KETTLER LEWECK
ENGINEERING

WATER STUDY FOR:

UNIVERSITY OF SAN DIEGO

2015 MASTER PLAN

Facilities Management

5998 Alcala Park

San Diego, CA 92110-2492

KLE PROJECT NO.: 0059

WATER STUDY

UNIVERSITY OF SAN DIEGO
2015 MASTER PLAN AND
CONDITIONAL USE PERMIT
PTS 417090
SAN DIEGO, CALIFORNIA

Original Date: June 30, 2015
Revisions Date: October 30, 2015
Final Date: March 7, 2016

Prepared For:

The University of San Diego
5998 Alcala Park
San Diego, CA 92110-2492
(619) 260-4568

Prepared By:

KETTLER LEWECK ENGINEERING
303 A Street, Suite 302
San Diego, California 92101
(619) 269-3444

REGISTERED PROFESSIONAL ENGINEER
STEVEN C. KETTLER
No. C48358
Exp. 6-30-2016
CIVIL
STATE OF CALIFORNIA

Steven C. Kettler RCE 48,358
Registration Expires 6-30-2016

TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	PROJECT INFORMATION	1
2.1	PROJECT LOCATION	1
2.2	PROJECT DESCRIPTION	3
3.0	EXISTING CONDITION	5
3.1	EASTERLY PORTION OF THE USD MAIN CAMPUS	5
3.2	MARIAN WAY	5
4.0	WATER DEMAND AND HYDRAULIC CALCULATIONS	6
5.0	PROPOSED PUBLIC IMPROVEMENTS	7
6.0	CONCLUSION	8

FIGURES

FIGURE 1	VICINITY MAP	2

TABLES

TABLE 1	PRELIMINARY PROPOSED PROJECT FIXTURE UNITS (ADDITIONAL/CHANGED FIXTURE UNITS ONLY)	7

APPENDIX

APPENDIX A PREVIOUSLY APPROVED WATER STUDY (2008)
APPENDIX B PREMINARY WATER DEMAND ESTIMATES AND HYDRAULIC CALCULATIONS
APPENDIX C EXISTING AND PROPOSED CONDITIONS MAPS
APPENDIX D CITY OF SAN DIEGO SPLASH MAPS/REFERENCE DRAWINGS

1.0 INTRODUCTION

The purpose of this Water Study is to evaluate the potential impacts to the City's existing public water system on campus (if any) associated with the University of San Diego's Main Campus 2015 Master Plan Project in support of a Conditional Use Permit (CUP) application. Specifically, this report will address hydraulic capacity, redundancy, potential for new public water improvements, and phasing related to the 2015 Master Plan projects.

This study shall be considered a supplement to the previously approved Water Study (2008) prepared in conjunction with Substantial Conformance Review (SCR – PTS 104192) and Conditional Use Permit (CUP – PTS 14021) applications that included the Intercollegiate Athletic Center, Baseball Ballpark Renovations, Soccer Field (with optional underground parking), Wellness & Recreation Center and the Golf/Softball Facility. Refer to Appendix A for a copy of this study.

There are both public and private water mains throughout the campus. Over time, as the campus has expanded, water facilities have been constructed, removed and/or modified. Although a majority of the campus improvements were processed through the City of San Diego for approval, there are some existing public water facilities that do not meet current City of San Diego standards. These issues were identified, summarized, and agreed upon in the 2008 Update Master Water Study. The result of this study identified nine (9) specific public water improvements to be constructed over several years in five (5) phases. To date, Phase 1-4 have been completed. Phase 5 involves the upsizing of the existing 8-inch public main to 12-inch from Marian Way to Linda Vista in three (3) sub-phases in conjunction with the USD Pedestrian Mall Improvement Project. A portion of Phase 5 (i.e. the middle and easterly portions) is the only remaining work required by the City of San Diego Public Utilities Department. Phase 5A has been recently completed by the City (i.e. DWG No. 38090-D).

2.0 PROJECT INFORMATION

2.1 Project Location

The University of San Diego (USD) campus occupies approximately 180 acres of land devoted to university-related uses in the central portion of the City of San Diego (City), in the community of Linda Vista. The campus is located 4 miles north of downtown San Diego, approximately 0.5 mile east of Interstate 5 (I-5) and 0.5 mile north of Interstate 8 (I-8). The USD campus is located within an unsectioned area of Township 16 South, Range 3 West, on the U.S. Geological Survey (USGS) 7.5-minute La Jolla quadrangle map. Tecolote Canyon Natural Park forms the northern border of the property, Morena Boulevard is located to the west, with Via Las Cumbres bordering the campus on the east, and Linda Vista Road to the south. Elevations on campus range from approximately 50 feet above mean sea level (AMSL) to approximately 260 feet AMSL. With the exception of the steep, north-facing slopes along the northern campus border and the slopes on the western end of campus near Marian Way, the majority of the campus is

developed and supports university facilities (buildings, parking lots, athletic fields, etc.) and associated landscaping.

Surrounding land uses include commercial/industrial development and residential housing in the Morena Boulevard area to the west of the campus, student and non-student multi-family housing immediately to the south and various types of residential development to the east. Tecolote Canyon Natural Park contains undeveloped regional open space to the north. The City's Multi-habitat Planning Area (MHPA) occurs on approximately 7.6 acres along the northern edge of the campus and extends offsite into Tecolote Canyon. The campus is located within the Airport Influence Area (AIA) for San Diego International Airport and Montgomery Field.

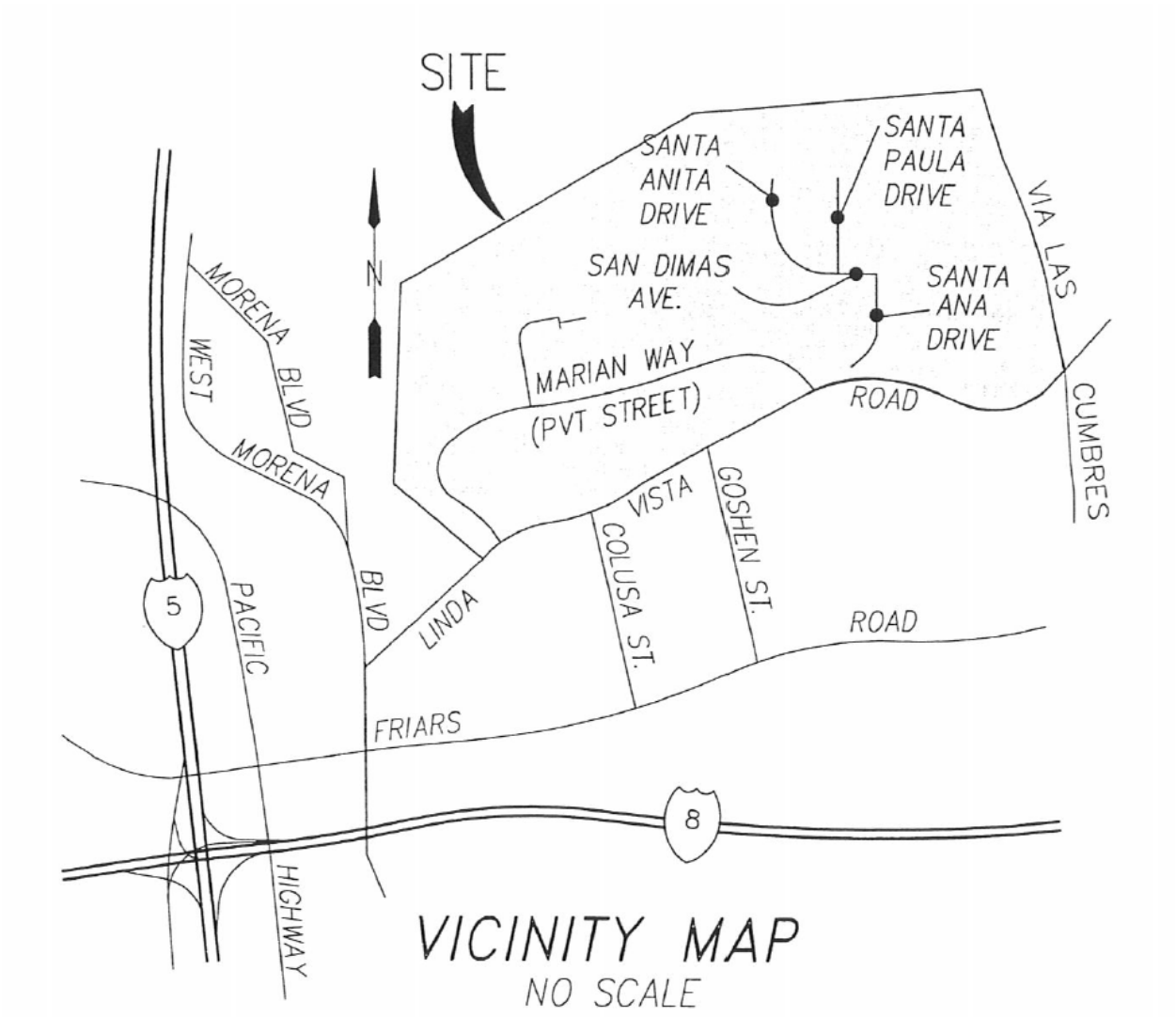


FIGURE 1 – VICINITY MAP

2.2 Project Description

In 1996, USD received approval of its existing Master Plan to guide the phased buildout of the campus through the year 2030. The City issued Conditional Use Permit (CUP)/ Resource Protection Ordinance (RPO) Permit No. 92-0568 to allow the campus to construct 23 conceptual projects and expand student population to 7,000 FTE. Two future study areas were also identified in the Master Plan. The sequence of the projects was not determined at that time in order to provide flexibility with regard to economics and academic needs. The 1996 Master Plan EIR was prepared to assess the short- and long-term, as well as cumulative, impacts of implementing the Master Plan and was certified in conjunction with the CUP approvals.

