	**0.1045**	0.0070	6	137	
U3-K10	U3-K9	2.0	**40.4**	1	**34**	1.0	5	**34**	0.7	0	**61**	0.5	4.5	**88.3**	**0.0309**	1.99	0.0614	0.0485	**0.1099**	0.0143	6	204	
U3-K9	U3-K8	6.7	**47.1**	8	**42**	1.0	8	**42**	0.7	0	**61**	0.5	13.6	**101.9**	**0.0357**	1.98	0.0705	0.0565	**0.1270**	0.0122	8	292	
U3-K8	U3-K7	1.0	**48.1**	0	**42**	1.0	4	**46**	0.7	0	**61**	0.5	2.8	**104.7**	**0.0366**	1.97	0.0723	0.0577	**0.1301**	0.0154	8	77	
U3-K7	U3-K6	3.0	**51.1**	0	**42**	1.0	10	**56**	0.7	0	**61**	0.5	7.0	**111.7**	**0.0391**	1.97	0.0770	0.0613	**0.1383**	0.0154	8	274	
U3-K6	U3-K5	0.9	**52.0**	0	**42**	1.0	3	**59**	0.7	0	**61**	0.5	2.1	**113.8**	**0.0398**	1.97	0.0784	0.0624	**0.1408**	0.0154	8	241	
U3-K5	U3-K4	8.6	**60.6**	4	**46**	1.0	15	**74**	0.7	0	**61**	0.5	14.5	**128.3**	**0.0449**	1.96	0.0880	0.0727	**0.1607**	0.0060	8	143	
U3-K4	U3-K3	4.5	**65.1**	1	**47**	1.0	10	**84**	0.7	0	**61**	0.5	8.0	**136.3**	**0.0477**	1.95	0.0932	0.0781	**0.1713**	0.0063	8	293	
U3-K3	U3-K2	50.5	**115.6**	31	**78**	1.0	67	**151**	0.7	26	**87**	0.5	90.9	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0066	8	94	
U3-K2	U3-K1	0.0	**115.6**	0	**78**	1.0	0	**151**	0.7	0	**87**	0.5	0.0	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0560	8	228	
U3-K1	U2-K9	2.3	**117.9**	0	**78**	1.0	4	**155**	0.7	0	**87**	0.5	2.8	**230.0**	**0.0805**	1.91	0.1540	0.1415	**0.2955**	0.0560	8	174	
U2-K9	U2-K8	4.6	**122.5**	0	**78**	1.0	11	**166**	0.7	0	**87**	0.5	7.7	**237.7**	**0.0832**	1.91	0.1589	0.1470	**0.3059**	0.0025	10	143	
U2-K8	U2-K7	8.2	**130.7**	6	**84**	1.0	13	**179**	0.7	0	**87**	0.5	15.1	**252.8**	**0.0885**	1.91	0.1686	0.1568	**0.3254**	0.0300	10	137	
U2-K7	U2-K6	0.7	**131.4**	0	**84**	1.0	2	**181**	0.7	0	**87**	0.5	1.4	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0294	10	179	
U2-K6	U2-K5	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	380	
U2-K5	U2-K4	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	401	
U2-K4	U2-K3	2.3	**133.7**	1	**85**	1.0	4	**185**	0.7	0	**87**	0.5	3.8	**258.0**	**0.0903**	1.90	0.1719	0.1604	**0.3324**	0.0200	10	311	
U2-K3	U2-K2	1.4	**135.1**	2	**87**	1.0	3	**188**	0.7	0	**87**	0.5	4.1	**262.1**	**0.0917**	1.90	0.1745	0.1621	**0.3367**	0.0430	10	161	
U2-K2	U2-K1	5.5	**140.6**	4	**91**	1.0	8	**196**	0.7	0	**87**	0.5	9.6	**271.7**	**0.0951**	1.90	0.1807	0.1687	**0.3494**	0.0275	10	308	
U2-K1	U1-K9	1.4	**142.0**	2	**93**	1.0	2	**198**	0.7	0	**87**	0.5	3.4	**275.1**	**0.0963**	1.90	0.1828	0.1704	**0.3532**	0.0080	10	424	
U1-K9	U1-K8	28.3	**170.3**	35	**128**	1.0	15	**213**	0.7	50	**137**	0.5	70.5	**345.6**	**0.1210**	1.88	0.2275	0.2044	**0.4318**	0.0100	10	15	
U1-K8	U1-K7	13.5	**183.8**	22	**150**	1.0	13	**226**	0.7	0	**137**	0.5	31.1	**376.7**	**0.1318**	1.87	0.2470	0.2206	**0.4676**	0.0025	10	132	
U1-K7	U1-K6	6.8	**190.6**	9	**159**	1.0	6	**232**	0.7	0	**137**	0.5	13.2	**389.9**	**0.1365**	1.87	0.2553	0.2287	**0.4840**	0.0025	10	208	
U1-K6	U1-K5	2.8	**193.4**	0	**159**	1.0	7	**239**	0.7	0	**137**	0.5	4.9	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0025	10	100	
U1-K5	U1-K4	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0240	10	112	
U1-K4	U1-K3	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0028	12	240	
U1-K3	U1-K2	0.8	**194.2**	0	**159**	1.0	4	**243**	0.7	0	**137**	0.5	2.8	**397.6**	**0.1392**	1.87	0.2601	0.2330	**0.4931**	0.0163	12	231	
U1-K2	U1-K1	2.2	**196.4**	0	**159**	1.0	6	**249**	0.7	0	**137**	0.5	4.2	**401.8**	**0.1406**	1.87	0.2627	0.2357	**0.4984**	0.0160	12	190	
U1-K1	U1-K	2.1	**198.5**	0	**159**	1.0	8	**257**	0.7	0	**137**	0.5	5.6	**407.4**	**0.1426**	1.87	0.2662	0.2382	**0.5044**	0.0040	12	142	
U1-K																							
U2-C7	U2-C6	0.0	**0.0**	0	**0**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**0.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0260	6	132	
U2-C6	U2-C5	0.7	**0.7**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0050	6	60	
U2-C5	U2-C4	0.0	**0.7**	0	**2**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0370	6	151	
U2-C4	U2-C3	1.1	**1.8**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0022	**0.0060**	0.0170	6	84	
U2-C3	U2-C2	6.6	**8.4**	13	**18**	1.0	5	**5**	0.7	0	**0**	0.5	16.5	**21.5**	**0.0075**	2.09	0.0157	0.0101	**0.0258**	0.0050	6	50	
U2-C2	U2-C1	1.1	**9.5**	3	**21**	1.0	0	**5**	0.7	0	**0**	0.5	3.0	**24.5**	**0.0086**	2.08	0.0178	0.0114	**0.0292**	0.0070	6	210	
U2-C1	U1-C17	4.7	**14.2**	0	**21**	1.0	10	**15**	0.7	0	**0**	0.5	7.0	**31.5**	**0.0110**	2.06	0.0227	0.0170	**0.0398**	0.0070	6	217	
U1-C17	U1-C16	6.9	**21.1**	16	**37**	1.0	0	**15**	0.7	0	**0**	0.5	16.0	**47.5**	**0.0166**	2.03	0.0338	0.0253	**0.0591**	0.0050	6	233	
U1-C16	U1-C15	0.0	**21.1**	0	**37**	1.0	0	**15**	0.7	0	**0**	0.5	0.0	**47.5**	**0.0166**	2.03	0.0338	0.0253	**0.0591**	0.0040	8	265	
U1-C15	U1-C14	3.3	**24.4**	10	**47**	1.0	0	**15**	0.7	0	**0**	0.5	10.0	**57.5**	**0.0201**	2.02	0.0406	0.0293	**0.0699**	0.0050	8	265	
U1-C14	U1-C13	4.1	**28.5**	8	**55**	1.0	0	**15**	0.7	0	**0**	0.5	8.0	**65.5**	**0.0229**	2.01	0.0461	0.0342	**0.0803**	0.0160	8	325	
U1-C13	U1-C12	0.0	**28.5**	0	**55**	1.0	0	**15**	0.7	0	**0**	0.5	0.0	**65.5**	**0.0229**	2.01	0.0461	0.0342	**0.0803**	0.0050	8	426	
U1-C12	U1-C11	10.7	**39.2**	0	**55**	1.0	16	**31**	0.7	5	**5**	0.5	13.7	**79.2**	**0.0277**	2.00	0.0553	0.0470	**0.1024**	0.0100	8	188	
U1-C11	U1-C10	15.2	**54.4**	31	**86**	1.0	6	**37**	0.7	0	**5**	0.5	35.2	**114.4**	**0.0400**	1.97	0.0788	0.0653	**0.1441**	0.0050	8	379	
U1-C10	U1-C9	7.2	**61.6**	0	**86**	1.0	17	**54**	0.7	5	**10**	0.5	14.4	**128.8**	**0.0451**	1.96	0.0883	0.0739	**0.1622**	0.0035	8	233	
U1-C9	U1-C8	0.7	**62.3**	0	**86**	1.0	0	**54**	0.7	5	**15**	0.5	2.5	**131.3**	**0.0460**	1.96	0.0899	0.0748	**0.1647**	0.0035	8	274	
U1-C8	U1-C7	3.2	**65.5**	0	**86**	1.0	6	**60**	0.7	5	**20**	0.5	6.7	**138.0**	**0.0483**	1.95	0.0943	0.0786	**0.1729**	0.0035	8	401	
U1-C7	U1-C6	0.8	**66.3**	0	**86**	1.0	0	**60**	0.7	5	**25**	0.5	2.5	**140.5**	**0.0492**	1.95	0.0960	0.0796	**0.1755**	0.0035	8	307	
U1-C6	U1-C5	1.2	**67.5**	0	**86**	1.0	0	**60**	0.7	7	**32**	0.5	3.5	**144.0**	**0.0504**	1.95	0.0983	0.0810	**0.1793**	0.0090	8	127	
U1-C5	U1-C4	17.4	**84.9**	24	**110**	1.0	24	**84**	0.7	0	**32**	0.5	40.8	**184.8**	**0.0647**	1.93	0.1249	0.1019	**0.2267**	0.0025	10	70	
U1-C4	U1-C3	2.2	**87.1**	0	**110**	1.0	7	**91**	0.7	2	**34**	0.5	5.9	**190.7**	**0.0667**	1.93	0.1287	0.1045	**0.2332**	0.0025	10	230	
U1-C3	U1-C2	1.8	**88.9**	0	**110**	1.0	6	**97**	0.7	0	**34**	0.5	4.2	**194.9**	**0.0682**	1.93	0.1314	0.1067	**0.2381**	0.0025	10	225	
U1-C2	U1-C1	3.3	**92.2**	0	**110**	1.0	0	**97**	0.7	3	**37**	0.5	1.5	**196.4**	**0.0687**	1.93	0.1324	0.1106	**0.2430**	0.0025	10	225	
U1-C1	U1-C	0.0	**92.2**	0	**110**	1.0	0	**97**	0.7	0	**37**	0.5	0.0	**196.4**	**0.0687**	1.93	0.1324	0.1106	**0.2430**	0.0025	10	214	
U1-C																							

FROM NODE	TO NODE	AREA	**ΣAREA**	DEMANDS														PIPE CHARACTERISTICS			
				ESTATE LOTS	**ΣESTATE LOTS**	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	**ΣCIRCLE/ COTTAGE LOTS**	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	**ΣHALFPLEX/ TOWNHOUSE LOTS**	DWELLING UNIT FACTOR	TOTAL EDU's		**Q_{ADWF}**	PF	Q_{PDWF}	$Q_{I/I}$	**Q_{PWWF}**	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.
5. Murieta Gardens I & II and the surrounding development is assumed to be fully constructed with the following breakdown:

Development	Area (AC)	EDU
Murieta Gardens I (commercial)	31.1	67.0
Murieta Gardens II (79 lots)	22.0	55.3
Murieta Village (189 lots)	31.9	94.5
Equestrian Center	60.0	240.0
Existing Commerical	42.0	168.0
Total	**187.0**	624.8



SEWER LEGEND

EXISTING - SIZE & DIRECTION — IMPACTED — SURCHARGE

EXISTING FORCE MAIN - SIZE & DIRECTION

EXISTING LIFT STATION — L.S.

SCALE: 1"=400'

400' 0' 400' 800' 1200'

GRAPHIC SCALE: 1"=400'

MASTER SEWER PLAN FOR RANCHO MURIETA

EXISTING CONDITION

JUNE, 2018

BAKER-WILLIAMS ENGINEERING GROUP
Engineering / Surveying / Land Planning / Entitlement Processing / GPS Services
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Appendix B

Design Option 1 Shed Map & Spreadsheet Calculations

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS													PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	(AC)										EDU	Σ EDU	(MGD)		(MGD)	(MGD)	(MGD)	(FT/FT)	(IN.)	(FT)	(FT/S)
U4-N24	U4-N23	0.6	**0.6**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0007	**0.0023**	0.0320	6	67	
U4-N23	U4-N22	0.7	**1.3**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0016	**0.0054**	0.0080	6	300	
U4-N22	U4-N21	0.7	**2.0**	2	**7**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**7.0**	**0.0025**	2.17	0.0053	0.0024	**0.0077**	0.0340	6	206	
U4-N21	U4-N20	0.8	**2.8**	2	**9**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**9.0**	**0.0032**	2.15	0.0068	0.0034	**0.0101**	0.0050	6	158	
U4-N20	U4-N19	2.5	**5.3**	4	**13**	1.0	3	**3**	0.7	0	**0**	0.5	6.1	**15.1**	**0.0053**	2.12	0.0112	0.0064	**0.0175**	0.0410	6	385	
U4-N19	U4-N18	2.1	**7.4**	1	**14**	1.0	5	**8**	0.7	0	**0**	0.5	4.5	**19.6**	**0.0069**	2.10	0.0144	0.0089	**0.0233**	0.0730	6	349	
U4-N18	U4-N17	2.1	**9.5**	6	**20**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**25.6**	**0.0090**	2.08	0.0186	0.0114	**0.0300**	0.0360	6	304	
U4-N17	U4-N16	1.8	**11.3**	5	**25**	1.0	0	**8**	0.7	0	**0**	0.5	5.0	**30.6**	**0.0107**	2.07	0.0221	0.0136	**0.0357**	0.0200	6	237	
U4-N16	U4-N15	0.2	**11.5**	1	**26**	1.0	0	**8**	0.7	0	**0**	0.5	1.0	**31.6**	**0.0111**	2.06	0.0228	0.0138	**0.0366**	0.0190	6	210	
U4-N15	U4-N14	2.5	**14.0**	6	**32**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**37.6**	**0.0132**	2.05	0.0270	0.0168	**0.0438**	0.0420	6	426	
U4-N14	U4-N13	3.7	**17.7**	3	**35**	1.0	1	**9**	0.7	9	**9**	0.5	8.2	**45.8**	**0.0160**	2.04	0.0326	0.0212	**0.0539**	0.0448	6	176	
U4-N13	U4-N12	4.9	**22.6**	9	**44**	1.0	0	**9**	0.7	0	**9**	0.5	9.0	**54.8**	**0.0192**	2.02	0.0388	0.0271	**0.0659**	0.0280	6	168	
U4-N12	U4-N11	1.4	**24.0**	0	**44**	1.0	4	**13**	0.7	0	**9**	0.5	2.8	**57.6**	**0.0202**	2.02	0.0407	0.0288	**0.0695**	0.0180	6	147	
U4-N11	U4-N10	8.8	**32.8**	5	**49**	1.0	14	**27**	0.7	0	**9**	0.5	14.8	**72.4**	**0.0253**	2.00	0.0507	0.0394	**0.0901**	0.0035	8	282	
U4-N10	U4-N9	2.0	**34.8**	0	**49**	1.0	4	**31**	0.7	0	**9**	0.5	2.8	**75.2**	**0.0263**	2.00	0.0526	0.0418	**0.0944**	0.0035	8	147	
U4-N9	U4-N8	6.3	**41.1**	0	**49**	1.0	15	**46**	0.7	0	**9**	0.5	10.5	**85.7**	**0.0300**	1.99	0.0597	0.0493	**0.1090**	0.0035	8	126	
U4-N8	U4-N7	4.6	**45.7**	4	**53**	1.0	6	**52**	0.7	0	**9**	0.5	8.2	**93.9**	**0.0329**	1.98	0.0652	0.0548	**0.1200**	0.0035	8	211	
U4-N7	U4-N6	0.0	**45.7**	0	**53**	1.0	0	**52**	0.7	0	**9**	0.5	0.0	**93.9**	**0.0329**	1.98	0.0652	0.0548	**0.1200**	0.0035	8	219	
U4-N6	U4-N5	4.3	**50.0**	0	**53**	1.0	9	**61**	0.7	0	**9**	0.5	6.3	**100.2**	**0.0351**	1.98	0.0694	0.0600	**0.1294**	0.0035	8	293	
U4-N5	U4-N4	1.6	**51.6**	0	**53**	1.0	0	**61**	0.7	6	**15**	0.5	3.0	**103.2**	**0.0361**	1.98	0.0714	0.0619	**0.1333**	0.0035	8	206	
U4-N4	U4-N3	0.8	**52.4**	0	**53**	1.0	0	**61**	0.7	3	**18**	0.5	1.5	**104.7**	**0.0366**	1.97	0.0723	0.0629	**0.1352**	0.0035	8	254	
U4-N3	U4-N2	0.7	**53.1**	0	**53**	1.0	1	**62**	0.7	0	**18**	0.5	0.7	**105.4**	**0.0369**	1.97	0.0728	0.0637	**0.1365**	0.1084	8	85	
U4-N2	U4-N1	3.6	**56.7**	0	**53**	1.0	3	**65**	0.7	0	**18**	0.5	2.1	**107.5**	**0.0376**	1.97	0.0742	0.0680	**0.1422**	0.0039	8	260	
U4-N1	U3-N3	8.7	**65.4**	0	**53**	1.0	3	**68**	0.7	20	**38**	0.5	12.1	**119.6**	**0.0419**	1.96	0.0822	0.0785	**0.1607**	0.0083	8	322	
U3-N3	U3-N2	54.0	**119.4**	70	**123**	1.0	44	**112**	0.7	43	**81**	0.5	122.3	**241.9**	**0.0847**	1.91	0.1616	0.1433	**0.3049**	0.0035	8	208	
U3-N2	U3-N1	0.9	**120.3**	0	**123**	1.0	3	**115**	0.7	0	**81**	0.5	2.1	**244.0**	**0.0854**	1.91	0.1630	0.1444	**0.3073**	0.0035	8	211	
U3-N1	U2-N9	9.2	**129.5**	18	**141**	1.0	12	**127**	0.7	0	**81**	0.5	26.4	**270.4**	**0.0946**	1.90	0.1798	0.1554	**0.3352**	0.0035	8	101	
U2-N9	U2-N8	1.4	**130.9**	0	**141**	1.0	4	**131**	0.7	0	**81**	0.5	2.8	**273.2**	**0.0956**	1.90	0.1816	0.1571	**0.3387**	0.0200	8	175	
U2-N8	U2-N7	1.6	**132.5**	0	**141**	1.0	5	**136**	0.7	0	**81**	0.5	3.5	**276.7**	**0.0968**	1.90	0.1838	0.1590	**0.3428**	0.0130	8	315	
U2-N7	U2-N6	6.9	**139.4**	18	**159**	1.0	0	**136**	0.7	0	**81**	0.5	18.0	**294.7**	**0.1031**	1.89	0.1953	0.1673	**0.3626**	0.0163	8	269	
U2-N6	U2-N5	8.8	**148.2**	17	**176**	1.0	4	**140**	0.7	8	**89**	0.5	23.8	**318.5**	**0.1115**	1.89	0.2104	0.1778	**0.3882**	0.0242	8	194	
U2-N5	U2-N4	29.1	**177.3**	26	**202**	1.0	33	**173**	0.7	12	**101**	0.5	55.1	**373.6**	**0.1308**	1.87	0.2451	0.2128	**0.4578**	0.0035	8	267	
U2-N4	U2-N3	1.7	**179.0**	3	**205**	1.0	1	**174**	0.7	0	**101**	0.5	3.7	**377.3**	**0.1321**	1.87	0.2474	0.2148	**0.4622**	0.0418	8	252	
U2-N3	U2-N2	3.1	**182.1**	3	**208**	1.0	6	**180**	0.7	0	**101**	0.5	7.2	**384.5**	**0.1346**	1.87	0.2519	0.2185	**0.4704**	0.0188	8	196	
U2-N2	U2-N1	1.4	**183.5**	0	**208**	1.0	0	**180**	0.7	11	**112**	0.5	5.5	**390.0**	**0.1365**	1.87	0.2553	0.2202	**0.4755**	0.0050	8	480	
U2-N1	U1-N	19.3	**202.8**	17	**225**	1.0	21	**201**	0.7	20	**132**	0.5	41.7	**431.7**	**0.1511**	1.86	0.2814	0.2434	**0.5247**	0.0190	8	300	
U1-N	U1-M	9.9	**212.7**	15	**240**	1.0	13	**214**	0.7	0	**132**	0.5	24.1	**455.8**	**0.1595**	1.86	0.2964	0.2552	**0.5516**	0.0050	8	400	
U1-M	U1-L	10.1	**222.8**	6	**246**	1.0	21	**235**	0.7	0	**132**	0.5	20.7	**476.5**	**0.1668**	1.85	0.3092	0.2674	**0.5766**	0.0150	8	393	
U1-L	U1-K	13.1	**235.9**	0	**246**	1.0	21	**256**	0.7	35	**167**	0.5	32.2	**508.7**	**0.1780**	1.85	0.3292	0.2831	**0.6123**	0.0030	10	340	
U1-K	U1-J	1.2	**435.6**	0	**405**	1.0	0	**513**	0.7	5	**309**	0.5	2.5	**918.6**	**0.3215**	1.80	0.5785	0.5227	**1.1012**	0.0015	15	240	
U1-J	U1-I	1.0	**436.6**	0	**405**	1.0	0	**513**	0.7	6	**315**	0.5	3.0	**921.6**	**0.3226**	1.80	0.5803	0.5239	**1.1042**	0.0015	15	426	
U1-I	U1-H	3.9	**440.5**	0	**405**	1.0	4	**517**	0.7	21	**336**	0.5	13.3	**934.9**	**0.3272**	1.80	0.5883	0.5286	**1.1169**	0.0015	15	250	
U1-H	U1-G	11.9	**452.4**	0	**405**	1.0	30	**547**	0.7	0	**336**	0.5	21.0	**955.9**	**0.3346**	1.80	0.6008	0.5429	**1.1437**	0.0015	15	260	
U1-G	U1-F	63.2	**515.6**	10	**415**	1.0	27	**574**	0.7	38	**374**	0.5	47.9	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	365	
U1-F	U1-E	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	220	
U1-E	U1-D	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0015	15	390	
U1-D	U1-C	0.0	**515.6**	0	**415**	1.0	0	**574**	0.7	0	**374**	0.5	0.0	**1003.8**	**0.3513**	1.79	0.6295	0.6187	**1.2482**	0.0077	15	275	
U1-C	U1-B	17.0	**880.9**	0	**1002**	1.0	340	**1043**	0.7	0	**411**	0.5	238.0	**1937.6**	**0.6782**	1.73	1.1763	1.0571	**2.2334**	0.0015	18	425	
U1-B	U1-A	0.0	**880.9**	0	**1002**	1.0	0	**1043**	0.7	0	**411**	0.5	0.0	**1937.6**	**0.6782**	1.73	1.1763	1.0571	**2.2334**	0.0015	18	50	
U1-A [5]	LS-U1	187.0	**1067.9**	475	**1477**	1.0	79	**1122**	0.7	189	**600**	0.5	624.8	**2562.4**	**0.8968**	1.71	1.5334	1.2815	**2.8149**	0.0025	21	170	
LS-U1																							