The Master Plan is a document that records the vision and goals of the physical campus. This vision for the campus is updated from time to time to reflect the changes in demographics and the economy that affect higher education. Most importantly, the Master Plan is required by the City as the basis for the university's CUP and to ensure the University's fulfillment of current regulations. Over the last several years, USD campus officials have been conducting vision planning and space planning exercises to address the future needs of the university. An update to the existing Master Plan is now proposed.

The proposed USD Master Plan Update provides a comprehensive revision of the 1996 Master Plan and Design Guidelines, as well as the campus' building space and infrastructure needs associated with increasing enrollment from 7,000 full-time equivalent (FTE) students to 10,000 FTE over the next 20+ years. The USD Master Plan Update project would allow for the development of academic core/student service/ support uses and athletics and recreation uses, and additional student housing. Parking supply expansions would also occur under the proposed Master Plan Update.

Among the projects outlined in the Master Plan Update are 14 proposed construction sites, as well as 16 approved projects identified in the 1996 Master Plan EIR that have previous City review/approvals but remain unbuilt. The 14 proposed project sites would allow for the construction of academic/administrative buildings, student housing, student services uses, athletics/athletic support/administrative buildings, parking, pedestrian circulation and landscape improvements not contemplated in the 1996 Master Plan and related EIR. Design guidelines contained in the Master Plan Update would provide a comprehensive design framework to guide campus development. Other elements of the Master Plan Update address the planning context of the campus, provide an enrollment and space analysis, and identify sustainability goals.

The above-described improvements would require the following entitlements: an amended CUP to allow for the continued institutional use, a Site Development Permit (SDP) to allow impacts to Environmentally Sensitive Lands (ESL), and MHPA Boundary Line Correction to shift developed land out of the Multiple Species Conservation Program (MSCP) preserve.

The 2015 Master Plan projects include:

Site #	Project Description	Note	Sprinklered	Floors
	Previously Approved Projects			
1	Approved as Sports Park; Tennis Center; Proposed Athletics/ Administrative/ Parking	(2)	Y	1
2	Approved as Environmental Studies Building; New Academic/ Administrative Building	(1)	Y	3
3	Approved as Library Expansion; New Academic/Administrative Building	(1)	Y	2.5
4	Approved as Landscaped Pedestrian Mall; Proposed Plaza	(1)	Y	1
5	Approved as Olin Hall Expansion with underground parking; Proposed Academic/Administrative Building with Parking	(2)	Y	2.5
6	Approved as Hughes Expansion; Proposed Administrative/ Academic Building	(1)	Y	3
7	Approved as Serra Hall Addition with partial demolition of existing building; Proposed Academic/Administrative Building	(1)	Y	3
8	Approved as Pedestrian Mall; Proposed Plaza with enhanced connection across buildings and enhanced entry gateway and tram drop-off	(1)	N	1
9	Approved as Recreation, Wellness & Aquatic Center	(1)	Y	3
10	Approved as Public Safety Building; Proposed Administrative/Parking	(1)	Y	2
11	Approved as Renovation to Missions; Proposed Housing	(2)	Y	3
12	Approved as Stadium Grandstands and Fieldhouse Facility	(1)	N/A	N/A
13	Approved as Collegiate Athletic Center and Office Building	(1)	Y	3
14	Approved as parking and soccer field	(1)	Y	2
15	Approved Residential Expansion	(1)	Y	4
16	Approved as softball, golf and club sports building	(1)	Y	1
	Proposed Projects			
17	Approved as Lower Olin Future Study Area; Proposed Trails/Landscape Enhancements	(3)	N/A	N/A
18	Parking/Administrative/Physical Plant. 2 levels above ground.	(3)	Y	5
19	Plaza/Mall/Bridge	(3)	N	1
20	Proposed Academic/Administrative/Support	(3)	Y	1&2
21	Proposed Academic/Administrative/Student Support Services	(3)	Y	1.5
22	New Academic/Administrative Building (Four Stories to match Shiley Hall)	(3)	Y	4
23	New Housing/Parking Structure	(3)	Y	3
24	New Housing/ Student Services/ Parking	(3)	Y	3.5
25	Proposed Academic/ Administrative / Parking Building	(3)	Y	3
26	Engineering Expansion of Loma Hall; Proposed Academic/Administrative Building	(3)	Y	3
27	Housing/Student Services	(3)	Y	3
28	Athletics/Administrative Support	(3)	Y	2
29	Facilities/Athletic Support	(3)	Y	1
30	New Student Housing/Student Services/ Parking/Athletics	(3)	Y	3

Notes:

(1) Project previously approved as part of CUP 92-0568 and/or SCR 140192, SCR 104201. Shown herein for reference only
(2) Project previously approved as part of CUP 92-0568. To be modified as part of this CUP Application
(3) Project proposed as part of this CUP Application

3.0 EXISTING CONDITION

The following is a summary of the existing condition for both the easterly portion of the USD campus and Marian Way. The existing water improvements are shown in Appendix "C".

3.1 Easterly Portion of the USD Main Campus

The easterly portion of the campus includes the areas of the campus bound by Linda Vista Road to the south, the east entrance/Marian Way to the west and Via Las Cumbres to the east. The existing facilities located in this area are the Mission Apartments (A, B and the new apartments), Mission Crossroads, the Seminary, Jenny Craig Pavilion, San Antonio DePadua, Stadium Grandstand and Fieldhouse Facility, Sports Center Complex and Alcala Vistas. There are existing 8-inch and 12-inch public water mains.

The easterly portion of the USD campus is split in two major areas by the existence of two different water pressure zones (i.e. the 390 zone and the 559 zone). There exists a water pressure regulator in Linda Vista Road near the intersection of Linda Vista Road and Via Las Cumbres. The most easterly portion of the easterly campus is served from the high pressure zone (i.e. the 559 zone). There exists a connection from a 10-inch water main in Via Las Cumbres to an 8-inch water main on the campus. A second 8-inch water main from the campus connects to a 12-inch water main in Linda Vista Road. However, the valve at the tee in Linda Vista Road is closed since this portion of the existing 12-inch water system is on the low pressure zone. Finally, there exists a valve on the existing 12-inch water main that traverses the north side of the campus. The valve located between the Jenny Craig Pavilion and the Sports Complex is also closed as it keeps the two different pressure zones isolated. This portion of the easterly campus is essentially served by one water connection in Via Las Cumbres. The most westerly portion of the easterly campus is served by a single 12-inch main on the campus that connects to the existing 12-inch in Linda Vista Road. The water pressure zone for this portion of the easterly campus is the 390 zone. This 12-inch water splits into two separate sub-systems. One provides water to the Jenny Craig Pavilion and the other provides water to the Mission Apartments, the Seminary and the San Antonio De Padua. The existing 12-inch water main servicing the Mission Apartment area beyond the San Dimas Ave cul-de-sac is a dead-end water system and does not have redundancy.

3.2 Marian Way

The current condition includes existing 8-inch and recently completed 12-inch public water mains within an existing 80-foot public water easement. There exist a number of existing water services, irrigation services, fire services and fire hydrants on these water mains. Not all of these existing appurtenances are located within the existing public water easement. Although the existing main appears to be in good condition and there have not been any problems to date, the City of San Diego Public Utilities Department is requiring that the 8-inch main be upsized to a 12-inch main. In addition, they will not

accept certain non-standard surface improvements (i.e., walls, fountains, etc.) above their existing public water main. Finally, they will not accept the fire hydrants, meters and other appurtenances that are not included within a public easement. Nor will they accept the existing access along this existing public water main. This water line is shown to be realigned and upgraded to a 12" main per the 2008 Updated Master Water Study. In 2015 the City upgraded approximately 1/3 of the 8" main to a 12" main (DWG No 38090-D). This improvement was identified as Phase 5A in the 2008 Update Master Water Study. Phase 5B and the center section within Colachis Plaza remain to be upgraded. This improvement is anticipated to be constructed by the City during the summer of 2016.

4.0 WATER DEMAND AND HYDRAULIC CALCULATIONS

The preliminary water demand data was provided to the City of San Diego by M.W. Steele on behalf of USD via this study. Refer to Table 2. The figures included in this table represent changes from the existing condition and are not a summary of the total fixture units on campus. The number of fixture units for each proposed project was estimated by using the Uniform Plumbing Code (UPC) with augmentations based on the facility standards set by USD. The University has requirements for the number of facilities (showers, toilets, etc.) provided for each bed. Therefore, these facility standards only show significant differences from the UPC in residential facilities. The City of San Diego Public Utilities Department will use this preliminary water demand data to evaluate the hydraulic characteristics of the existing water facilities. Based on this evaluation, the City of San Diego Public Utilities Department may identify areas of the existing systems that do not meet their current standards. If so, the City of San Diego may identify improvements that would bring the public water facilities up to current City standards. The output of the City's hydraulic modeling is included in Appendix "B".