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS													PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	(AC)										EDU	Σ EDU	(MGD)		(MGD)	(MGD)	(MGD)	(FT/FT)	(IN.)	(FT)	(FT/S)
U3-K13	U3-K12	17.3	**17.3**	8	**8**	1.0	15	**15**	0.7	32	**32**	0.5	34.5	**34.5**	**0.0121**	2.06	0.0248	0.0208	**0.0456**	0.0200	6	212	
U3-K12	U3-K11	1.3	**18.6**	1	**9**	1.0	2	**17**	0.7	0	**32**	0.5	2.4	**36.9**	**0.0129**	2.05	0.0265	0.0223	**0.0488**	0.0083	6	322	
U3-K11	U3-K10	19.8	**38.4**	24	**33**	1.0	12	**29**	0.7	29	**61**	0.5	46.9	**83.8**	**0.0293**	1.99	0.0584	0.0461	**0.1045**	0.0070	6	137	
U3-K10	U3-K9	2.0	**40.4**	1	**34**	1.0	5	**34**	0.7	0	**61**	0.5	4.5	**88.3**	**0.0309**	1.99	0.0614	0.0485	**0.1099**	0.0143	6	204	
U3-K9	U3-K8	6.7	**47.1**	8	**42**	1.0	8	**42**	0.7	0	**61**	0.5	13.6	**101.9**	**0.0357**	1.98	0.0705	0.0565	**0.1270**	0.0122	8	292	
U3-K8	U3-K7	1.0	**48.1**	0	**42**	1.0	4	**46**	0.7	0	**61**	0.5	2.8	**104.7**	**0.0366**	1.97	0.0723	0.0577	**0.1301**	0.0154	8	77	
U3-K7	U3-K6	3.0	**51.1**	0	**42**	1.0	10	**56**	0.7	0	**61**	0.5	7.0	**111.7**	**0.0391**	1.97	0.0770	0.0613	**0.1383**	0.0154	8	274	
U3-K6	U3-K5	0.9	**52.0**	0	**42**	1.0	3	**59**	0.7	0	**61**	0.5	2.1	**113.8**	**0.0398**	1.97	0.0784	0.0624	**0.1408**	0.0154	8	241	
U3-K5	U3-K4	8.6	**60.6**	4	**46**	1.0	15	**74**	0.7	0	**61**	0.5	14.5	**128.3**	**0.0449**	1.96	0.0880	0.0727	**0.1607**	0.0060	8	143	
U3-K4	U3-K3	4.5	**65.1**	1	**47**	1.0	10	**84**	0.7	0	**61**	0.5	8.0	**136.3**	**0.0477**	1.95	0.0932	0.0781	**0.1713**	0.0063	8	293	
U3-K3	U3-K2	50.5	**115.6**	31	**78**	1.0	67	**151**	0.7	26	**87**	0.5	90.9	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0066	8	94	
U3-K2	U3-K1	0.0	**115.6**	0	**78**	1.0	0	**151**	0.7	0	**87**	0.5	0.0	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0560	8	228	
U3-K1	U2-K9	2.3	**117.9**	0	**78**	1.0	4	**155**	0.7	0	**87**	0.5	2.8	**230.0**	**0.0805**	1.91	0.1540	0.1415	**0.2955**	0.0560	8	174	
U2-K9	U2-K8	4.6	**122.5**	0	**78**	1.0	11	**166**	0.7	0	**87**	0.5	7.7	**237.7**	**0.0832**	1.91	0.1589	0.1470	**0.3059**	0.0025	10	143	
U2-K8	U2-K7	8.2	**130.7**	6	**84**	1.0	13	**179**	0.7	0	**87**	0.5	15.1	**252.8**	**0.0885**	1.91	0.1686	0.1568	**0.3254**	0.0300	10	137	
U2-K7	U2-K6	0.7	**131.4**	0	**84**	1.0	2	**181**	0.7	0	**87**	0.5	1.4	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0294	10	179	
U2-K6	U2-K5	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	380	
U2-K5	U2-K4	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	401	
U2-K4	U2-K3	2.3	**133.7**	1	**85**	1.0	4	**185**	0.7	0	**87**	0.5	3.8	**258.0**	**0.0903**	1.90	0.1719	0.1604	**0.3324**	0.0200	10	311	
U2-K3	U2-K2	1.4	**135.1**	2	**87**	1.0	3	**188**	0.7	0	**87**	0.5	4.1	**262.1**	**0.0917**	1.90	0.1745	0.1621	**0.3367**	0.0430	10	161	
U2-K2	U2-K1	5.5	**140.6**	4	**91**	1.0	8	**196**	0.7	0	**87**	0.5	9.6	**271.7**	**0.0951**	1.90	0.1807	0.1687	**0.3494**	0.0275	10	308	
U2-K1	U1-K9	1.4	**142.0**	2	**93**	1.0	2	**198**	0.7	0	**87**	0.5	3.4	**275.1**	**0.0963**	1.90	0.1828	0.1704	**0.3532**	0.0080	10	424	
U1-K9	U1-K8	28.3	**170.3**	35	**128**	1.0	15	**213**	0.7	50	**137**	0.5	70.5	**345.6**	**0.1210**	1.88	0.2275	0.2044	**0.4318**	0.0100	10	15	
U1-K8	U1-K7	13.5	**183.8**	22	**150**	1.0	13	**226**	0.7	0	**137**	0.5	31.1	**376.7**	**0.1318**	1.87	0.2470	0.2206	**0.4676**	0.0025	10	132	
U1-K7	U1-K6	6.8	**190.6**	9	**159**	1.0	6	**232**	0.7	0	**137**	0.5	13.2	**389.9**	**0.1365**	1.87	0.2553	0.2287	**0.4840**	0.0025	10	208	
U1-K6	U1-K5	2.8	**193.4**	0	**159**	1.0	7	**239**	0.7	0	**137**	0.5	4.9	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0025	10	100	
U1-K5	U1-K4	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0240	10	112	
U1-K4	U1-K3	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0028	12	240	
U1-K3	U1-K2	0.8	**194.2**	0	**159**	1.0	4	**243**	0.7	0	**137**	0.5	2.8	**397.6**	**0.1392**	1.87	0.2601	0.2330	**0.4931**	0.0163	12	231	
U1-K2	U1-K1	2.2	**196.4**	0	**159**	1.0	6	**249**	0.7	0	**137**	0.5	4.2	**401.8**	**0.1406**	1.87	0.2627	0.2357	**0.4984**	0.0160	12	190	
U1-K1	U1-K	2.1	**198.5**	0	**159**	1.0	8	**257**	0.7	0	**137**	0.5	5.6	**407.4**	**0.1426**	1.87	0.2662	0.2382	**0.5044**	0.0040	12	142	
U1-K																							
U2-C7	U2-C6	0.0	**0.0**	0	**0**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**0.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0260	6	132	
U2-C6	U2-C5	0.7	**0.7**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0050	6	60	
U2-C5	U2-C4	0.0	**0.7**	0	**2**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0370	6	151	
U2-C4	U2-C3	1.1	**1.8**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0022	**0.0060**	0.0170	6	84	
U2-C3	U2-C2	6.6	**8.4**	13	**18**	1.0	5	**5**	0.7	0	**0**	0.5	16.5	**21.5**	**0.0075**	2.09	0.0157	0.0101	**0.0258**	0.0050	6	50	
U2-C2	U2-C1	1.1	**9.5**	3	**21**	1.0	0	**5**	0.7	0	**0**	0.5	3.0	**24.5**	**0.0086**	2.08	0.0178	0.0114	**0.0292**	0.0070	6	210	
U2-C1	U1-C17	4.7	**14.2**	0	**21**	1.0	10	**15**	0.7	0	**0**	0.5	7.0	**31.5**	**0.0110**	2.06	0.0227	0.0170	**0.0398**	0.0070	6	217	
U1-C17	U1-C16	6.9	**21.1**	16	**37**	1.0	0	**15**	0.7	0	**0**	0.5	16.0	**47.5**	**0.0166**	2.03	0.0338	0.0253	**0.0591**	0.0050	6	233	
U1-C16	U1-C15	0.0	**277.2**	0	**514**	1.0	0	**47**	0.7	0	**0**	0.5	0.0	**546.9**	**0.1914**	1.84	0.3527	0.3326	**0.6854**	0.0040	8	265	
U1-C15	U1-C14	3.3	**280.5**	10	**524**	1.0	0	**47**	0.7	0	**0**	0.5	10.0	**556.9**	**0.1949**	1.84	0.3589	0.3366	**0.6955**	0.0050	8	265	
U1-C14	U1-C13	4.1	**284.6**	8	**532**	1.0	0	**47**	0.7	0	**0**	0.5	8.0	**564.9**	**0.1977**	1.84	0.3638	0.3415	**0.7053**	0.0160	8	325	
U1-C13	U1-C12	0.0	**284.6**	0	**532**	1.0	0	**47**	0.7	0	**0**	0.5	0.0	**564.9**	**0.1977**	1.84	0.3638	0.3415	**0.7053**	0.0050	8	426	
U1-C12	U1-C11	10.7	**295.3**	0	**532**	1.0	16	**63**	0.7	5	**5**	0.5	13.7	**578.6**	**0.2025**	1.84	0.3722	0.3544	**0.7266**	0.0100	8	188	
U1-C11	U1-C10	15.2	**310.5**	31	**563**	1.0	6	**69**	0.7	0	**5**	0.5	35.2	**613.8**	**0.2148**	1.83	0.3938	0.3726	**0.7664**	0.0050	8	379	
U1-C10	U1-C9	7.2	**317.7**	0	**563**	1.0	17	**86**	0.7	5	**10**	0.5	14.4	**628.2**	**0.2199**	1.83	0.4026	0.3812	**0.7839**	0.0035	8	233	
U1-C9	U1-C8	0.7	**318.4**	0	**563**	1.0	0	**86**	0.7	5	**15**	0.5	2.5	**630.7**	**0.2207**	1.83	0.4042	0.3821	**0.7863**	0.0035	8	274	
U1-C8	U1-C7	3.2	**321.6**	0	**563**	1.0	6	**92**	0.7	5	**20**	0.5	6.7	**637.4**	**0.2231**	1.83	0.4083	0.3859	**0.7942**	0.0035	8	401	
U1-C7	U1-C6	0.8	**322.4**	0	**563**	1.0	0	**92**	0.7	5	**25**	0.5	2.5	**639.9**	**0.2240**	1.83	0.4098	0.3869	**0.7967**	0.0035	8	307	
U1-C6	U1-C5	1.2	**323.6**	0	**563**	1.0	0	**92**	0.7	7	**32**	0.5	3.5	**643.4**	**0.2252**	1.83	0.4119	0.3883	**0.8003**	0.0090	8	127	
U1-C5	U1-C4	17.4	**341.0**	24	**587**	1.0	24	**116**	0.7	0	**32**	0.5	40.8	**684.2**	**0.2395**	1.82	0.4368	0.4092	**0.8460**	0.0025	10	70	
U1-C4	U1-C3	2.2	**343.2**	0	**587**	1.0	7	**123**	0.7	2	**34**	0.5	5.9	**690.1**	**0.2415**	1.82	0.4404	0.4118	**0.8523**	0.0025	10	230	
U1-C3	U1-C2	1.8	**345.0**	0	**587**	1.0	6	**129**	0.7	0	**34**	0.5	4.2	**694.3**	**0.2430**	1.82	0.4430	0.4140	**0.8570**	0.0025	10	225	
U1-C2	U1-C1	3.3	**348.3**	0	**587**	1.0	0	**129**	0.7	3	**37**	0.5	1.5	**695.8**	**0.2435**	1.82	0.4439	0.4180	**0.8619**	0.0025	10	225	
U1-C1	U1-C	0.0	**348.3**	0	**587**	1.0	0	**129**	0.7	0	**37**	0.5	0.0	**695.8**	**0.2435**	1.82	0.4439	0.4180	**0.8619**	0.0025	10	214	
U1-C																							

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS														PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	(AC)										EDU	Σ EDU	(MGD)		(MGD)	(MGD)	(MGD)	(FT/FT)	(IN.)	(FT)	(FT/S)
G-15	G-14	4.9	**4.9**	8	**8**	1.0	0	**0**	0.7	0	**0**	0.5	8.0	**8.0**	**0.0028**	2.16	0.0060	0.0059	**0.0119**	0.0150	6	370	
G-14	G-13	2.4	**7.3**	4	**12**	1.0	0	**0**	0.7	0	**0**	0.5	4.0	**12.0**	**0.0042**	2.13	0.0089	0.0088	**0.0177**	0.0100	6	150	
G-13	G-12	1.1	**8.4**	2	**14**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**14.0**	**0.0049**	2.12	0.0104	0.0101	**0.0205**	0.0100	6	140	
G-12	G-11	1.1	**9.5**	2	**16**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**16.0**	**0.0056**	2.11	0.0118	0.0114	**0.0232**	0.0150	6	100	
G-11	G-10	4.1	**13.6**	5	**21**	1.0	0	**0**	0.7	0	**0**	0.5	5.0	**21.0**	**0.0074**	2.09	0.0154	0.0163	**0.0317**	0.0150	6	160	
G-10	G-9	2.9	**16.5**	9	**30**	1.0	0	**0**	0.7	0	**0**	0.5	9.0	**30.0**	**0.0105**	2.07	0.0217	0.0198	**0.0415**	0.1000	6	200	
G-9	G-8	1.0	**17.5**	2	**32**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**32.0**	**0.0112**	2.06	0.0231	0.0210	**0.0441**	0.0800	6	150	
G-8	G-7	2.5	**20.0**	5	**37**	1.0	0	**0**	0.7	0	**0**	0.5	5.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	0.0500	6	200	
G-7	LS-G1	0.0	**20.0**	0	**37**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	0.0200	6	50	
LS-G1	G-6	0.0	**20.0**	0	**37**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	FM	4	1280	N/A
G-6	G-5	1.5	**21.5**	2	**39**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**39.0**	**0.0137**	2.05	0.0280	0.0258	**0.0538**	0.0100	6	180	
G-5	G-4	1.3	**22.8**	2	**41**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**41.0**	**0.0144**	2.04	0.0293	0.0274	**0.0567**	0.0100	6	220	
G-4	G-3	1.8	**24.6**	3	**44**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**44.0**	**0.0154**	2.04	0.0314	0.0295	**0.0609**	0.0100	6	400	
G-3	G-2	1.3	**25.9**	2	**46**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**46.0**	**0.0161**	2.04	0.0328	0.0311	**0.0639**	0.0100	6	210	
G-2	G-1	1.3	**27.2**	2	**48**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**48.0**	**0.0168**	2.03	0.0341	0.0326	**0.0668**	0.0100	6	260	
G-1	H-1	1.6	**28.8**	2	**50**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**50.0**	**0.0175**	2.03	0.0355	0.0346	**0.0701**	0.0100	6	240	
H-2	H-1	7.0	**7.0**	3	**53**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**3.0**	**0.0011**	2.22	0.0023	0.0084	**0.0107**	0.0050	6	360	
H-1	LS-H2	4.0	**39.8**	21	**74**	1.0	0	**0**	0.7	0	**0**	0.5	21.0	**24.0**	**0.0084**	2.08	0.0175	0.0478	**0.0653**	0.0050	6	310	
H-5	H-3	6.5	**6.5**	0	**0**	1.0	32	**32**	0.7	0	**0**	0.5	22.4	**22.4**	**0.0078**	2.09	0.0164	0.0078	**0.0242**	0.0050	6	240	
H-4	H-3	11.0	**11.0**	26	**26**	1.0	0	**32**	0.7	0	**0**	0.5	26.0	**26.0**	**0.0091**	2.08	0.0189	0.0132	**0.0321**	0.0050	6	170	
LS-H2	H-8	0.0	**39.8**		**74**									**74.0**									
H-8	H-7	5.0	**44.8**	10	**84**	1.0	0	**32**	0.7	0	**0**	0.5	10.0	**84.0**	**0.0294**	1.99	0.0585	0.0538	**0.1123**	0.0050	6	400	
H-7	H-3	12.0	**56.8**	21	**105**	1.0	0	**32**	0.7	0	**0**	0.5	21.0	**105.0**	**0.0368**	1.97	0.0725	0.0682	**0.1407**	0.0050	6	200	
H-3	LS-H1	1.5	**75.8**	3	**134**	1.0	0	**32**	0.7	0	**0**	0.5	3.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	0.0050	6	50	
LS-H1	H-OUT	0.0	**75.8**	0	**134**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	FM	6	2000	N/A
H-OUT	LS-R1	0.0	**75.8**	0	**134**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	0.0100	8	3300	
LS-R1 [6]	U1-C16	180.3	**256.1**	343	**477**	1.0	0	**32**	0.7	0	**0**	0.5	343.0	**499.4**	**0.1748**	1.85	0.3234	0.3073	**0.6307**	FM	6	1100	N/A

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.
5. Murieta Gardens I & II and the surrounding development is assumed to be fully constructed with the following breakdown:

Development	Area (AC)	EDU
Murieta Gardens I (commercial)	31.1	67.0
Murieta Gardens II (78 lots)	22.0	78.0
Murieta Village (189 lots)	31.9	94.5
Equestrian Center	60.0	240.0
Existing Commerical	42.0	168.0
Total	**187.0**	647.5

6. The shed area for LS-R1 includes the Residences East and West (140AC/198 lot) development, the future Escuala School (9.0AC/81EDU), and the existing park (25.6AC/52EDU) with its future expansion (5.7AC/12EDU).

RANCHO MURIETA NORTH

SEWER INFRASTRUCTURE CALCULATIONS

EAST SHED - BUILDOUT CONDITION

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS															PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
LS6A	6S	11.1	**11.1**	42	**42**	1.0	0	**0**	0.7	0	**0**	0.5	42.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	FM	4	2900	N/A
6S	6R	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0300	6	401	
6R	6Q	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0410	6	202	
6Q	6P	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0490	6	180	
6P	6O	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0450	6	252	
6O	6N	8.7	**19.8**	18	**60**	1.0	0	**0**	0.7	0	**0**	0.5	18.0	**60.0**	**0.0210**	2.02	0.0423	0.0238	**0.0661**	0.0260	6	180	
6N	6M	0.0	**19.8**	0	**60**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**60.0**	**0.0210**	2.02	0.0423	0.0238	**0.0661**	0.0450	6	188	
6M	6L	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0280	6	335	
6L	6K	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0260	6	215	
6K	6J	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0100	6	164	
6J	6I	4.9	**63.4**	12	**109**	1.0	0	**56**	0.7	0	**0**	0.5	12.0	**148.2**	**0.0519**	1.95	0.1010	0.0761	**0.1771**	0.0050	8	170	
6I	6H	0.0	**63.4**	0	**109**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**148.2**	**0.0519**	1.95	0.1010	0.0761	**0.1771**	0.0050	8	169	
6H	6G	4.4	**67.8**	12	**121**	1.0	0	**56**	0.7	0	**0**	0.5	12.0	**160.2**	**0.0561**	1.94	0.1089	0.0814	**0.1902**	0.0099	8	204	
6G	6F	6.4	**74.2**	17	**138**	1.0	0	**56**	0.7	0	**0**	0.5	17.0	**177.2**	**0.0620**	1.93	0.1199	0.0890	**0.2090**	0.0035	8	435	
6F	6E	0.0	**74.2**	0	**138**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**177.2**	**0.0620**	1.93	0.1199	0.0890	**0.2090**	0.0328	8	312	
6E	6D	4.9	**105.4**	13	**181**	1.0	0	**144**	0.7	0	**0**	0.5	13.0	**281.8**	**0.0986**	1.90	0.1871	0.1265	**0.3136**	0.0035	8	210	
6D	6C	1.3	**113.1**	3	**186**	1.0	0	**206**	0.7	0	**0**	0.5	3.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0035	10	70	
6C	6B	0.0	**113.1**	0	**186**	1.0	0	**206**	0.7	0	**0**	0.5	0.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0133	10	252	
6B	6A	0.0	**113.1**	0	**186**	1.0	0	**206**	0.7	0	**0**	0.5	0.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0040	10	232	
6A	LS-6B	0.0	**347.5**	0	**514**	1.0	0	**310**	0.7	0	**0**	0.5	0.0	**731.0**	**0.2559**	1.82	0.4653	0.4170	**0.8823**	0.0320	10	40	
LS-6B																							
6E4	6E3	0.0	**21.5**	0	**19**	1.0	0	**88**	0.7	0	**0**	0.5	0.0	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0100	8	2387	
6E3	6E2	0.0	**21.5**	0	**19**	1.0	0	**88**	0.7	0	**0**	0.5	0.0	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0110	8	140	
6E2	6E1	2.4	**23.9**	6	**25**	1.0	0	**88**	0.7	0	**0**	0.5	6.0	**86.6**	**0.0303**	1.99	0.0603	0.0287	**0.0890**	0.0039	8	238	
6E1	6E	2.4	**26.3**	5	**30**	1.0	0	**88**	0.7	0	**0**	0.5	5.0	**91.6**	**0.0321**	1.98	0.0636	0.0316	**0.0952**	0.0060	8	133	
6D2	6D1	0.6	**17.2**	1	**1**	1.0	52	**52**	0.7	0	**0**	0.5	37.4	**37.4**	**0.0131**	2.05	0.0268	0.0206	**0.0475**	0.0330	6	175	
6D1	6D	1.0	**6.4**	1	**2**	1.0	10	**62**	0.7	0	**0**	0.5	8.0	**45.4**	**0.0159**	2.04	0.0324	0.0077	**0.0400**	0.0050	6	179	
A-E1 [5]	6M	38.7	**38.7**	37	**37**	1.0	56	**56**	0.7	0	**0**	0.5	76.2	**76.2**	**0.0267**	2.00	0.0533	0.0464	**0.0997**	0.0100	8	170	
A-W1	6E4	21.5	**21.5**	19	**19**	1.0	88	**88**	0.7	0	**0**	0.5	80.6	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0050	8	305	

RANCHO MURIETA NORTH

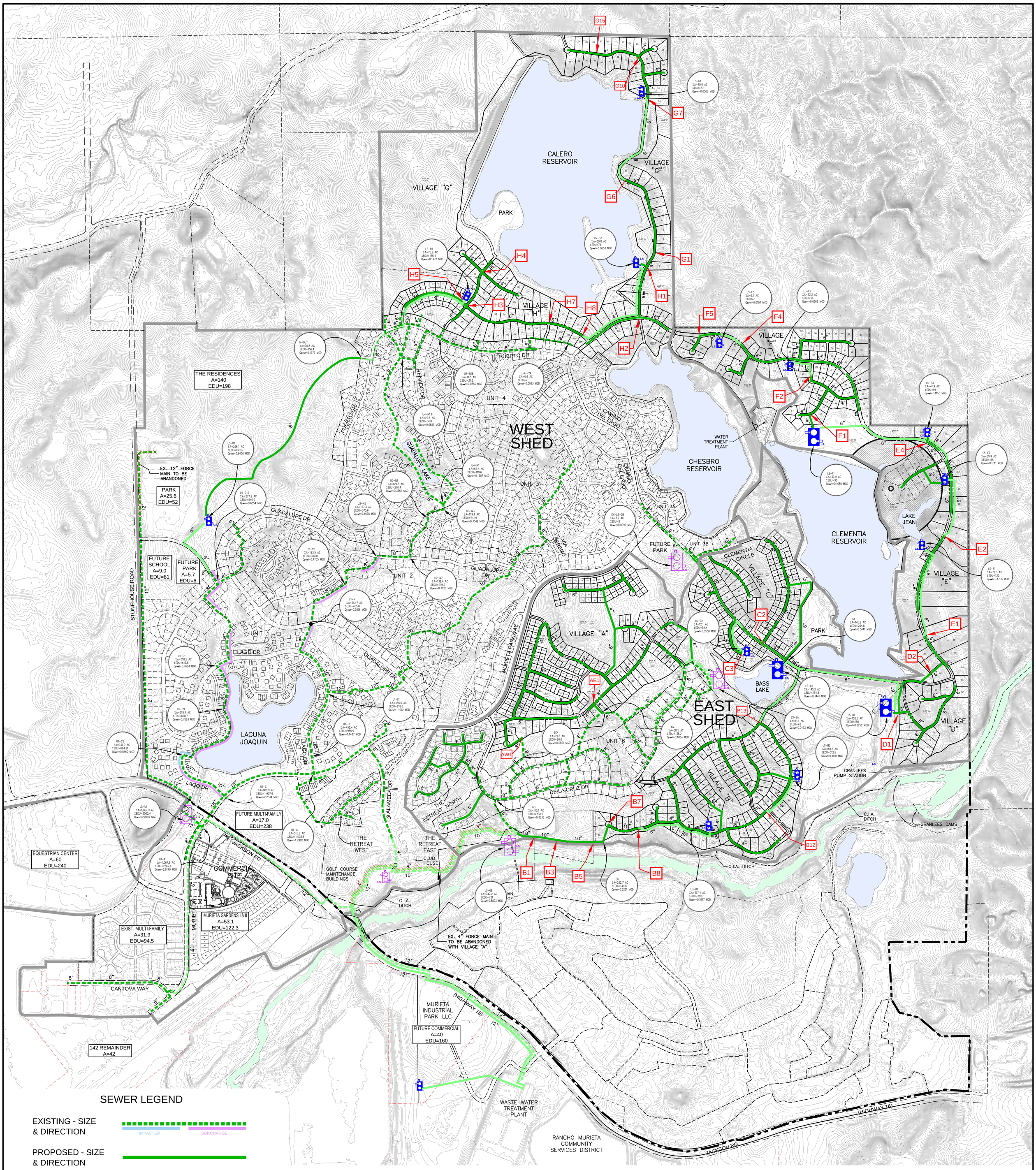
SEWER INFRASTRUCTURE CALCULATIONS

EAST SHED - BUILDOUT CONDITION

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS														PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
F5	LS-F3	5.1	**5.1**	6	**6**	1.0	0	**0**	0.7	0	**0**	0.5	6.0	**6.0**	**0.0021**	2.18	0.0046	0.0061	**0.0107**	0.0300	6	180	
LS-F3	F4	0.0	**5.1**	0	**6**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**6.0**	**0.0021**	2.18	0.0046	0.0061	**0.0107**	0.0100	6	40	
F4	F3	2.9	**8.0**	13	**19**	1.0	0	**0**	0.7	0	**0**	0.5	13.0	**19.0**	**0.0067**	2.10	0.0140	0.0096	**0.0236**	FM	4	600	N/A
F3	LS-F2	15.3	**23.3**	35	**54**	1.0	0	**0**	0.7	0	**0**	0.5	35.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	0.1000	6	550	
LS-F2	F2	0.0	**23.3**	0	**54**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	FM	4	450	N/A
F2	F1	0.0	**23.3**	0	**54**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	0.0100	6	1200	
F1	LS-F1	14.6	**37.9**	36	**90**	1.0	0	**0**	0.7	0	**0**	0.5	36.0	**90.0**	**0.0315**	1.99	0.0626	0.0455	**0.1080**	0.0100	6	100	
LS-F1	E4	0.0	**37.9**	0	**90**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**90.0**	**0.0315**	1.99	0.0626	0.0455	**0.1080**	FM	4	2520	N/A
E4	LS-E3	4.0	**41.9**	4	**94**	1.0	0	**0**	0.7	0	**0**	0.5	4.0	**94.0**	**0.0329**	1.98	0.0652	0.0503	**0.1155**	0.0100	6	40	
LS-E3	E3	0.0	**41.9**	0	**94**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**94.0**	**0.0329**	1.98	0.0652	0.0503	**0.1155**	FM	4	500	N/A
E3	LS-E2	18.0	**59.9**	21	**115**	1.0	0	**0**	0.7	0	**0**	0.5	21.0	**115.0**	**0.0403**	1.97	0.0792	0.0719	**0.1511**	0.0100	6	40	
LS-E2	E2	0.0	**59.9**	0	**115**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**115.0**	**0.0403**	1.97	0.0792	0.0719	**0.1511**	FM	4	950	N/A
E2	LS-E1	12.4	**72.3**	7	**122**	1.0	0	**0**	0.7	0	**0**	0.5	7.0	**122.0**	**0.0427**	1.96	0.0838	0.0868	**0.1706**	0.0100	6	40	
LS-E1	E1	0.0	**72.3**	0	**122**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**122.0**	**0.0427**	1.96	0.0838	0.0868	**0.1706**	FM	4	1100	N/A
E1	D2	11.2	**83.5**	0	**122**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**122.0**	**0.0427**	1.96	0.0838	0.1002	**0.1840**	0.0400	6	630	
D2	D1	10.8	**94.3**	11	**133**	1.0	0	**0**	0.7	0	**0**	0.5	11.0	**133.0**	**0.0466**	1.96	0.0910	0.1132	**0.2042**	0.0250	6	1620	
D1	LD-D1	8.2	**102.5**	17	**150**	1.0	0	**0**	0.7	0	**0**	0.5	17.0	**150.0**	**0.0525**	1.95	0.1022	0.1230	**0.2252**	0.0100	6	100	
LS-D1	LS-C1	0.0	**102.5**	0	**150**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**150.0**	**0.0525**	1.95	0.1022	0.1230	**0.2252**	FM	6	2500	N/A
LS-C1	B13	0.0	**145.2**	0	**182**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**254.8**	**0.0892**	1.90	0.1699	0.1742	**0.3441**	FM	6	1000	N/A
B13	B12	0.0	**145.2**	0	**182**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**254.8**	**0.0892**	1.90	0.1699	0.1742	**0.3441**	0.0500	8	950	
B12	LS-B2	24.3	**169.5**	58	**240**	1.0	0	**104**	0.7	0	**0**	0.5	58.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	0.0100	8	40	
LS-B2	B11	0.0	**169.5**	0	**240**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	FM	6	650	N/A
B11	B10	0.0	**169.5**	0	**240**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	0.0500	8	600	
B10	B9	26.8	**196.3**	28	**268**	1.0	0	**104**	0.7	0	**0**	0.5	28.0	**340.8**	**0.1193**	1.88	0.2244	0.2356	**0.4600**	0.0100	8	170	
B9	LS-B1	21.1	**217.4**	42	**310**	1.0	0	**104**	0.7	0	**0**	0.5	42.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0100	8	40	
LS-B1	B8	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	FM	6	1020	N/A
B8	B7	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0500	10	400	
B7	B6	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0050	10	180	
B6	B5	5.3	**222.7**	8	**318**	1.0	0	**104**	0.7	0	**0**	0.5	8.0	**390.8**	**0.1368**	1.87	0.2558	0.2672	**0.5231**	0.0500	10	30	
B5	B4	0.0	**222.7**	0	**318**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**390.8**	**0.1368**	1.87	0.2558	0.2672	**0.5231**	0.0050	10	170	
B4 [6]	B3	11.7	**234.4**	10	**328**	1.0	0	**104**	0.7	0	**0**	0.5	10.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	140	
B3	B2	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	230	
B2	B1	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	150	
B1	6A	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	80	
C3	LS-C2	12.1	**12.1**	32	**32**	1.0	32	**32**	0.7	0	**0**	0.5	54.4	**54.4**	**0.0190**	2.02	0.0385	0.0145	**0.0530**	0.0100	6	40	
LS-C2	C2	0.0	**12.1**	0	**32**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**54.4**	**0.0190**	2.02	0.0385	0.0145	**0.0530**	FM	4	600	N/A
C2	C1	13.3	**25.4**	0	**32**	1.0	28	**60**	0.7	0	**0**	0.5	19.6	**74.0**	**0.0259**	2.00	0.0518	0.0305	**0.0823**	0.0050	6	360	
C1	LS-C1	17.3	**42.7**	0	**32**	1.0	44	**104**	0.7	0	**0**	0.5	30.8	**104.8**	**0.0367**	1.97	0.0724	0.0512	**0.1237**	0.0100	8	250	

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.
5. The easter shed of Village A has a future option of a 12.5AC 33 lot development that is not included in this model.
6. The existing Geyer-West property (11.7 AC) is being assigned a 10 EDU demand for the possibility of future development.