Note: The following table is based on the fixture unit data shown in Appendix B. Projects previously covered by the 2008 Updated Master Water Study are not included. The Camino/Founder's Hall information is shown even though this work is not a project included in the CUP application. This work consists of tenant improvements (TIs) to change the usage from residential to administrative. This shift will occur as new residential facilities included in the CUP are constructed.

TABLE 2- PRELIMINARY PROPOSED PROJECT FIXTURE UNITS (ADDITIONAL/CHANGED FU'S ONLY)

			Fixture Units (Per USD/UPC)	
Location	Zone	Project	Sub-total	Add'l Fixture Units
East Campus	559 Pressure Zone	Project 28 – Athletics/Administrative		71
		Project 29 – Facilities/Athletic Support		16
		Project 30 – Student Housing		1237
		559 Pressure Zone Total		1324
	390 Pressure Zone	Project 11 – Housing/Student Services	220	-201
		Project 11 – Demo Existing Apartment	-421	
		Project 27 – Housing/Student Services	708	-36
		Project 27 – Demo Existing Apartment	-744	
		390 Pressure Zone Total		-237
	East Campus Total			1087
Marian Way	390 Pressure Zone	Project 1 – Athletics/Admin/Parking	29	-7
		Project 1 – Demo Existing Tennis Facility	-36	
		Project 5 – Academic/Admin/Parking		269
		Project 17 – Lower Olin Study Area/Trails/Landscape		0
		Project 19 – Plaza/ Bridge		0
		Project 20 – Academic/Admin/Support		0
		Project 21 – Academic/Admin/Student Support		52
		Project 24 – Housing/Student Services/Parking		506
		Project 25 – Academic/Admin/Parking		261
		Project 26 – Engineering Expansion of Loma Hall		256
		Camino/Founders Hall*		-423
	Marian Way Total			914
Linda Vista Rd	390 Pressure Zone	Project 22 – Academic/Administrative		751
		Project 23 – Housing/Parking	1716	1231
		Project 23 – Existing Structure Demolition	-485	
	Linda Vista Rd Basin Total			1982
Cushman	390 Pressure Zone	Project 18 –Parking/Admin/Physical Plant		0
		Cushman Total		0

Note: This table represents changes from the existing condition and is not a summary of the total campus demand.

5.0 PROPOSED PUBLIC IMPROVEMENTS

The following is a summary of the proposed public improvements for both the easterly portion of the USD campus and Marian Way. These proposed public improvements are based on the

results of the hydraulic calculations performed by the City of San Diego Public Utilities Department using demand data provided by USD. The proposed water improvement is shown in on the proposed water map included in Appendix 'C'.

1. Proposed upsizing of the existing 8" public water main to a 12" public water main in Marian Way (i.e. Project 5B as identified in the 2008 Updated Mater Water Study.)

The construction of this improvements is scheduled to be completed by the City of San Diego during the summer of 2016.

6.0 CONCLUSION

The City's analysis of the proposed 2015 Main Campus Master Plan and associated CUP projects has concluded that all City design standards have been meet and no additional improvements to the public water system on campus are required.

The only proposed public water improvements identified is the one remaining project (i.e. Project 5B) from the 2008 Updated Master Water Study. This project is scheduled to be constructed by the City during the summer of 2016.

APPENDIX A

PREVIOUSLY APPROVED WATER STUDY (2008)

869.0

THE CITY OF SAN DIEGO

MAYOR JERRY SANDERS

March 28, 2008

Mr. Steven C. Kettler
Latitude 33 Planning and Engineering
4933 Paramount Drive, Suite 200
San Diego, CA 92123

Dear Mr. Kettler:

Subject: Updated Water Study – University of San Diego Alcala Campus

We have completed our review of the subject water study dated February 2008. The water study is accepted by the CIP Planning and Water Review Section on behalf of the City of San Diego's Water Department.

If you have any questions or require further information, please call me at (619) 533-4287 or Associate Engineer-Civil Chris Gascon at (619) 533-7417.

Sincerely,

Leonard L. Wilson
Senior Civil Engineer
Water Resources and Planning Division

CNG

2008-016-10.03

DIVERSITY BRINGS US ALL TOGETHER

Water Department
600 B Street, Suite 1000, MS 910 • San Diego, CA 92101
Tel (619) 533-7595 Fax (619) 235-1973

UPDATED MASTER WATER STUDY

UNIVERSITY OF SAN DIEGO ALCALA CAMPUS

SAN DIEGO, CALIFORNIA

February 2008

Prepared for:

UNIVERSITY OF SAN DIEGO
5998 Alcala Park
San Diego, CA 92110

Prepared By:

LATITUDE 33 PLANNING AND ENGINEERING
4933 Paramount Drive, Suite 200
San Diego, California 92123
(858) 751-0633

Steven C. Kettler RCE 48358
Registration Expires 6-30-2008

Prepared By: JW/SCK
Checked By: SCK

H:\800\869.00\Reports\Water\MasterWaterStudy-SCRCUP update.doc

TABLE OF CONTENTS

		PAGE
I.	PURPOSE	1
II.	PROJECT DESCRIPTION	1
III.	EXISTING CONDITION	1
IV.	PROPOSED PUBLIC IMPROVEMENTS	4
V.	WATER DEMAND AND HYDRAULIC CALCUALTIONS	7
VI.	CONCLUSION	10

LIST OF FIGURES

FIGURE 1	SITE VICINITY MAP	3
FIGURE 2	USD EASTERLY CAMPUS WATER DEMAND DATA MAP	8

LIST OF TABLES

TABLE 1	RECOMMENDED PUBLIC IMPROVEMENT PHASING	6
TABLE 2	USD EASTERLY CAMPUS WATER DEMAND DATA	9

LIST OF EXHIBITS

EXHIBIT A	OVERALL USD CAMPUS MAP
EXHIBIT B	EXISTING WATER IMPROVEMENT MAP
EXHIBIT C	EASTERLY CAMPUS PROPOSED IMPROVEMENT EXHIBIT
EXHIBIT D	MARIAN WAY/PEDESTRIAN MALL PROPOSED IMPROVEMENT EXHIBIT
EXHIBIT E	PROPOSED PUBLIC WATER IMPROVEMENT PHASING EXHIBIT

LIST OF APPENDICES

APPENDIX A	WATER DEMAND AND HYDRAULIC CALCUALTIONS

I. PURPOSE

This study has been updated to include the SCR (PTS 104192) and CUP Amendment (PTS 140201) applications. The SCR includes the Intercollegiate Athletic Center, Baseball Ballpark Renovations, and soccer field with optional underground parking structure. The CUP Amendment includes the Wellness & Recreation Center and Golf/Softball Facility. The City of San Diego is requiring that USD evaluate the impacts of these two applications on the public water system within the campus. The original study addressed capacity, redundancy, easement adjustments. This update will investigate whether additional improvements are required with the construction of the proposed SCR and CUP projects.

The purpose of the Master Water Study is to evaluate the easterly portion/area of the USD campus as well as the area along Marian Way (refer to Exhibit "A "). Specifically, this study will evaluate the need for new, public water improvements in the easterly area of the USD campus to provide water redundancy and to evaluate the relocation of the existing public water main in Marian Way to eliminate the encroachment of non-typical private improvements within the City's easement and over the existing public water main. Finally, this study will address the horizontal alignment of the proposed pipes (refer to Exhibits "C" and "D"), demonstrate adequate access for the City maintenance personnel along the alignment of the water systems, relocations and/or reconnections of existing appurtenances to the new water main(s) and public easement adjustments (i.e. quitclaiming of old easements and granting of new easements).

II. PROJECT DESCRIPTION

The University of San Diego campus is located in the Linda Vista Community Plan Area of the City of San Diego (refer to Figure 1, Site Vicinity Map). There exists both public and private water mains throughout the campus. Over time, as the campus has expanded, water facilities have been constructed, removed and/or modified. Although a majority of the campus improvements were processed through the City of San Diego for approval, there are some existing public water facilities that do not meet current City of San Diego standards relative to redundancy or are located outside of public water easements. These issues relate mostly to the easterly portion/area of the USD campus. In addition, there exists significant private improvements along Marian Way that encroach into the City's existing water easement. The City's water department will not support these encroachments.

III. EXISTING CONDITION

The following is a summary of the existing condition for both the easterly portion of the USD campus and Marian Way. The existing water improvements are shown on Exhibit "B".