SEWER LEGEND

- EXISTING - SIZE & DIRECTION (IMPACTED / SURCHARGE)
- PROPOSED - SIZE & DIRECTION
- EXISTING FORCE MAIN - SIZE & DIRECTION
- PROPOSED FORCE MAIN - SIZE & DIRECTION
- EXISTING LIFT STATION (L.S.)
- PROPOSED LIFT STATION (L.S.)
- PROPOSED LOCAL LIFT STATION (L.S.)

SCALE: 1"=400'

400' 0' 400' 800' 1200'

GRAPHIC SCALE: 1"=400'

MASTER SEWER PLAN FOR RANCHO MURIETA OPTION #1

JUNE, 2018

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Appendix C

Design Option 3 Shed Map & Spreadsheet Calculations

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS													PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
U4-N27	U4-N26	1.0	**1.0**	2	**134**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**158.4**	**0.0554**	1.94	0.1077	0.0012	**0.1089**	0.0050	6	104	
U4-N26	U4-N25	0.8	**1.8**	2	**136**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**160.4**	**0.0561**	1.94	0.1090	0.0022	**0.1111**	0.0246	6	145	
U4-N25	U4-N13	1.9	**3.7**	4	**140**	1.0	0	**0**	0.7	0	**0**	0.5	4.0	**164.4**	**0.0575**	1.94	0.1116	0.0044	**0.1160**	0.0500	6	300	
U4-N24	U4-N23	0.6	**0.6**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0007	**0.0023**	0.0320	6	67	
U4-N23	U4-N22	0.7	**1.3**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0016	**0.0054**	0.0080	6	300	
U4-N22	U4-N21	0.7	**2.0**	2	**7**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**7.0**	**0.0025**	2.17	0.0053	0.0024	**0.0077**	0.0340	6	206	
U4-N21	U4-N20	0.8	**2.8**	2	**9**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**9.0**	**0.0032**	2.15	0.0068	0.0034	**0.0101**	0.0050	6	158	
U4-N20	U4-N19	2.5	**5.3**	4	**13**	1.0	3	**3**	0.7	0	**0**	0.5	6.1	**15.1**	**0.0053**	2.12	0.0112	0.0064	**0.0175**	0.0410	6	385	
U4-N19	U4-N18	2.1	**7.4**	1	**14**	1.0	5	**8**	0.7	0	**0**	0.5	4.5	**19.6**	**0.0069**	2.10	0.0144	0.0089	**0.0233**	0.0730	6	349	
U4-N18	U4-N17	2.1	**9.5**	6	**20**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**25.6**	**0.0090**	2.08	0.0186	0.0114	**0.0300**	0.0360	6	304	
U4-N17	U4-N16	1.8	**11.3**	5	**25**	1.0	0	**8**	0.7	0	**0**	0.5	5.0	**30.6**	**0.0107**	2.07	0.0221	0.0136	**0.0357**	0.0200	6	237	
U4-N16	U4-N15	0.2	**11.5**	1	**26**	1.0	0	**8**	0.7	0	**0**	0.5	1.0	**31.6**	**0.0111**	2.06	0.0228	0.0138	**0.0366**	0.0190	6	210	
U4-N15	U4-N14	2.5	**14.0**	6	**32**	1.0	0	**8**	0.7	0	**0**	0.5	6.0	**37.6**	**0.0132**	2.05	0.0270	0.0168	**0.0438**	0.0420	6	426	
U4-N14	U4-N13	3.7	**17.7**	3	**35**	1.0	1	**9**	0.7	9	**9**	0.5	8.2	**45.8**	**0.0160**	2.04	0.0326	0.0212	**0.0539**	0.0448	6	176	
U4-N13	U4-N12	4.9	**98.4**	9	**184**	1.0	0	**41**	0.7	0	**9**	0.5	9.0	**219.2**	**0.0767**	1.92	0.1471	0.1181	**0.2651**	0.0280	6	168	
U4-N12	U4-N11	1.4	**99.8**	0	**184**	1.0	4	**45**	0.7	0	**9**	0.5	2.8	**222.0**	**0.0777**	1.92	0.1489	0.1198	**0.2686**	0.0180	6	147	
U4-N11	U4-N10	8.8	**108.6**	5	**189**	1.0	14	**59**	0.7	0	**9**	0.5	14.8	**236.8**	**0.0829**	1.91	0.1584	0.1303	**0.2887**	0.0035	8	282	
U4-N10	U4-N9	2.0	**110.6**	0	**189**	1.0	4	**63**	0.7	0	**9**	0.5	2.8	**239.6**	**0.0839**	1.91	0.1602	0.1327	**0.2929**	0.0035	8	147	
U4-N9	U4-N8	6.3	**116.9**	0	**189**	1.0	15	**78**	0.7	0	**9**	0.5	10.5	**250.1**	**0.0875**	1.91	0.1669	0.1403	**0.3072**	0.0035	8	126	
U4-N8	U4-N7	4.6	**121.5**	4	**193**	1.0	6	**84**	0.7	0	**9**	0.5	8.2	**258.3**	**0.0904**	1.90	0.1721	0.1458	**0.3179**	0.0035	8	211	
U4-N7	U4-N6	0.0	**121.5**	0	**193**	1.0	0	**84**	0.7	0	**9**	0.5	0.0	**258.3**	**0.0904**	1.90	0.1721	0.1458	**0.3179**	0.0035	8	219	
U4-N6	U4-N5	4.3	**125.8**	0	**193**	1.0	9	**93**	0.7	0	**9**	0.5	6.3	**264.6**	**0.0926**	1.90	0.1761	0.1510	**0.3271**	0.0035	8	293	
U4-N5	U4-N4	1.6	**127.4**	0	**193**	1.0	0	**93**	0.7	6	**15**	0.5	3.0	**267.6**	**0.0937**	1.90	0.1780	0.1529	**0.3309**	0.0035	8	206	
U4-N4	U4-N3	0.8	**128.2**	0	**193**	1.0	0	**93**	0.7	3	**18**	0.5	1.5	**269.1**	**0.0942**	1.90	0.1790	0.1538	**0.3328**	0.0035	8	254	
U4-N3	U4-N2	0.7	**128.9**	0	**193**	1.0	1	**94**	0.7	0	**18**	0.5	0.7	**269.8**	**0.0944**	1.90	0.1794	0.1547	**0.3341**	0.1084	8	85	
U4-N2	U4-N1	3.6	**132.5**	0	**193**	1.0	3	**97**	0.7	0	**18**	0.5	2.1	**271.9**	**0.0952**	1.90	0.1808	0.1590	**0.3398**	0.0039	8	260	
U4-N1	U3-N3	8.7	**141.2**	0	**193**	1.0	3	**100**	0.7	20	**38**	0.5	12.1	**284.0**	**0.0994**	1.90	0.1885	0.1694	**0.3579**	0.0083	8	322	
U3-N3	U3-N2	54.0	**195.2**	70	**263**	1.0	44	**144**	0.7	43	**81**	0.5	122.3	**406.3**	**0.1422**	1.87	0.2655	0.2342	**0.4998**	0.0035	8	208	
U3-N2	U3-N1	0.9	**196.1**	0	**263**	1.0	3	**147**	0.7	0	**81**	0.5	2.1	**408.4**	**0.1429**	1.87	0.2668	0.2353	**0.5022**	0.0035	8	211	
U3-N1	U2-N9	9.2	**205.3**	18	**281**	1.0	12	**159**	0.7	0	**81**	0.5	26.4	**434.8**	**0.1522**	1.86	0.2833	0.2464	**0.5297**	0.0035	8	101	
U2-N9	U2-N8	1.4	**206.7**	0	**281**	1.0	4	**163**	0.7	0	**81**	0.5	2.8	**437.6**	**0.1532**	1.86	0.2851	0.2480	**0.5331**	0.0200	8	175	
U2-N8	U2-N7	1.6	**208.3**	0	**281**	1.0	5	**168**	0.7	0	**81**	0.5	3.5	**441.1**	**0.1544**	1.86	0.2872	0.2500	**0.5372**	0.0130	8	315	
U2-N7	U2-N6	6.9	**215.2**	18	**299**	1.0	0	**168**	0.7	0	**81**	0.5	18.0	**459.1**	**0.1607**	1.86	0.2984	0.2582	**0.5567**	0.0163	8	269	
U2-N6	U2-N5	8.8	**224.0**	17	**316**	1.0	4	**172**	0.7	8	**89**	0.5	23.8	**482.9**	**0.1690**	1.85	0.3132	0.2688	**0.5820**	0.0242	8	194	
U2-N5	U2-N4	29.1	**253.1**	26	**342**	1.0	33	**205**	0.7	12	**101**	0.5	55.1	**538.0**	**0.1883**	1.84	0.3473	0.3037	**0.6510**	0.0035	8	267	
U2-N4	U2-N3	1.7	**254.8**	3	**345**	1.0	1	**206**	0.7	0	**101**	0.5	3.7	**541.7**	**0.1896**	1.84	0.3495	0.3058	**0.6553**	0.0418	8	252	
U2-N3	U2-N2	3.1	**257.9**	3	**348**	1.0	6	**212**	0.7	0	**101**	0.5	7.2	**548.9**	**0.1921**	1.84	0.3540	0.3095	**0.6635**	0.0188	8	196	
U2-N2	U2-N1	1.4	**259.3**	0	**348**	1.0	0	**212**	0.7	11	**112**	0.5	5.5	**554.4**	**0.1940**	1.84	0.3574	0.3112	**0.6685**	0.0050	8	480	
U2-N1	U1-N	19.3	**278.6**	17	**365**	1.0	21	**233**	0.7	20	**132**	0.5	41.7	**596.1**	**0.2086**	1.84	0.3830	0.3343	**0.7173**	0.0190	8	300	
U1-N	U1-M	9.9	**288.5**	15	**380**	1.0	13	**246**	0.7	0	**132**	0.5	24.1	**620.2**	**0.2171**	1.83	0.3978	0.3462	**0.7440**	0.0050	8	400	
U1-M	U1-L	10.1	**298.6**	6	**386**	1.0	21	**267**	0.7	0	**132**	0.5	20.7	**640.9**	**0.2243**	1.83	0.4104	0.3583	**0.7687**	0.0150	8	393	
U1-L	U1-K	13.1	**311.7**	0	**386**	1.0	21	**288**	0.7	35	**167**	0.5	32.2	**673.1**	**0.2356**	1.83	0.4301	0.3740	**0.8041**	0.0030	10	340	
U1-K	U1-J	1.2	**511.4**	0	**545**	1.0	0	**545**	0.7	5	**309**	0.5	2.5	**1083.0**	**0.3791**	1.79	0.6767	0.6137	**1.2904**	0.0015	15	240	
U1-J	U1-I	1.0	**512.4**	0	**545**	1.0	0	**545**	0.7	6	**315**	0.5	3.0	**1086.0**	**0.3801**	1.78	0.6785	0.6149	**1.2934**	0.0015	15	426	
U1-I	U1-H	3.9	**516.3**	0	**545**	1.0	4	**549**	0.7	21	**336**	0.5	13.3	**1099.3**	**0.3848**	1.78	0.6864	0.6196	**1.3059**	0.0015	15	250	
U1-H	U1-G	11.9	**528.2**	0	**545**	1.0	30	**579**	0.7	0	**336**	0.5	21.0	**1120.3**	**0.3921**	1.78	0.6989	0.6338	**1.3327**	0.0015	15	260	
U1-G	U1-F	63.2	**591.4**	10	**555**	1.0	27	**606**	0.7	38	**374**	0.5	47.9	**1168.2**	**0.4089**	1.78	0.7273	0.7097	**1.4369**	0.0015	15	365	
U1-F	U1-E	0.0	**591.4**	0	**555**	1.0	0	**606**	0.7	0	**374**	0.5	0.0	**1168.2**	**0.4089**	1.78	0.7273	0.7097	**1.4369**	0.0015	15	220	
U1-E	U1-D	0.0	**591.4**	0	**555**	1.0	0	**606**	0.7	0	**374**	0.5	0.0	**1168.2**	**0.4089**	1.78	0.7273	0.7097	**1.4369**	0.0015	15	390	
U1-D	U1-C	0.0	**591.4**	0	**555**	1.0	0	**606**	0.7	0	**374**	0.5	0.0	**1168.2**	**0.4089**	1.78	0.7273	0.7097	**1.4369**	0.0077	15	275	
U1-C	U1-B	17.0	**880.9**	0	**1008**	1.0	340	**1043**	0.7	0	**411**	0.5	238.0	**1945.6**	**0.6810**	1.73	1.1810	1.0571	**2.2380**	0.0015	18	425	
U1-B	U1-A	0.0	**880.9**	0	**1008**	1.0	0	**1043**	0.7	0	**411**	0.5	0.0	**1945.6**	**0.6810**	1.73	1.1810	1.0571	**2.2380**	0.0015	18	50	
U1-A [5]	LS-U1	187.0	**1067.9**	475	**1483**	1.0	79	**1122**	0.7	189	**600**	0.5	624.8	**2570.4**	**0.8996**	1.71	1.5379	1.2815	**2.8194**	0.0025	21	170	
LS-U1																							

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS																PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
U3-K13	U3-K12	17.3	**17.3**	8	**8**	1.0	15	**15**	0.7	32	**32**	0.5	34.5	**34.5**	**0.0121**	2.06	0.0248	0.0208	**0.0456**	0.0200	6	212	
U3-K12	U3-K11	1.3	**18.6**	1	**9**	1.0	2	**17**	0.7	0	**32**	0.5	2.4	**36.9**	**0.0129**	2.05	0.0265	0.0223	**0.0488**	0.0083	6	322	
U3-K11	U3-K10	19.8	**38.4**	24	**33**	1.0	12	**29**	0.7	29	**61**	0.5	46.9	**83.8**	**0.0293**	1.99	0.0584	0.0461	**0.1045**	0.0070	6	137	
U3-K10	U3-K9	2.0	**40.4**	1	**34**	1.0	5	**34**	0.7	0	**61**	0.5	4.5	**88.3**	**0.0309**	1.99	0.0614	0.0485	**0.1099**	0.0143	6	204	
U3-K9	U3-K8	6.7	**47.1**	8	**42**	1.0	8	**42**	0.7	0	**61**	0.5	13.6	**101.9**	**0.0357**	1.98	0.0705	0.0565	**0.1270**	0.0122	8	292	
U3-K8	U3-K7	1.0	**48.1**	0	**42**	1.0	4	**46**	0.7	0	**61**	0.5	2.8	**104.7**	**0.0366**	1.97	0.0723	0.0577	**0.1301**	0.0154	8	77	
U3-K7	U3-K6	3.0	**51.1**	0	**42**	1.0	10	**56**	0.7	0	**61**	0.5	7.0	**111.7**	**0.0391**	1.97	0.0770	0.0613	**0.1383**	0.0154	8	274	
U3-K6	U3-K5	0.9	**52.0**	0	**42**	1.0	3	**59**	0.7	0	**61**	0.5	2.1	**113.8**	**0.0398**	1.97	0.0784	0.0624	**0.1408**	0.0154	8	241	
U3-K5	U3-K4	8.6	**60.6**	4	**46**	1.0	15	**74**	0.7	0	**61**	0.5	14.5	**128.3**	**0.0449**	1.96	0.0880	0.0727	**0.1607**	0.0060	8	143	
U3-K4	U3-K3	4.5	**65.1**	1	**47**	1.0	10	**84**	0.7	0	**61**	0.5	8.0	**136.3**	**0.0477**	1.95	0.0932	0.0781	**0.1713**	0.0063	8	293	
U3-K3	U3-K2	50.5	**115.6**	31	**78**	1.0	67	**151**	0.7	26	**87**	0.5	90.9	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0066	8	94	
U3-K2	U3-K1	0.0	**115.6**	0	**78**	1.0	0	**151**	0.7	0	**87**	0.5	0.0	**227.2**	**0.0795**	1.91	0.1522	0.1387	**0.2909**	0.0560	8	228	
U3-K1	U2-K9	2.3	**117.9**	0	**78**	1.0	4	**155**	0.7	0	**87**	0.5	2.8	**230.0**	**0.0805**	1.91	0.1540	0.1415	**0.2955**	0.0560	8	174	
U2-K9	U2-K8	4.6	**122.5**	0	**78**	1.0	11	**166**	0.7	0	**87**	0.5	7.7	**237.7**	**0.0832**	1.91	0.1589	0.1470	**0.3059**	0.0025	10	143	
U2-K8	U2-K7	8.2	**130.7**	6	**84**	1.0	13	**179**	0.7	0	**87**	0.5	15.1	**252.8**	**0.0885**	1.91	0.1686	0.1568	**0.3254**	0.0300	10	137	
U2-K7	U2-K6	0.7	**131.4**	0	**84**	1.0	2	**181**	0.7	0	**87**	0.5	1.4	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0294	10	179	
U2-K6	U2-K5	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	380	
U2-K5	U2-K4	0.0	**131.4**	0	**84**	1.0	0	**181**	0.7	0	**87**	0.5	0.0	**254.2**	**0.0890**	1.91	0.1695	0.1577	**0.3272**	0.0150	10	401	
U2-K4	U2-K3	2.3	**133.7**	1	**85**	1.0	4	**185**	0.7	0	**87**	0.5	3.8	**258.0**	**0.0903**	1.90	0.1719	0.1604	**0.3324**	0.0200	10	311	
U2-K3	U2-K2	1.4	**135.1**	2	**87**	1.0	3	**188**	0.7	0	**87**	0.5	4.1	**262.1**	**0.0917**	1.90	0.1745	0.1621	**0.3367**	0.0430	10	161	
U2-K2	U2-K1	5.5	**140.6**	4	**91**	1.0	8	**196**	0.7	0	**87**	0.5	9.6	**271.7**	**0.0951**	1.90	0.1807	0.1687	**0.3494**	0.0275	10	308	
U2-K1	U1-K9	1.4	**142.0**	2	**93**	1.0	2	**198**	0.7	0	**87**	0.5	3.4	**275.1**	**0.0963**	1.90	0.1828	0.1704	**0.3532**	0.0080	10	424	
U1-K9	U1-K8	28.3	**170.3**	35	**128**	1.0	15	**213**	0.7	50	**137**	0.5	70.5	**345.6**	**0.1210**	1.88	0.2275	0.2044	**0.4318**	0.0100	10	15	
U1-K8	U1-K7	13.5	**183.8**	22	**150**	1.0	13	**226**	0.7	0	**137**	0.5	31.1	**376.7**	**0.1318**	1.87	0.2470	0.2206	**0.4676**	0.0025	10	132	
U1-K7	U1-K6	6.8	**190.6**	9	**159**	1.0	6	**232**	0.7	0	**137**	0.5	13.2	**389.9**	**0.1365**	1.87	0.2553	0.2287	**0.4840**	0.0025	10	208	
U1-K6	U1-K5	2.8	**193.4**	0	**159**	1.0	7	**239**	0.7	0	**137**	0.5	4.9	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0025	10	100	
U1-K5	U1-K4	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0240	10	112	
U1-K4	U1-K3	0.0	**193.4**	0	**159**	1.0	0	**239**	0.7	0	**137**	0.5	0.0	**394.8**	**0.1382**	1.87	0.2583	0.2321	**0.4904**	0.0028	12	240	
U1-K3	U1-K2	0.8	**194.2**	0	**159**	1.0	4	**243**	0.7	0	**137**	0.5	2.8	**397.6**	**0.1392**	1.87	0.2601	0.2330	**0.4931**	0.0163	12	231	
U1-K2	U1-K1	2.2	**196.4**	0	**159**	1.0	6	**249**	0.7	0	**137**	0.5	4.2	**401.8**	**0.1406**	1.87	0.2627	0.2357	**0.4984**	0.0160	12	190	
U1-K1	U1-K	2.1	**198.5**	0	**159**	1.0	8	**257**	0.7	0	**137**	0.5	5.6	**407.4**	**0.1426**	1.87	0.2662	0.2382	**0.5044**	0.0040	12	142	
U1-K																							
U2-C7	U2-C6	0.0	**0.0**	0	**0**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**0.0**	**0.0000**	3.50	0.0000	0.0000	**0.0000**	0.0260	6	132	
U2-C6	U2-C5	0.7	**0.7**	2	**2**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0050	6	60	
U2-C5	U2-C4	0.0	**0.7**	0	**2**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**2.0**	**0.0007**	2.25	0.0016	0.0008	**0.0024**	0.0370	6	151	
U2-C4	U2-C3	1.1	**1.8**	3	**5**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**5.0**	**0.0018**	2.19	0.0038	0.0022	**0.0060**	0.0170	6	84	
U2-C3	U2-C2	6.6	**8.4**	13	**18**	1.0	5	**5**	0.7	0	**0**	0.5	16.5	**21.5**	**0.0075**	2.09	0.0157	0.0101	**0.0258**	0.0050	6	50	
U2-C2	U2-C1	1.1	**9.5**	3	**21**	1.0	0	**5**	0.7	0	**0**	0.5	3.0	**24.5**	**0.0086**	2.08	0.0178	0.0114	**0.0292**	0.0070	6	210	
U2-C1	U1-C17	4.7	**14.2**	0	**21**	1.0	10	**15**	0.7	0	**0**	0.5	7.0	**31.5**	**0.0110**	2.06	0.0227	0.0170	**0.0398**	0.0070	6	217	
U1-C17	U1-C16	6.9	**21.1**	16	**37**	1.0	0	**15**	0.7	0	**0**	0.5	16.0	**47.5**	**0.0166**	2.03	0.0338	0.0253	**0.0591**	0.0050	6	233	
U1-C16	U1-C15	0.0	**201.4**	0	**380**	1.0	0	**15**	0.7	0	**0**	0.5	0.0	**390.5**	**0.1367**	1.87	0.2556	0.2417	**0.4973**	0.0040	8	265	
U1-C15	U1-C14	3.3	**204.7**	10	**390**	1.0	0	**15**	0.7	0	**0**	0.5	10.0	**400.5**	**0.1402**	1.87	0.2619	0.2456	**0.5075**	0.0050	8	265	
U1-C14	U1-C13	4.1	**208.8**	8	**398**	1.0	0	**15**	0.7	0	**0**	0.5	8.0	**408.5**	**0.1430**	1.87	0.2669	0.2506	**0.5175**	0.0160	8	325	
U1-C13	U1-C12	0.0	**208.8**	0	**398**	1.0	0	**15**	0.7	0	**0**	0.5	0.0	**408.5**	**0.1430**	1.87	0.2669	0.2506	**0.5175**	0.0050	8	426	
U1-C12	U1-C11	10.7	**219.5**	0	**398**	1.0	16	**31**	0.7	5	**5**	0.5	13.7	**422.2**	**0.1478**	1.86	0.2755	0.2634	**0.5389**	0.0100	8	188	
U1-C11	U1-C10	15.2	**234.7**	31	**429**	1.0	6	**37**	0.7	0	**5**	0.5	35.2	**457.4**	**0.1601**	1.86	0.2974	0.2816	**0.5790**	0.0050	8	379	
U1-C10	U1-C9	7.2	**241.9**	0	**429**	1.0	17	**54**	0.7	5	**10**	0.5	14.4	**471.8**	**0.1651**	1.86	0.3063	0.2903	**0.5966**	0.0035	8	233	
U1-C9	U1-C8	0.7	**242.6**	0	**429**	1.0	0	**54**	0.7	5	**15**	0.5	2.5	**474.3**	**0.1660**	1.85	0.3079	0.2911	**0.5990**	0.0035	8	274	
U1-C8	U1-C7	3.2	**245.8**	0	**429**	1.0	6	**60**	0.7	5	**20**	0.5	6.7	**481.0**	**0.1684**	1.85	0.3120	0.2950	**0.6070**	0.0035	8	401	
U1-C7	U1-C6	0.8	**246.6**	0	**429**	1.0	0	**60**	0.7	5	**25**	0.5	2.5	**483.5**	**0.1692**	1.85	0.3136	0.2959	**0.6095**	0.0035	8	307	
U1-C6	U1-C5	1.2	**247.8**	0	**429**	1.0	0	**60**	0.7	7	**32**	0.5	3.5	**487.0**	**0.1705**	1.85	0.3157	0.2974	**0.6131**	0.0090	8	127	
U1-C5	U1-C4	17.4	**265.2**	24	**453**	1.0	24	**84**	0.7	0	**32**	0.5	40.8	**527.8**	**0.1847**	1.85	0.3410	0.3182	**0.6592**	0.0025	10	70	
U1-C4	U1-C3	2.2	**267.4**	0	**453**	1.0	7	**91**	0.7	2	**34**	0.5	5.9	**533.7**	**0.1868**	1.84	0.3446	0.3209	**0.6655**	0.0025	10	230	
U1-C3	U1-C2	1.8	**269.2**	0	**453**	1.0	6	**97**	0.7	0	**34**	0.5	4.2	**537.9**	**0.1883**	1.84	0.3472	0.3230	**0.6702**	0.0025	10	225	
U1-C2	U1-C1	3.3	**272.5**	0	**453**	1.0	0	**97**	0.7	3	**37**	0.5	1.5	**539.4**	**0.1888**	1.84	0.3481	0.3270	**0.6751**	0.0025	10	225	
U1-C1	U1-C	0.0	**272.5**	0	**453**	1.0	0	**97**	0.7	0	**37**	0.5	0.0	**539.4**	**0.1888**	1.84	0.3481	0.3270	**0.6751**	0.0025	10	214	
U1-C																							