<u>Easterly Portion of the USD Campus:</u>
The easterly portion of the campus includes the areas of the campus bound by Linda Vista Road to the south, the east entrance/Marian Way to the west and Via Las Cumbres to the east. The existing facilities located in this area are the Mission Apartments (A, B and the new apartments), Mission Crossroads, the Seminary, Jenny Craig Pavilion, San Antonio DePadua, Stadium

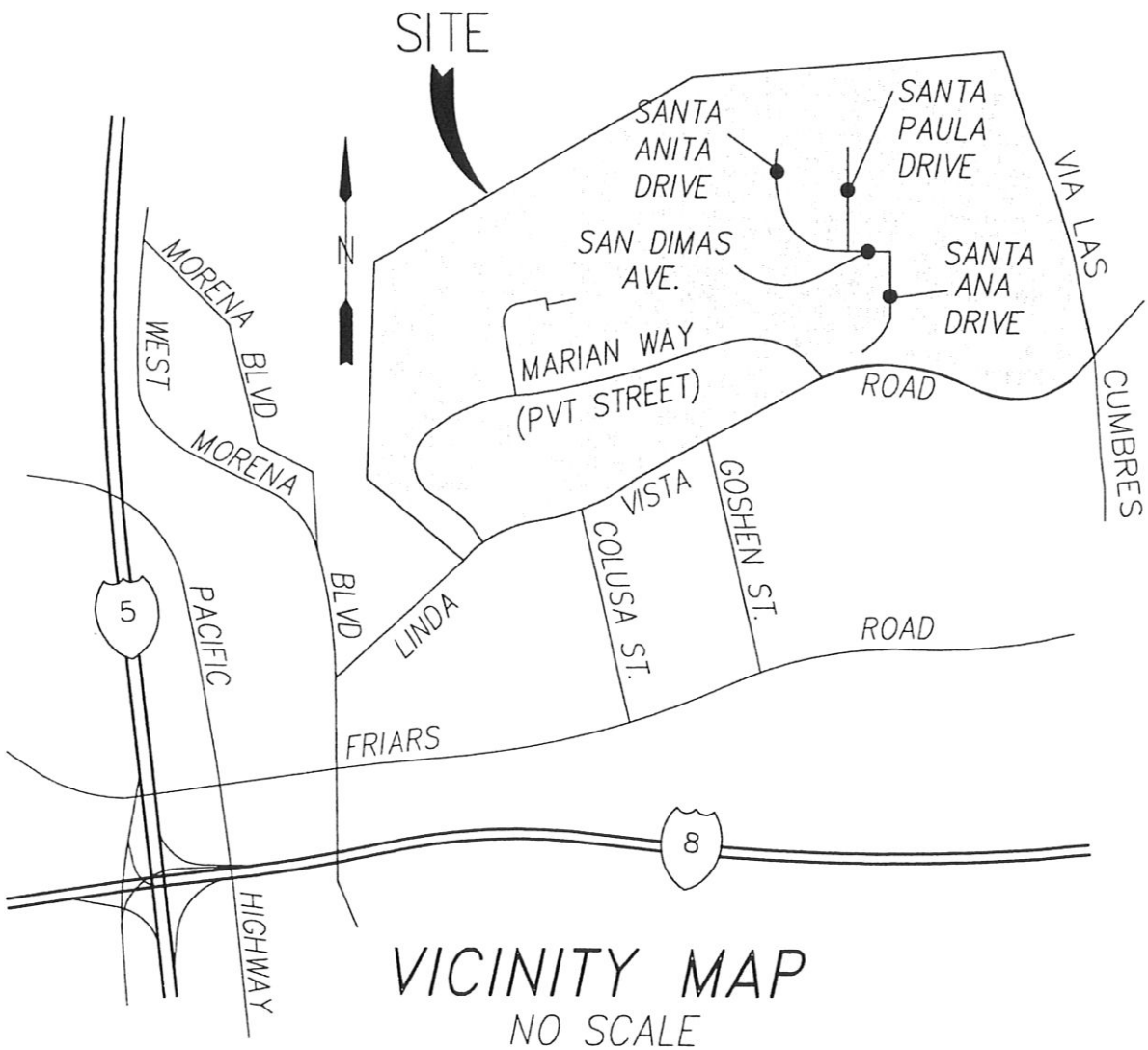
Grandstand and Fieldhouse Facility, Sports Center Complex and Alcala Vistas. Refer to Figure 2. There exists public 8-inch and 12-inch water mains.

The easterly portion of the USD campus is split in two major areas by the existence of two different water pressure zones (i.e. the 339 zone and the 590 zone). There exists a water pressure regulator in Linda Vista Road near the intersection of Linda Vista Road and Via Las Cumbres. The most easterly portion of the easterly campus is served from the high pressure zone (i.e. the 590 zone). There exists a connection from a 10-inch water main in Via Las Cumbres to an 8-inch water main on the campus. A second 8-inch water main from the campus connects to a 12-inch water main in Linda Vista Road. However, the valve at the tee in Linda Vista Road is closed since this portion of the existing 12-inch water system is on the low pressure zone. Finally, there exists a valve on the existing 12-inch water main that traverses the north side of the campus. The valve located between the Jenny Craig Pavilion and the Sports Complex is also closed as it keeps the two different pressure zones isolated. This portion of the easterly campus is essentially served by one water connection in Via Las Cumbres. The most westerly portion of the easterly campus is served by a single 12-inch main on the campus that connects to the existing 12-inch in Linda Vista Road. The water pressure zone for this portion of the easterly campus is the 339 zone. This 12-inch water splits into two separate sub-systems. One provides water to the Jenny Craig Pavilion and the other provides water to the Mission Apartments, the Seminary and the San Antonio De Padua. The existing 12-inch water main servicing the Mission Apartment area is a dead-end water system and does not have redundancy. A second area north and east of the Mission Apartment area (i.e. within Santa Paula Drive north of San Dimas) also does not have redundancy. There is an existing 8-inch main in this portion of Santa Paula Drive that is a dead-end water system.

The City of San Diego Water Department is not supportive of the existing conditions identified above. Specifically, they are not supportive with the dead-end conditions and the lack of water redundancy in the entire easterly portion of the USD campus.

Marian Way:

The current condition includes an existing 8-inch public water main within an existing 80-foot public water easement. There exist a number of existing water services, irrigation services, fire services and fire hydrants on this 8-inch water main. Not all of these existing appurtenances are located within the existing public water easement. Although the existing main appears to be in good condition and there have not been any problems to date, the City of San Diego Water Department is not supportive of this existing condition. Specifically, they will not accept certain non-standard surface improvements (i.e., walls, fountains, etc.) above their existing public water main. In addition, they will not accept the fire hydrants, meters and other appurtenances that are not included within a public easement. Finally, they will not accept the existing access along this existing public water main.



VICINITY MAP

NO SCALE

FIGURE 1

VICINITY MAP FOR:

UNIVERSITY OF SAN DIEGO

Latitude 33
Planning and Engineering
4933 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
Tel 858-751-0633 Fax 858-751-0634

DATE:	6/13/07
SCALE:	NTS
DWN BY:	JCW
JOB NO.:	867.0

H:\800\817.0\EXHIBITS\VICINITY.dwg 6/14/2007 8:56:05 AM PDT

IV. PROPOSED PUBLIC IMPROVEMENTS

The following is a summary of the proposed public improvements for both the easterly portion of the USD campus and Marian Way. These proposed public improvements are based on the results of the hydraulic calculations performed by the City of San Diego Water Department using demand data provided by USD. The proposed water improvements are shown in Exhibits "C" and "D".

Easterly Portion of the USD Campus:
The proposed improvements to the easterly portion of the USD campus generally include converting this portion of the USD campus to the lower water pressure zone and adding new water mains to create redundancy and eliminate dead-end mains. The following describe the proposed improvements in more detail:

Improvement 1 - The existing valve at the connection of the 8-inch water from the campus to Via Las Cumbres will be permanently closed. This will isolate the campus from the higher water pressure zone.

Improvement 2 – The existing 8-inch water main from the campus connecting to Linda Vista Road will be upsized to a 12-inch line. This new line will be set in the normally open position. This will create a connection to the lower pressure zone. A parallel 12-inch line will also be constructed adjacent to the new 12-inch line. The combined flows from the dual mains will provide the required capacity to the loop around the Alcala Vista Apartments while reducing the velocities in the pipes.

Improvement 3 – Upsize a portion of the existing 8-inch water main from the dual 12-inch mains identified as Improvement 2 to the existing 12-inch main north of the Alcala Vista Apartments.

Improvement 4 – The existing valve on the existing 12-inch water main that traverses the north side of the campus will be opened. This valve is located between the Jenny Craig Pavilion and the Sports Complex. This will connect the easterly portion of the east campus to the westerly portion of the east campus.

Improvement 5 – Construct a second parallel public 12-inch water main in San Dimas Avenue. This second public water main will terminate at the end of the existing cul-de-sac in San Dimas Avenue. The two existing water laterals providing water service to the existing apartments will be relocated close to the cul-de-sac. An additional short segment of a private water service will be required to connect the new relocated services at the cul-de-sac with the existing private water system that traverses between the existing apartments. The existing fire hydrant will remain in the same location as a public fire hydrant.

Improvement 6 - Construct a new 12" extension of the existing 8-inch public water main within a new public water easement northwest of the existing Jenny Craig Pavilion. This will provide the required redundancy to the existing 8-inch dead-end water system in Santa Paula Drive.

Improvement 7 - Construct a new 12" main from Linda Vista Road to the existing tee in Santa Ana Dr., east of the parking structure. The alignment of this new main will parallel that of the existing main.

Improvement 8 – The University will have the choice of two options to provide redundancy to the San Dimas Ave. area. The first option is to upsize the existing 8-inch main in Santa Paula Dr. to a 12-inch main from San Dimas Ave to the new connection identified as Improvement 6. The other option is to provide a new 12-inch main from the tee in Santa Ana Dr. east of the parking structure to the intersection of San Dimas Ave and Santa Paula Dr. Due to the limited space available in Santa Ana Drive, the new main will be located under a landscaped slope and through a parking lot. The exact alignment will be determined during final engineering if the University selects this option.