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS																PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
G-15	G-14	4.9	**4.9**	8	**8**	1.0	0	**0**	0.7	0	**0**	0.5	8.0	**8.0**	**0.0028**	2.16	0.0060	0.0059	**0.0119**	0.0150	6	370	
G-14	G-13	2.4	**7.3**	4	**12**	1.0	0	**0**	0.7	0	**0**	0.5	4.0	**12.0**	**0.0042**	2.13	0.0089	0.0088	**0.0177**	0.0100	6	150	
G-13	G-12	1.1	**8.4**	2	**14**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**14.0**	**0.0049**	2.12	0.0104	0.0101	**0.0205**	0.0100	6	140	
G-12	G-11	1.1	**9.5**	2	**16**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**16.0**	**0.0056**	2.11	0.0118	0.0114	**0.0232**	0.0150	6	100	
G-11	G-10	4.1	**13.6**	5	**21**	1.0	0	**0**	0.7	0	**0**	0.5	5.0	**21.0**	**0.0074**	2.09	0.0154	0.0163	**0.0317**	0.0150	6	160	
G-10	G-9	2.9	**16.5**	9	**30**	1.0	0	**0**	0.7	0	**0**	0.5	9.0	**30.0**	**0.0105**	2.07	0.0217	0.0198	**0.0415**	0.1000	6	200	
G-9	G-8	1.0	**17.5**	2	**32**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**32.0**	**0.0112**	2.06	0.0231	0.0210	**0.0441**	0.0800	6	150	
G-8	G-7	2.5	**20.0**	5	**37**	1.0	0	**0**	0.7	0	**0**	0.5	5.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	0.0500	6	200	
G-7	LS-G1	0.0	**20.0**	0	**37**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	0.0200	6	50	
LS-G1	G-6	0.0	**20.0**	0	**37**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**37.0**	**0.0130**	2.05	0.0266	0.0240	**0.0506**	FM	4	1280	N/A
G-6	G-5	1.5	**21.5**	2	**39**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**39.0**	**0.0137**	2.05	0.0280	0.0258	**0.0538**	0.0100	6	180	
G-5	G-4	1.3	**22.8**	2	**41**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**41.0**	**0.0144**	2.04	0.0293	0.0274	**0.0567**	0.0100	6	220	
G-4	G-3	1.8	**24.6**	3	**44**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**44.0**	**0.0154**	2.04	0.0314	0.0295	**0.0609**	0.0100	6	400	
G-3	G-2	1.3	**25.9**	2	**46**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**46.0**	**0.0161**	2.04	0.0328	0.0311	**0.0639**	0.0100	6	210	
G-2	G-1	1.3	**27.2**	2	**48**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**48.0**	**0.0168**	2.03	0.0341	0.0326	**0.0668**	0.0100	6	260	
G-1	H-13	1.6	**28.8**	2	**50**	1.0	0	**0**	0.7	0	**0**	0.5	2.0	**50.0**	**0.0175**	2.03	0.0355	0.0346	**0.0701**	0.0100	6	240	
H-2	H-1	7.0	**7.0**	3	**53**	1.0	0	**0**	0.7	0	**0**	0.5	3.0	**3.0**	**0.0011**	2.22	0.0023	0.0084	**0.0107**	0.0050	6	360	
H-1	LS-H2	4.0	**39.8**	21	**74**	1.0	0	**0**	0.7	0	**0**	0.5	21.0	**24.0**	**0.0084**	2.08	0.0175	0.0478	**0.0653**	0.0050	6	310	
H-5	H-3	6.5	**6.5**	0	**0**	1.0	32	**32**	0.7	0	**0**	0.5	22.4	**22.4**	**0.0078**	2.09	0.0164	0.0078	**0.0242**	0.0050	6	240	
H-4	H-3	11.0	**11.0**	26	**26**	1.0	0	**32**	0.7	0	**0**	0.5	26.0	**26.0**	**0.0091**	2.08	0.0189	0.0132	**0.0321**	0.0050	6	170	
LS-H2	H-8	0.0	**39.8**		**74**									**74.0**									
H-8	H-7	5.0	**44.8**	10	**84**	1.0	0	**32**	0.7	0	**0**	0.5	10.0	**84.0**	**0.0294**	1.99	0.0585	0.0538	**0.1123**	0.0050	6	400	
H-7	H-3	12.0	**56.8**	21	**105**	1.0	0	**32**	0.7	0	**0**	0.5	21.0	**105.0**	**0.0368**	1.97	0.0725	0.0682	**0.1407**	0.0050	6	200	
H-3	LS-H1	1.5	**75.8**	3	**134**	1.0	0	**32**	0.7	0	**0**	0.5	3.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	0.0050	6	50	
LS-H1	H-OUT	0.0	**75.8**	0	**134**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	FM	6	1000	N/A
H-OUT	U4-N27	0.0	**75.8**	0	**134**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**156.4**	**0.0547**	1.94	0.1064	0.0910	**0.1973**	0.0800	8	195	
LS-R1 [6]	U1-C16	180.3	**180.3**	343	**343**	1.0	0	**0**	0.7	0	**0**	0.5	343.0	**343.0**	**0.1201**	1.88	0.2258	0.2164	**0.4422**	FM	6	1100	N/A

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.
5. Murieta Gardens I & II and the surrounding development is assumed to be fully constructed with the following breakdown:

Development	Area (AC)	EDU
Murieta Gardens I (commercial)	31.1	67.0
Murieta Gardens II (79 lots)	22.0	78.0
Murieta Village (189 lots)	31.9	94.5
Equestrian Center	60.0	240.0
Existing Commerical	42.0	168.0
Total	**187.0**	647.5

6. The shed area for LS-R1 includes the Residences East and West (140AC/198 lot) development, the future Escuala School (9.0AC/81EDU), and the existing park (25.6AC/52EDU) with its future expansion (5.7AC/12EDU).

RANCHO MURIETA NORTH

SEWER INFRASTRUCTURE CALCULATIONS

EAST SHED - BUILDOUT CONDITION

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS															PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
LS6A	6S	11.1	**11.1**	42	**42**	1.0	0	**0**	0.7	0	**0**	0.5	42.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	FM	4	2900	N/A
6S	6R	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0300	6	401	
6R	6Q	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0410	6	202	
6Q	6P	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0490	6	180	
6P	6O	0.0	**11.1**	0	**42**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**42.0**	**0.0147**	2.04	0.0300	0.0133	**0.0433**	0.0450	6	252	
6O	6N	8.7	**19.8**	18	**60**	1.0	0	**0**	0.7	0	**0**	0.5	18.0	**60.0**	**0.0210**	2.02	0.0423	0.0238	**0.0661**	0.0260	6	180	
6N	6M	0.0	**19.8**	0	**60**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**60.0**	**0.0210**	2.02	0.0423	0.0238	**0.0661**	0.0450	6	188	
6M	6L	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0280	6	335	
6L	6K	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0260	6	215	
6K	6J	0.0	**58.5**	0	**97**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**136.2**	**0.0477**	1.95	0.0932	0.0702	**0.1634**	0.0100	6	164	
6J	6I	4.9	**63.4**	12	**109**	1.0	0	**56**	0.7	0	**0**	0.5	12.0	**148.2**	**0.0519**	1.95	0.1010	0.0761	**0.1771**	0.0050	8	170	
6I	6H	0.0	**63.4**	0	**109**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**148.2**	**0.0519**	1.95	0.1010	0.0761	**0.1771**	0.0050	8	169	
6H	6G	4.4	**67.8**	12	**121**	1.0	0	**56**	0.7	0	**0**	0.5	12.0	**160.2**	**0.0561**	1.94	0.1089	0.0814	**0.1902**	0.0099	8	204	
6G	6F	6.4	**74.2**	17	**138**	1.0	0	**56**	0.7	0	**0**	0.5	17.0	**177.2**	**0.0620**	1.93	0.1199	0.0890	**0.2090**	0.0035	8	435	
6F	6E	0.0	**74.2**	0	**138**	1.0	0	**56**	0.7	0	**0**	0.5	0.0	**177.2**	**0.0620**	1.93	0.1199	0.0890	**0.2090**	0.0328	8	312	
6E	6D	4.9	**105.4**	13	**181**	1.0	0	**144**	0.7	0	**0**	0.5	13.0	**281.8**	**0.0986**	1.90	0.1871	0.1265	**0.3136**	0.0035	8	210	
6D	6C	1.3	**113.1**	3	**186**	1.0	0	**206**	0.7	0	**0**	0.5	3.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0035	10	70	
6C	6B	0.0	**113.1**	0	**186**	1.0	0	**206**	0.7	0	**0**	0.5	0.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0133	10	252	
6B	6A	0.0	**113.1**	0	**186**	1.0	0	**206**	0.7	0	**0**	0.5	0.0	**330.2**	**0.1156**	1.88	0.2177	0.1357	**0.3535**	0.0040	10	232	
6A	LS-6B	0.0	**347.5**	0	**514**	1.0	0	**310**	0.7	0	**0**	0.5	0.0	**731.0**	**0.2559**	1.82	0.4653	0.4170	**0.8823**	0.0320	10	40	
LS-6B																							
6E4	6E3	0.0	**21.5**	0	**19**	1.0	0	**88**	0.7	0	**0**	0.5	0.0	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0100	8	2387	
6E3	6E2	0.0	**21.5**	0	**19**	1.0	0	**88**	0.7	0	**0**	0.5	0.0	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0110	8	140	
6E2	6E1	2.4	**23.9**	6	**25**	1.0	0	**88**	0.7	0	**0**	0.5	6.0	**86.6**	**0.0303**	1.99	0.0603	0.0287	**0.0890**	0.0039	8	238	
6E1	6E	2.4	**26.3**	5	**30**	1.0	0	**88**	0.7	0	**0**	0.5	5.0	**91.6**	**0.0321**	1.98	0.0636	0.0316	**0.0952**	0.0060	8	133	
6D2	6D1	0.6	**17.2**	1	**1**	1.0	52	**52**	0.7	0	**0**	0.5	37.4	**37.4**	**0.0131**	2.05	0.0268	0.0206	**0.0475**	0.0330	6	175	
6D1	6D	1.0	**6.4**	1	**2**	1.0	10	**62**	0.7	0	**0**	0.5	8.0	**45.4**	**0.0159**	2.04	0.0324	0.0077	**0.0400**	0.0050	6	179	
A-E1 [5]	6M	38.7	**38.7**	37	**37**	1.0	56	**56**	0.7	0	**0**	0.5	76.2	**76.2**	**0.0267**	2.00	0.0533	0.0464	**0.0997**	0.0100	8	170	
A-W1	6E4	21.5	**21.5**	19	**19**	1.0	88	**88**	0.7	0	**0**	0.5	80.6	**80.6**	**0.0282**	1.99	0.0563	0.0258	**0.0821**	0.0050	8	305	

RANCHO MURIETA NORTH

SEWER INFRASTRUCTURE CALCULATIONS

EAST SHED - BUILDOUT CONDITION

FROM NODE	TO NODE	AREA	ΣAREA	DEMANDS														PIPE CHARACTERISTICS			
				ESTATE LOTS	ΣESTATE LOTS	DWELLING UNIT FACTOR	CIRCLE/ COTTAGE LOTS	ΣCIRCLE/ COTTAGE LOTS	DWELLING UNIT FACTOR	HALFPLEX/ TOWNHOUSE LOTS	ΣHALFPLEX/ TOWNHOUSE LOTS	DWELLING UNIT FACTOR	TOTAL EDU's		Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	PIPE SLOPE	DIA.	L	V
		(AC)	**(AC)**										EDU	**Σ EDU**	**(MGD)**		(MGD)	(MGD)	**(MGD)**	(FT/FT)	(IN.)	(FT)	(FT/S)
F5	LS-F3	5.1	**5.1**	6	**6**	1.0	0	**0**	0.7	0	**0**	0.5	6.0	**6.0**	**0.0021**	2.18	0.0046	0.0061	**0.0107**	0.0300	6	180	
LS-F3	F4	0.0	**5.1**	0	**6**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**6.0**	**0.0021**	2.18	0.0046	0.0061	**0.0107**	0.0100	6	40	
F4	F3	2.9	**8.0**	13	**19**	1.0	0	**0**	0.7	0	**0**	0.5	13.0	**19.0**	**0.0067**	2.10	0.0140	0.0096	**0.0236**	FM	4	600	N/A
F3	LS-F2	15.3	**23.3**	35	**54**	1.0	0	**0**	0.7	0	**0**	0.5	35.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	0.1000	6	550	
LS-F2	F2	0.0	**23.3**	0	**54**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	FM	4	450	N/A
F2	F1	0.0	**23.3**	0	**54**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**54.0**	**0.0189**	2.02	0.0383	0.0280	**0.0662**	0.0100	6	1200	
F1	LS-F1	14.6	**37.9**	36	**90**	1.0	0	**0**	0.7	0	**0**	0.5	36.0	**90.0**	**0.0315**	1.99	0.0626	0.0455	**0.1080**	0.0100	6	100	
LS-F1	E4	0.0	**37.9**	0	**90**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**90.0**	**0.0315**	1.99	0.0626	0.0455	**0.1080**	FM	4	2520	N/A
E4	LS-E3	4.0	**41.9**	4	**94**	1.0	0	**0**	0.7	0	**0**	0.5	4.0	**94.0**	**0.0329**	1.98	0.0652	0.0503	**0.1155**	0.0100	6	40	
LS-E3	E3	0.0	**41.9**	0	**94**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**94.0**	**0.0329**	1.98	0.0652	0.0503	**0.1155**	FM	4	500	N/A
E3	LS-E2	18.0	**59.9**	21	**115**	1.0	0	**0**	0.7	0	**0**	0.5	21.0	**115.0**	**0.0403**	1.97	0.0792	0.0719	**0.1511**	0.0100	6	40	
LS-E2	E2	0.0	**59.9**	0	**115**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**115.0**	**0.0403**	1.97	0.0792	0.0719	**0.1511**	FM	4	950	N/A
E2	LS-E1	12.4	**72.3**	7	**122**	1.0	0	**0**	0.7	0	**0**	0.5	7.0	**122.0**	**0.0427**	1.96	0.0838	0.0868	**0.1706**	0.0100	6	40	
LS-E1	E1	0.0	**72.3**	0	**122**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**122.0**	**0.0427**	1.96	0.0838	0.0868	**0.1706**	FM	4	1100	N/A
E1	D2	11.2	**83.5**	0	**122**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**122.0**	**0.0427**	1.96	0.0838	0.1002	**0.1840**	0.0400	6	630	
D2	D1	10.8	**94.3**	11	**133**	1.0	0	**0**	0.7	0	**0**	0.5	11.0	**133.0**	**0.0466**	1.96	0.0910	0.1132	**0.2042**	0.0250	6	1620	
D1	LD-D1	8.2	**102.5**	17	**150**	1.0	0	**0**	0.7	0	**0**	0.5	17.0	**150.0**	**0.0525**	1.95	0.1022	0.1230	**0.2252**	0.0100	6	100	
LS-D1	LS-C1	0.0	**102.5**	0	**150**	1.0	0	**0**	0.7	0	**0**	0.5	0.0	**150.0**	**0.0525**	1.95	0.1022	0.1230	**0.2252**	FM	6	2500	N/A
LS-C1	B13	0.0	**145.2**	0	**182**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**254.8**	**0.0892**	1.90	0.1699	0.1742	**0.3441**	FM	6	1000	N/A
B13	B12	0.0	**145.2**	0	**182**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**254.8**	**0.0892**	1.90	0.1699	0.1742	**0.3441**	0.0500	8	950	
B12	LS-B2	24.3	**169.5**	58	**240**	1.0	0	**104**	0.7	0	**0**	0.5	58.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	0.0100	8	40	
LS-B2	B11	0.0	**169.5**	0	**240**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	FM	6	650	N/A
B11	B10	0.0	**169.5**	0	**240**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**312.8**	**0.1095**	1.89	0.2067	0.2034	**0.4101**	0.0500	8	600	
B10	B9	26.8	**196.3**	28	**268**	1.0	0	**104**	0.7	0	**0**	0.5	28.0	**340.8**	**0.1193**	1.88	0.2244	0.2356	**0.4600**	0.0100	8	170	
B9	LS-B1	21.1	**217.4**	42	**310**	1.0	0	**104**	0.7	0	**0**	0.5	42.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0100	8	40	
LS-B1	B8	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	FM	6	1020	N/A
B8	B7	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0500	10	400	
B7	B6	0.0	**217.4**	0	**310**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**382.8**	**0.1340**	1.87	0.2508	0.2609	**0.5117**	0.0050	10	180	
B6	B5	5.3	**222.7**	8	**318**	1.0	0	**104**	0.7	0	**0**	0.5	8.0	**390.8**	**0.1368**	1.87	0.2558	0.2672	**0.5231**	0.0500	10	30	
B5	B4	0.0	**222.7**	0	**318**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**390.8**	**0.1368**	1.87	0.2558	0.2672	**0.5231**	0.0050	10	170	
B4 [6]	B3	11.7	**234.4**	10	**328**	1.0	0	**104**	0.7	0	**0**	0.5	10.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	140	
B3	B2	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	230	
B2	B1	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	150	
B1	6A	0.0	**234.4**	0	**328**	1.0	0	**104**	0.7	0	**0**	0.5	0.0	**400.8**	**0.1403**	1.87	0.2621	0.2813	**0.5434**	0.0050	10	80	
C3	LS-C2	12.1	**12.1**	32	**32**	1.0	32	**32**	0.7	0	**0**	0.5	54.4	**54.4**	**0.0190**	2.02	0.0385	0.0145	**0.0530**	0.0100	6	40	
LS-C2	C2	0.0	**12.1**	0	**32**	1.0	0	**32**	0.7	0	**0**	0.5	0.0	**54.4**	**0.0190**	2.02	0.0385	0.0145	**0.0530**	FM	4	600	N/A
C2	C1	13.3	**25.4**	0	**32**	1.0	28	**60**	0.7	0	**0**	0.5	19.6	**74.0**	**0.0259**	2.00	0.0518	0.0305	**0.0823**	0.0050	6	360	
C1	LS-C1	17.3	**42.7**	0	**32**	1.0	44	**104**	0.7	0	**0**	0.5	30.8	**104.8**	**0.0367**	1.97	0.0724	0.0512	**0.1237**	0.0100	8	250	

NOTES

1. One dwelling unit (DU) is equivilant to 350 gallons per day (gpd) per the Infrastructure Master Plan performed by MacKay & Somps.
2. Equivalent dwelling unit (EDU) factor is based upon the detailed breakdown of each development type that has been provided by RMCSD.
3. Peaking Factor is per the Sacramento Area Sewer District standard equations as outlined in the Infrastructure Master Plan by MacKay & Somps
4. Inflow and Infiltrations is set at 1,200 gpd/AC as outlined in the Infrastructure Master Plan by MacKay & Somps.
5. The easter shed of Village A has a future option of a 12.5AC 33 lot development that is not included in this model.
6. The existing Geyer-West property (11.7 AC) is being assigned a 10 EDU demand for the possibility of future development.

CALERO RESERVOIR

VILLAGE "G"

PARK

VILLAGE "H"

THE RESIDENCES
A=140
EDU=198

WEST SHED

UNIT 4

UNIT 3

UNIT 2

UNIT 1

UNIT 5A

UNIT 3B

UNIT 6

PUERTO DR

VENADO DR

GUADALUPE LAKE

GUADALUPE DR

CAMINO DEL LAGO

VIA SERENO

EX. 12" FORCE MAIN TO BE ABANDONED

PARK
A=25.6
EDU=52

FUTURE SCHOOL
A=9.0
EDU=81

FUTURE PARK
A=5.7
EDU=12

STONEHOUSE ROAD

LAGO DR

LAGUNA JOAQUIN

FUTURE MULTI-FAMILY
A=17.0
EDU=238

EQUESTRIAN CENTER
A=60
EDU=240

JACKSON RD

COMMERCIAL SITE

MURIETA GARDENS I & II
A=53.1
EDU=122.3

EXIST. MULTI-FAMILY
A=31.9
EDU=94.5

MURIETA PKWY

CANTOVA WAY

142 REMAINDER
A=42

THE RETREAT WEST

THE RETREAT EAST

THE RETREAT NORTH

CLUB HOUSE

GOLF COURSE MAINTENANCE BUILDINGS

C.I.A. DITCH

PEDESTRIAN BRIDGE

EX. 4" FORCE MAIN TO BE ABANDONED WITH VILLAGE "A"

MURIETA INDUSTRIAL PARK LLC

FUTURE COMMERCIAL
A=40
EDU=160

(HIGHWAY 16)

WASTE WATER TREATMENT PLANT

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

WATER TREATMENT PLANT

CHESBRO RESERVOIR

CLEMENTIA RESERVOIR

LAKE JEAN

FUTURE PARK

CLEMENTIA CIRCLE

VILLAGE "A"

VILLAGE "C"

VILLAGE "F"

VILLAGE "E"

VILLAGE "D"

VILLAGE "B"

PARK

BASS LAKE

EAST SHED

GRANLEES PUMP STATION

GRANLEES DAMS

DE LA CRUZ DR

LS-G1
ΣA=20.0 AC
ΣEDU=37.0
Qpwwf=0.0506 MGD

H13
ΣA=39.8 AC
ΣEDU=74
Qpwwf=0.0653 MGD

LS-H1
ΣA=75.8 AC
ΣEDU=156.4
Qpwwf=0.1973 MGD

H-OUT-1
ΣA=75.8 AC
ΣEDU=156.4
Qpwwf=0.1973 MGD

LS-F3
ΣA=5.1 AC
ΣEDU=6
Qpwwf=0.0107 MGD

LS-F2
ΣA=23.3 AC
ΣEDU=54
Qpwwf=0.0662 MGD

LS-E3
ΣA=41.9 AC
ΣEDU=94
Qpwwf=0.1155 MGD

LS-E2
ΣA=59.9 AC
ΣEDU=115
Qpwwf=0.1511 MGD

LS-E1
ΣA=72.3 AC
ΣEDU=122
Qpwwf=0.1706 MGD

LS-F1
ΣA=37.9 AC
ΣEDU=90
Qpwwf=0.1080 MGD

LS-R1
ΣA=180.3 AC
ΣEDU=343
Qpwwf=0.4422 MGD

U1-C16
ΣA=201.4 AC
ΣEDU=390.5
Qpwwf=0.4973 MGD

U2-N5
ΣA=253.1 AC
ΣEDU=538.0
Qpwwf=0.6510 MGD

U2-N2
ΣA=259.3 AC
ΣEDU=554.4
Qpwwf=0.6685 MGD

U1-N
ΣA=288.5 AC
ΣEDU=620.2
Qpwwf=0.7440 MGD

U2-N7
ΣA=215.2 AC
ΣEDU=459.1
Qpwwf=0.5567 MGD

U3-N3
ΣA=195.2 AC
ΣEDU=406.7
Qpwwf=0.4998 MGD

U4-N1
ΣA=141.2 AC
ΣEDU=284
Qpwwf=0.3579 MGD

U4-N4
ΣA=128.2 AC
ΣEDU=269.1
Qpwwf=0.3328 MGD

U4-N6
ΣA=125.8 AC
ΣEDU=264.0
Qpwwf=0.3271 MGD

U4-N13
ΣA=98.4 AC
ΣEDU=219.2
Qpwwf=0.2651 MGD

U4-N16
ΣA=11.5 AC
ΣEDU=31.6
Qpwwf=0.0366 MGD

U4-N24
ΣA=0.6 AC
ΣEDU=2
Qpwwf=0.0023 MGD

EX-LS-3B
ΣA=3.2 AC
ΣEDU=8
Qpwwf=0.0099 MGD

U1-C11
ΣA=234.7 AC
ΣEDU=457.4
Qpwwf=0.5790 MGD

U1-C9
ΣA=242.6 AC
ΣEDU=474.3
Qpwwf=0.5990 MGD

U1-C5
ΣA=265.2 AC
ΣEDU=527.8
Qpwwf=0.6592 MGD

U1-K
ΣA=511.4 AC
ΣEDU=1,083.0
Qpwwf=1.2904 MGD

U1-H
ΣA=528.2 AC
ΣEDU=1,120.3
Qpwwf=1.3327 MGD

U1-C
ΣA=880.9 AC
ΣEDU=1,945.8
Qpwwf=2.2380 MGD

U1-G
ΣA=591.4 AC
ΣEDU=1,168.2
Qpwwf=1.4369 MGD

LS-U1
ΣA=1,067.9 AC
ΣEDU=2,570.4
Qpwwf=2.8194 MGD

U1-A
ΣA=1,067.9 AC
ΣEDU=2,570.4
Qpwwf=2.8194 MGD

6E4
ΣA=21.5 AC
ΣEDU=80.6
Qpwwf=0.0821 MGD

6M
ΣA=58.5 AC
ΣEDU=136.2
Qpwwf=0.1834 MGD

6O
ΣA=113.1 AC
ΣEDU=330.2
Qpwwf=0.3535 MGD

LS-6A
ΣA=11.1 AC
ΣEDU=42
Qpwwf=0.0433 MGD

LS-6B
ΣA=169.5 AC
ΣEDU=312.8
Qpwwf=0.4101 MGD

LS-D1
ΣA=102.5 AC
ΣEDU=150
Qpwwf=0.2252 MGD

LS-C1
ΣA=145.2 AC
ΣEDU=254.8
Qpwwf=0.3441 MGD

C1
ΣA=145.2 AC
ΣEDU=254.8
Qpwwf=0.3441 MGD

LS-C2
ΣA=12.1 AC
ΣEDU=54.4
Qpwwf=0.0530 MGD

LS-6B
ΣA=347.2 AC
ΣEDU=731
Qpwwf=0.8823 MGD

B6
ΣA=222.7 AC
ΣEDU=340.8
Qpwwf=0.5231 MGD

LS-B1
ΣA=217.4 AC
ΣEDU=382.8
Qpwwf=0.5117 MGD

H1
H2
H3
H4
H5
H7
H8
G1
G6
G7
G10
G15
F4
F5
E1
E2
E4
D1
D2
C2
C3
B1
B3
B5
B7
B8
B11
AE1
AW1

SEWER LEGEND

EXISTING - SIZE & DIRECTION (IMPACTED / SURCHARGE)

PROPOSED - SIZE & DIRECTION

EXISTING FORCE MAIN - SIZE & DIRECTION

PROPOSED FORCE MAIN - SIZE & DIRECTION

EXISTING LIFT STATION — L.S.

PROPOSED LIFT STATION — L.S.

PROPOSED LOCAL LIFT STATION — L.S.

SCALE: 1"=400'

400' 0' 400' 800' 1200'

GRAPHIC SCALE: 1"=400'

MASTER SEWER PLAN FOR RANCHO MURIETA OPTION #3

JUNE, 2018

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