The goal is to design and construct these new water mains to meet the City of San Diego requirements of a public system. The construction of these improvements would have to occur during the University's holiday intersession or summer breaks so as not to disrupt this busy, confined area of the campus during normal school activities. Phasing of the improvements is based on the schedule for developing public improvement plans, obtaining permits, and USD's ability to finance and construct improvements while school is not in session (i.e. winter and summer session). In some cases, proposed improvements will be tied to the construction of projects currently identified in the Campus Master Plan (CUP 92-0568).

Marian Way:
The proposed improvements to Marian Way include the abandonment of the existing public 8-inch water main and construction of a new 12-inch public water main. The new 12-inch water main is proposed to be located underneath a relatively typical concrete sidewalk on the north side of the proposed Marian Way Pedestrian Mall. To provide access for the Water Department and the Fire Department, an additional strip of grasscrete will be proposed adjacent to the concrete sidewalk to provide a total minimum 20-foot wide access road. The existing appurtenances (meters, fire services and fire hydrants) will also be reconnected to the new water main. A new 24' wide water easement(s) will be granted over the new main and for all existing appurtenances that currently do not have an easement. The existing 80-foot easement will then be quitclaimed.

The proposed improvements described above will be constructed in phases as the Marian Way Pedestrian Mall is constructed. The Marian Way Mall is proposed to be split into three phases; the East phase, Center phase (this exists today) and West phase. The intent is to have the next incremental phase (i.e. Phase 5A) of the Marian Way Pedestrian Mall (i.e. either the east phase or west phase) include the new 12-inch water main in the East phase or West phase along with the new 12-inch water main within the existing Center phase. This scope of work will also include the relocation/reconnection of the existing appurtenances (i.e. water services, fire services and fire hydrants) and the water easement exchange. Once this phase of the water main relocation is complete, the balance of the water main relocation (i.e. Phase 5B) will be completed with the last phase of the Marian Way Mall (i.e. either the East phase or West phase).

The goal is to design and construct a new 12-inch water main to meet the City of San Diego requirements of a public system (i.e. plan and profile, vehicular access and easements) and to

phase the construction to incrementally install the new 12-inch water main with the construction of the new Marian Way Pedestrian Mall (i.e. Phases 5A and 5B as shown on Exhibit "E").

Table 1
Recommended Public Improvement Phasing

Phase	Improvement #	Description	Construction Timeline
1	5	San Dimas Ave 12" Dual	Summer 2008
	6	12" Connection NW of Jenny Craig	
2	7	12" Dual from Linda Vista to Jenny Craig branch	Summer 2009
3	8A	Upsize 8" to 12" in Santa Paula Drive from San Dimas Ave to Improvement #6	Earlier of Summer 2010 or construction of Wellness/Recreation Center
	8B	12" Dual from Jenny Craig branch to San Dimas Ave	
4	1	Close valve supplying campus from Via Las Cumbres	To be constructed with Intercollegiate Athletic Center
	2	Dual 12" lines from Linda Vista to E. campus replace existing 8" and open gate valve to 12" in Linda Vista Rd	
	3	Upsize 8" to 12" on eastern campus loop	
	4	Open valve NE of Jenny Craig	Completed after Improvements1, 2 and 3 are completed
5A	9	Upsize 8" main to 12" in either east or west end of Marian Way and center portion	Constructed with Marian Way Ped Mall Project. Date TBD
5B	9	Upsize 8" main to 12" in either east or west end of Marian Way not constructed in Phase 5A	Constructed with Marian Way Ped Mall Project. Date TBD

Notes:
1. The information shown above was developed based on conversations between the City of San Diego and USD. The schedule for developing public improvement plans and obtaining permits and USD's ability to finance and construct improvements while school is NOT in session (i.e. winter and summer sessions) were taken into consideration. The construction timelines shown herein are City of San Diego recommendations.

2. Refer to Exhibit "E" for the approximate delineation of the improvements identified in the above table.

3. No new water services served by the Phase 1 and 2 improvements will be allowed until the Phase 1 and 2 improvements are operationally accepted by the City. This restriction does not apply to any improvements incorporated into the same permit as the Phase 1 or 2 improvements.

4. Phase 3 can be satisfied by the completion of either improvement 8A or 8B.

5. The Golf/Softball facility shall be served from the existing public meter along Via Las Cumbres. Adequate meter size to be verified during the building permit process. This construction may occur independently of any of the public improvements listed above.

V. WATER DEMAND AND HYDRAULIC CALCULATIONS

The water demand data was provided to the City of San Diego by USD. Refer to Table 2 and Figure 2. The City of San Diego Water Department used this water demand data to evaluate the hydraulic characteristics of the existing water facilities. Based on this evaluation, the City of San Diego Water Department identified areas of the existing systems that did not meet their current standards. The City of San Diego identified improvements that would bring the public water facilities up to current City standards. These proposed improvements are identified above (see Section III, Proposed Improvements). The proposed SCR and CUP projects do not require any modifications to the improvements as identified in the original water study. The output of the City's hydraulic modeling is attached at the end of this study. Refer to Appendix "A.

GOLF / SOFTBALL FACILITY (CUP)
NEW MISSIONS HOUSING
MISSIONS A
MISSION CROSSROADS
SEMINARY
BASEBALL BALLPARK REVALUATION (SCR)
JENNY CRAIG PAVILION
MISSIONS B
SOCCER FIELD & OPTIONAL UNDERGROUND PARKING (SCR)
SAN ANTONIO DE PADUA
WELLNESS / RECREATION CENTER (CUP)
STADIUM GRANDSTAND AND FIELDHOUSE FACILITY
INTERCOLLEGIATE ATHLETIC CENTER
ALCALA VISTAS
UNIVERSITY OF SAN DIEGO
ALCALA PARK
SAN DIEGO, CALIFORNIA
FIGURE NO. 2
USD EASTERLY CAMPUS
WATER DEMAND DATA MAP
NORTH
1"=200'
Latitude 33
Planning and Engineering

Table 2
USD Easterly Campus
Water Demand

With SCR & CUP Projects

Building	Stories	Gross Sq. Ft.	Bathtub	Shower	Lavatory	Urinal	Wtr Clset	Kit. Sink	Jan. Sink	Washer	Laundry Sink	Drinking Fountain	Hose Bib	Other	Fixture Units
Fixture Unit Multiplier			4.0	2.0	1.0	3.0	2.5	1.5	1.5	1.5	1.5	0.5	2.5	1.0	
Missions A													21		
San Francisco	3	13,988	6	20	44		24	4	1						175.5
San Gabriel	3	9,288		12	24		12								78
Santa Inez	3	4,650		6	12		6								39
San Jose	3	4,650		6	12		6								39
San Diego	3	13,920		18	36		18								117
San Fernando	3	9,288		12	24		12								78
Mission Crossroads	2	7,692			8	2	6			13	1		4		60
Missions B													39		97.5
San Rafael	3	17,310		12	24		12		6						87
San Juan Capistrano	3	17,310		12	24		12		6						87
San Miguel	3	17,310	1	12	25		13	1	6						96
San Luis Obispo	3	17,310	1	12	25		13	1	6						96
San Antonio de Padua	4	50,222	41	2	76		43	41		3	1		14		454
Seminary	2	46,868	15		17		17	9	1	5	5		27		217
Jenny Craig Pavilion	3	110,000		36	67	21	72	8		2	1	5	21	2 hydro tubs/ Ice Mach.(3)	455.5
Field House	2	5,653		16	17	9	11			2	1	5	4		120.5
~~**Sports Center (Existing)**~~	~~2~~	~~52,751~~	~~5~~	~~30~~	~~35~~	~~12~~	~~33~~	~~2~~		~~2~~	~~1~~	~~7~~	~~12~~	~~Ice Machine (1)~~	~~275.5~~
Intercollegiate Athletic Center* **	3	67,642		36	14	8	29		3	3	1	4	15	Ice Machine (1)	233.5
Baseball Ball park* **	2	14,369		18	25	15	32	1	2	3	1	8		Ice Machine (1)	201.5
Soccer Field/ Underground Parking* **	3	183,235										3			
Wellness/Recreation Center **	3	113,507		17	12	8	29		2	2	1	8			154
Golf/ Softball Facility **	2			8	13	2	18		1			4			83.5
Alcala Vistas															
Palomar	3	49,878	57	30	93	2	94	49	1	15	1	2	27		789.5
Laguna	3	49,946	53	30	101		99	54							701.5
Cuyamaca	3	49,946	69	30	101		99	54							765.5
Borrego*	3	23,892	64	2	66		66	36	1	5	1				555.5
New Missions Housing *	4	95,848	125	2	132		132	73	1	3	1				1083
Totals		**993,722**	**432**	**349**	**992**	**67**	**875**	**331**	**37**	**56**	**15**	**39**	**172**	**5**	**6864.5**

*Newly constructed building not shown on aerial photo
**Proposed Project per CUP Amendment (PTS 140201)
***Proposed Project per SCR (PTS 140192)

VI. CONCLUSION

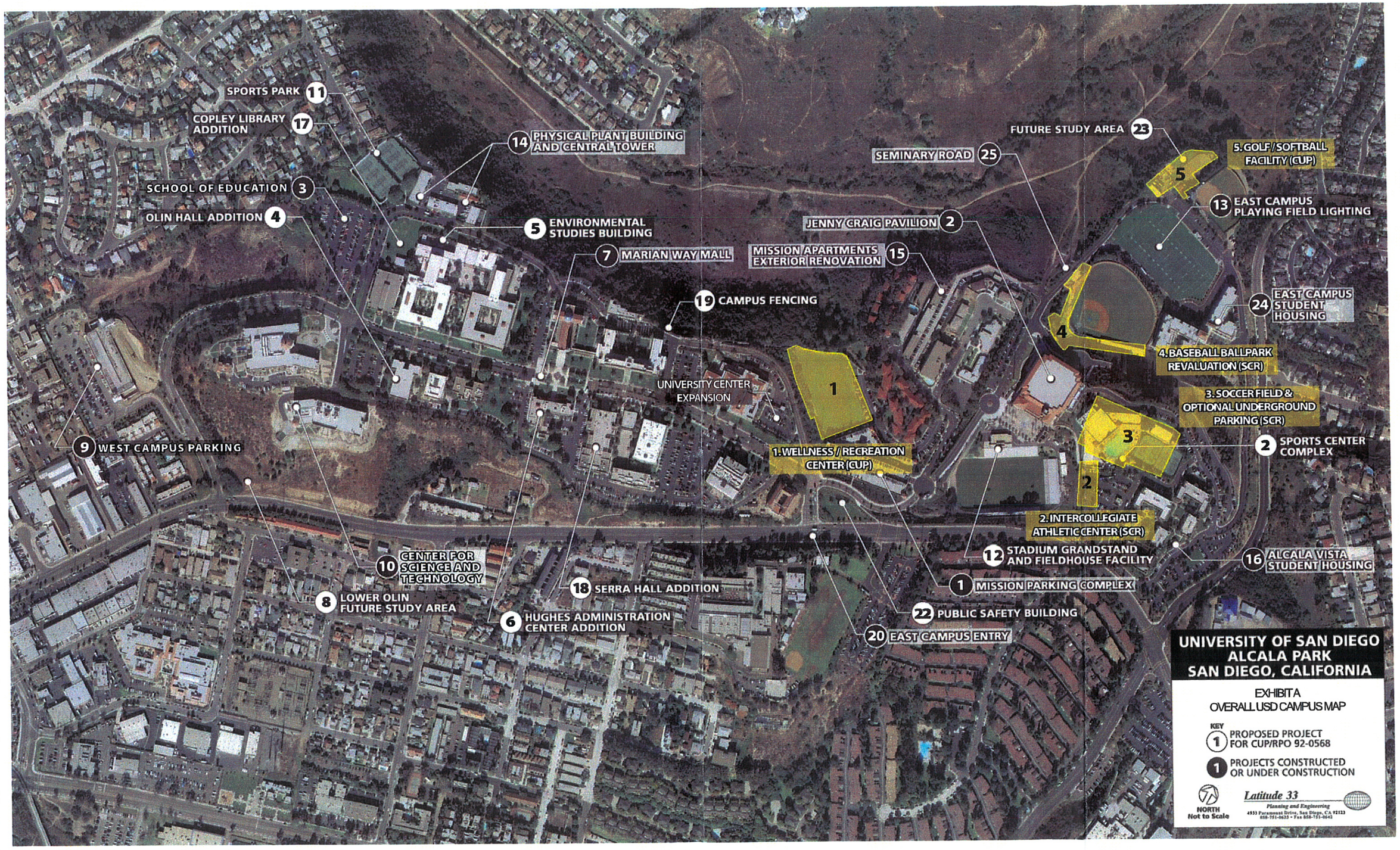
Updated Analysis

The City's analysis of the proposed SCR (Baseball renovation, IAC and Soccer field) and CUP Wellness & Recreation Center and Golf/ Softball Facility) projects has concluded that no additional improvements to the public water system on campus are required. The improvements as identified in the original study will adequately provide domestic and fire services to the campus.

Original Analysis

The City's analysis of the existing public water system(s) on the easterly portion of the USD campus has identified areas that are not consistent with current City of San Diego standards. The analysis also identified several proposed public water improvements in the easterly portion of the USD campus that would modify the existing public water system(s) to be in conformance to the current City of San Diego standards. In addition, this master water study evaluated the public water improvements required in the area of the Marian Way Mall to bring the public water system in this area in conformance with City of San Diego standards as it relates to the size of the main, access along the main, and easements. These proposed public water improvements outlined in this master water study are agreeable to USD. The construction of these proposed public water improvements will be phased as outlined herein.

In conclusion, the proposed public water improvements described herein and illustrated in Exhibits "C" and "D" are proposed to be public improvements. The proposed water improvements address redundancy, maintenance access and public easements. The proposed phasing and the proposed construction timing are also addressed herein (refer to Table 1 and Exhibit E). These proposed water improvements address the concerns of the City of San Diego Water Department.


SPORTS PARK 11
COPLEY LIBRARY ADDITION 17
14 PHYSICAL PLANT BUILDING AND CENTRAL TOWER
SCHOOL OF EDUCATION 3
OLIN HALL ADDITION 4
5 ENVIRONMENTAL STUDIES BUILDING
7 MARIAN WAY MALL
19 CAMPUS FENCING
UNIVERSITY CENTER EXPANSION
9 WEST CAMPUS PARKING
10 CENTER FOR SCIENCE AND TECHNOLOGY
8 LOWER OLIN FUTURE STUDY AREA
18 SERRA HALL ADDITION
6 HUGHES ADMINISTRATION CENTER ADDITION
SEMINARY ROAD 25
FUTURE STUDY AREA 23
JENNY CRAIG PAVILION 2
MISSION APARTMENTS EXTERIOR RENOVATION 15
5. GOLF / SOFTBALL FACILITY (CUP)
13 EAST CAMPUS PLAYING FIELD LIGHTING
24 EAST CAMPUS STUDENT HOUSING
4. BASEBALL BALLPARK REVALUATION (SCR)
3. SOCCER FIELD & OPTIONAL UNDERGROUND PARKING (SCR)
2 SPORTS CENTER COMPLEX
1. WELLNESS / RECREATION CENTER (CUP)
2. INTERCOLLEGIATE ATHLETIC CENTER (SCR)
12 STADIUM GRANDSTAND AND FIELDHOUSE FACILITY
16 ALCALA VISTA STUDENT HOUSING
1 MISSION PARKING COMPLEX
22 PUBLIC SAFETY BUILDING
20 EAST CAMPUS ENTRY
UNIVERSITY OF SAN DIEGO
ALCALA PARK
SAN DIEGO, CALIFORNIA
EXHIBIT A
OVERALL USD CAMPUS MAP
KEY
1 PROPOSED PROJECT FOR CUP/RPO 92-0568
1 PROJECTS CONSTRUCTED OR UNDER CONSTRUCTION
NORTH
Not to Scale
Latitude 33
Planning and Engineering

12" PVC
8" PVC
8" PVC
12" PVC
12" PVC
8" PVC
12" PVC
12" PVC
12" PVC
8" PVC
8" PVC
10" PVC
2" PVC
LEGEND
EXISTING PUBLIC AND PRIVATE IMPROVEMENTS
UNIVERSITY OF SAN DIEGO
ALCALA PARK
SAN DIEGO, CALIFORNIA
EXHIBIT B
EXISTING WATER IMPROVEMENT MAP
NORTH
1"=200'
Latitude 33
Planning and Engineering

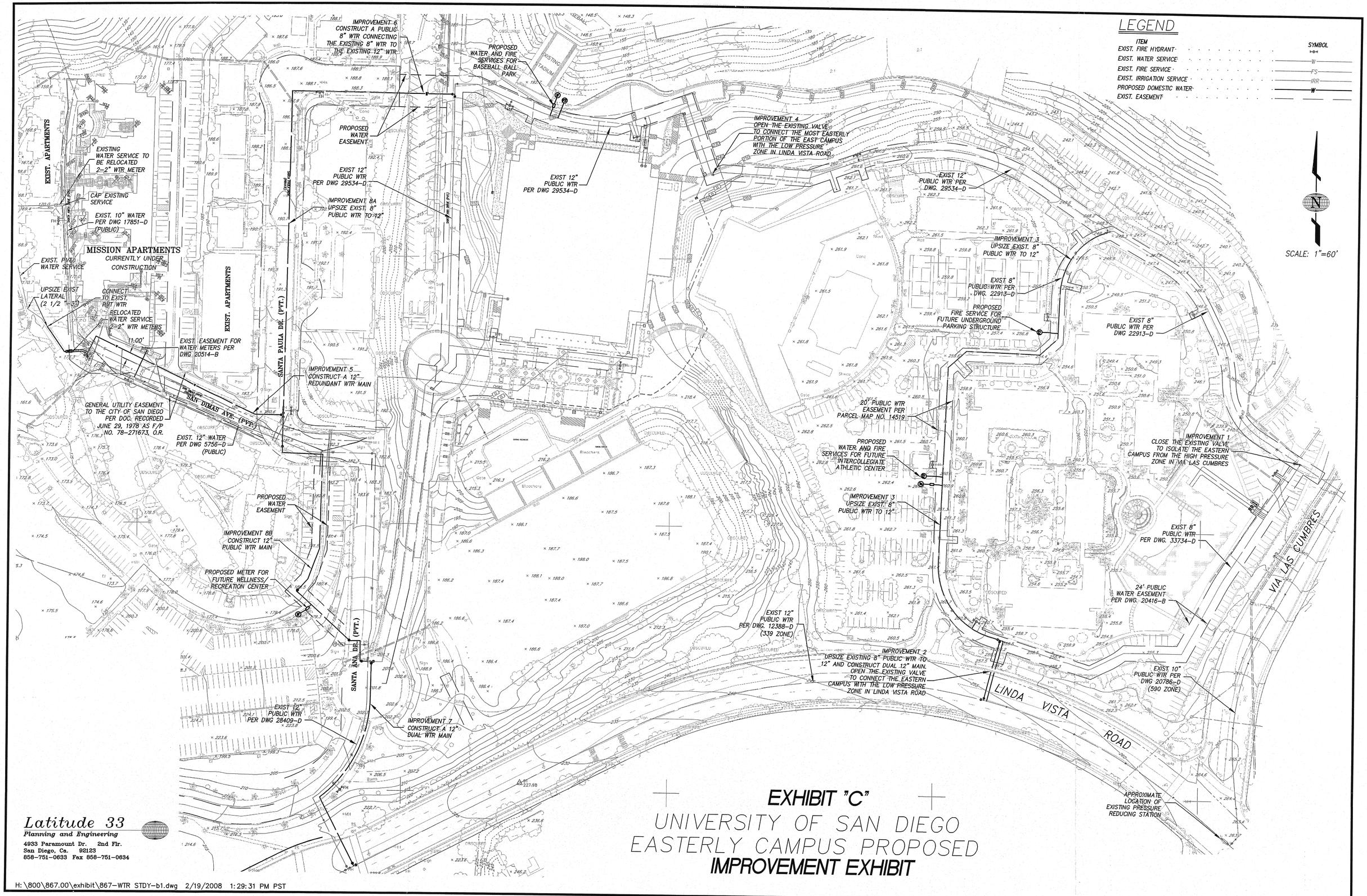


EXHIBIT "C"

UNIVERSITY OF SAN DIEGO EASTERLY CAMPUS PROPOSED

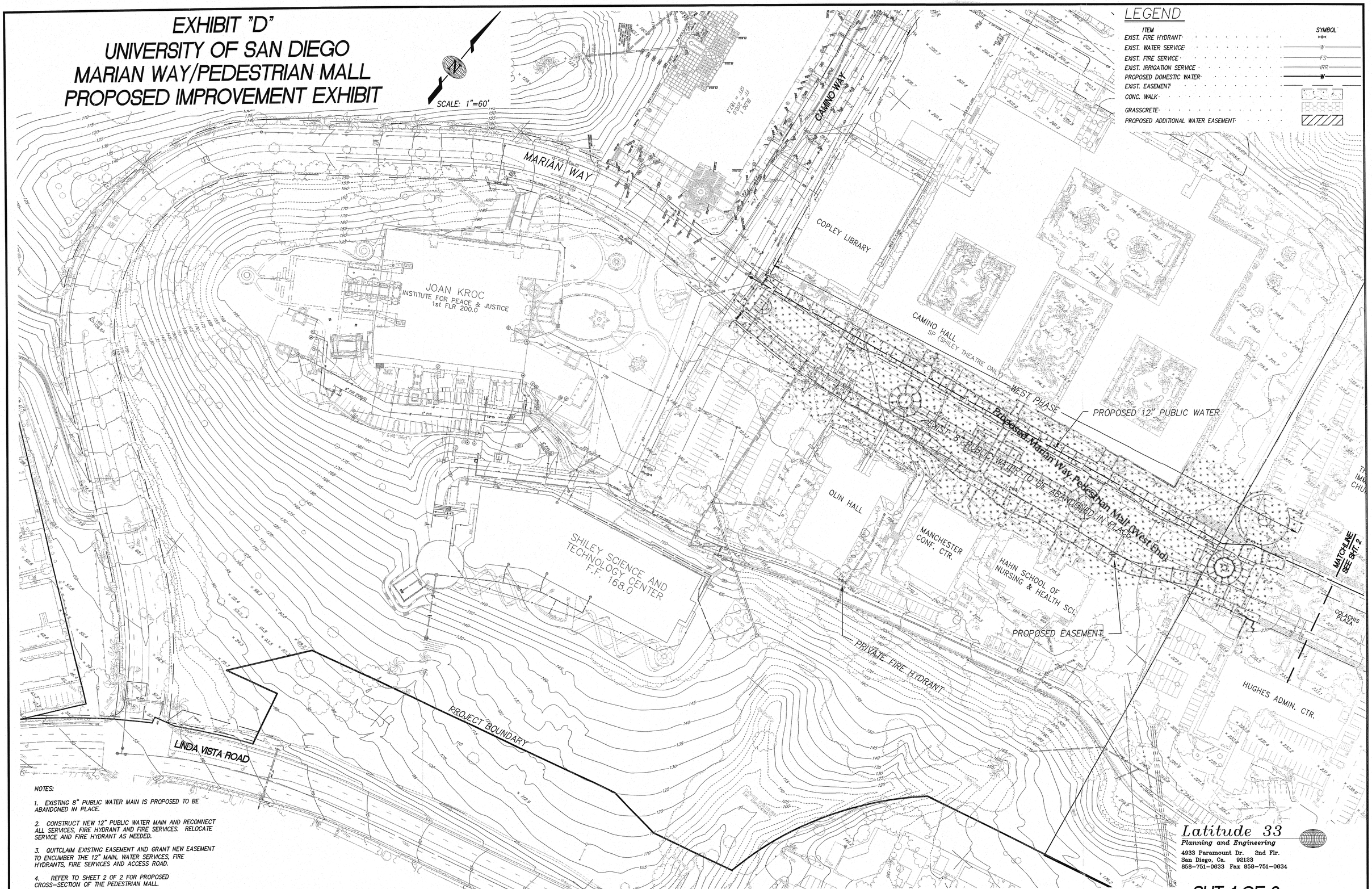
IMPROVEMENT EXHIBIT

Latitude 33
Planning and Engineering
4933 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
858-751-0633 Fax 858-751-0634

H:\800\867.00\exhibit\867-WTR STDY-b1.dwg 2/19/2008 1:29:31 PM PST

EXHIBIT "D"
UNIVERSITY OF SAN DIEGO
MARIAN WAY/PEDESTRIAN MALL
PROPOSED IMPROVEMENT EXHIBIT

SCALE: 1"=60'



NOTES:

1. EXISTING 8" PUBLIC WATER MAIN IS PROPOSED TO BE ABANDONED IN PLACE.

2. CONSTRUCT NEW 12" PUBLIC WATER MAIN AND RECONNECT ALL SERVICES, FIRE HYDRANT AND FIRE SERVICES. RELOCATE SERVICE AND FIRE HYDRANT AS NEEDED.

3. QUITCLAIM EXISTING EASEMENT AND GRANT NEW EASEMENT TO ENCUMBER THE 12" MAIN, WATER SERVICES, FIRE HYDRANTS, FIRE SERVICES AND ACCESS ROAD.

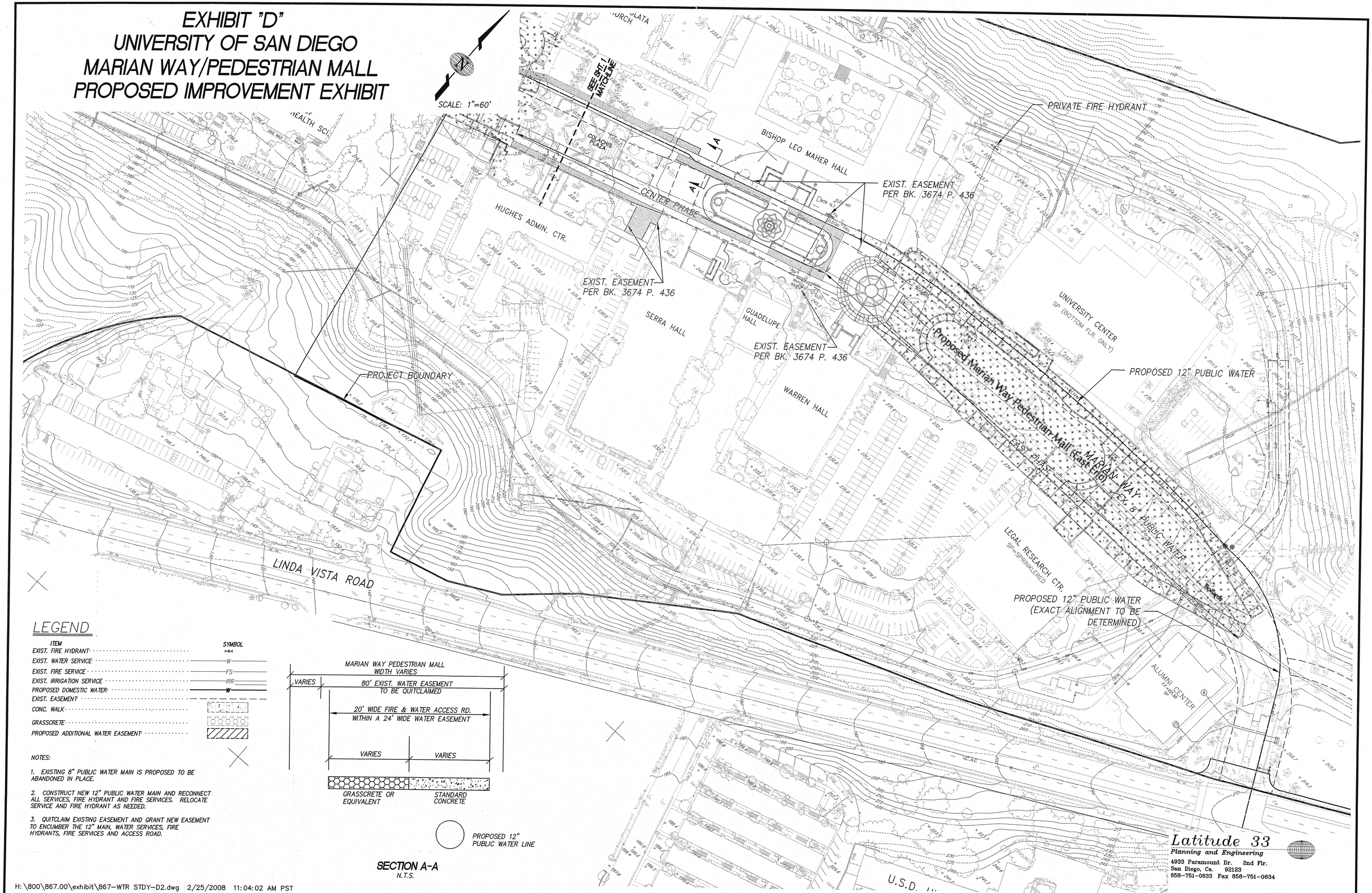
4. REFER TO SHEET 2 OF 2 FOR PROPOSED CROSS-SECTION OF THE PEDESTRIAN MALL.

H:\800\867.00\exhibit\867-WTR STDY-D1.dwg 2/25/2008 11:02:17 AM PST

Latitude 33
Planning and Engineering
4933 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
858-751-0633 Fax 858-751-0634

EXHIBIT "D"
UNIVERSITY OF SAN DIEGO
MARIAN WAY/PEDESTRIAN MALL
PROPOSED IMPROVEMENT EXHIBIT

SCALE: 1"=60'



LEGEND

ITEM	SYMBOL
EXIST. FIRE HYDRANT	
EXIST. WATER SERVICE	W
EXIST. FIRE SERVICE	FS
EXIST. IRRIGATION SERVICE	IRR
PROPOSED DOMESTIC WATER	W
EXIST. EASEMENT	
CONC. WALK	
GRASSCRETE	
PROPOSED ADDITIONAL WATER EASEMENT	

NOTES:

1. EXISTING 8" PUBLIC WATER MAIN IS PROPOSED TO BE ABANDONED IN PLACE.

2. CONSTRUCT NEW 12" PUBLIC WATER MAIN AND RECONNECT ALL SERVICES, FIRE HYDRANT AND FIRE SERVICES. RELOCATE SERVICE AND FIRE HYDRANT AS NEEDED.

3. QUITCLAIM EXISTING EASEMENT AND GRANT NEW EASEMENT TO ENCUMBER THE 12" MAIN, WATER SERVICES, FIRE HYDRANTS, FIRE SERVICES AND ACCESS ROAD.

PROPOSED 12" PUBLIC WATER LINE

SECTION A-A
N.T.S.

Latitude 33
Planning and Engineering
4933 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
858-751-0633 Fax 858-751-0634

H:\800\867.00\exhibit\867-WTR STDY-D2.dwg 2/25/2008 11:04:02 AM PST

12" PVC
8" PVC
12" MAIN TO REPLACE EXISTING 8"
12" REDUNDANT MAIN
12" CONNECTOR
8" PVC
12" PVC
OPEN VALVE
12" PVC
DUAL FROM JENNY CRAIG BRANCH TO SAN DIMAS
12" PVC
12" PVC
8" PVC
UPSIZE EXISTING 8" WTR TO 12"
10" PVC
12" DUAL FROM LINDA VISTA TO JENNY CRAIG BRANCH
8" PVC
8" PVC
12" PVC
CLOSE EXISTING VALVE
DUAL 12" MAIN
LEGEND
EXISTING PUBLIC AND PRIVATE IMPROVEMENTS
PHASE 1
PHASE 2
PHASE 3
PHASE 4
PHASE 5A
PHASE 5B
SECTION TO BE BUILT WITH 5A OR 5B
UNIVERSITY OF SAN DIEGO
ALCALA PARK
SAN DIEGO, CALIFORNIA
EXHIBIT E
PROPOSED WATER IMPROVEMENT PHASING EXHIBIT
NORTH
1"=200'
Latitude 33
Planning and Engineering
4933 Paramount Drive, San Diego, CA 92123
858-751-0633 • Fax 858-751-0642

Appendix A

MAX-DAY DEMAND WITH /FIRE FLOW DEMAND @ NODES NO.1 & NO.2, PIPE 406308 (CONNECTION TO LINDA VISTA ROAD TAKEN OUT OF SERVICE)

NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
02RN5K5	184.0	357.55	75.21
02RN5K6	194.0	357.55	70.88
02RN5KU	182.0	357.41	76.02
02RN5KV	182.0	357.42	76.02
02RN5KW	172.0	357.42	80.35
02RN5KX	182.0	357.42	76.02
02RN5KY	190.0	352.83	70.56
02RN5KZ	188.0	353.68	71.80
02RN5L0	184.0	357.54	75.21
02RN5L1	162.0	357.41	84.68
02RN5L2	170.0	357.42	81.22
02RN5L3	170.0	357.42	81.22
02RN5L4	164.0	357.42	83.82
02RN5T6	118.0	358.82	104.36
02RN5T7	140.0	358.78	94.81
02RN5TC	140.0	358.79	94.81
02RN5TF	202.0	358.69	67.90
02RN5TH	208.0	358.53	65.23
02RN5TJ	210.0	358.52	64.36
02RN5TK	244.0	357.48	49.18
02RN5TL	244.0	357.48	49.18
02RN5TM	244.0	357.46	49.17
02RN5TN	222.0	357.80	58.85
02RN5TQ	210.0	358.23	64.24
02RN5TS	210.0	358.22	64.23
02RN5TT	178.0	358.68	78.30
02RN5TU	210.0	358.24	64.24
02RN5TV	176.0	358.68	79.17
02RN5TW	176.0	358.70	79.17
02RN5TY	114.0	358.82	106.10
02RN5TZ	118.0	358.83	104.37
02RNCBJ	230.0	459.77	99.57
02RNCD5	238.0	353.48	50.05
02RNCD6	240.0	353.45	49.16
02RNCD8	240.0	353.52	49.20
02RNCD9	240.0	354.02	49.41
02RNCDA	228.0	353.48	54.38
02RNCDZ	258.0	355.64	42.31
02RNCE0	252.0	358.75	46.26
02RNCE1	248.0	358.75	48.00
02RNCE3	264.0	454.28	82.46
02RNCEE	248.0	358.76	48.00
02RNCEF	258.0	355.91	42.43
02RNCEG	264.0	454.36	82.49

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
5348000	8.0	0.11	4.77	0.00
5348001	12.0	20.55	0.00	0.06
5348003	10.0	0.22	-0.87	0.00
5348046	12.0	21.44	0.00	0.06
5348047	10.0	0.67	-5.20	0.00
5348079	12.0	21.66	0.00	0.06
5348085	12.0	94.34	0.00	0.27
5348089	12.0	21.55	-3.03	0.06
5348091	10.0	0.78	-0.43	0.00
5348093	10.0	0.33	0.00	0.00
5348095	8.0	0.22	1.30	0.00
5479281	10.0	0.11	-7.80	0.00
5479295	12.0	-20.10	0.00	-0.06
5479336	12.0	-113.89	0.00	-0.32
5479339	12.0	19.88	0.00	0.06
5479341	8.0	-113.78	-0.88	-0.73
5479342	12.0	0.11	-0.43	0.00
5479360	12.0	-19.99	-3.03	-0.06
5479363	12.0	94.23	0.00	0.27
5479364	12.0	114.00	0.00	0.32
5479365	12.0	20.44	0.00	0.06
5479366	12.0	-0.22	0.00	0.00
5479368	8.0	-106.32	-1.79	-0.68
406328	12.0	-3604.63	-4.34	-10.23
401754	6.0	-43.21	0.00	-0.49
401753	12.0	-117.97	-1.73	-0.33
401727	12.0	161.07	9.55	0.46
401444	12.0	-527.47	0.81	-1.50
406322	12.0	434.05	0.00	1.23
406312	12.0	105.69	1.74	0.30
406274	8.0	-402.17	-0.21	-2.57
406273	8.0	-402.06	0.85	-2.57
406324	10.0	1125.39	17.08	4.60
406275	8.0	0.00	-0.31	0.00
406350	8.0	402.28	-6.98	2.57
406329	12.0	-3608.80	3.85	-10.24
406327	12.0	-3608.92	0.59	-10.24
406326	12.0	105.47	0.12	0.30
406325	10.0	1125.28	0.04	4.60
406323	12.0	-3307.60	-0.12	-9.38
406276	8.0	-0.11	4.33	0.00
406271	8.0	401.84	0.88	2.56
401751	8.0	-182.23	-0.87	-1.16
401750	12.0	204.62	0.87	0.58

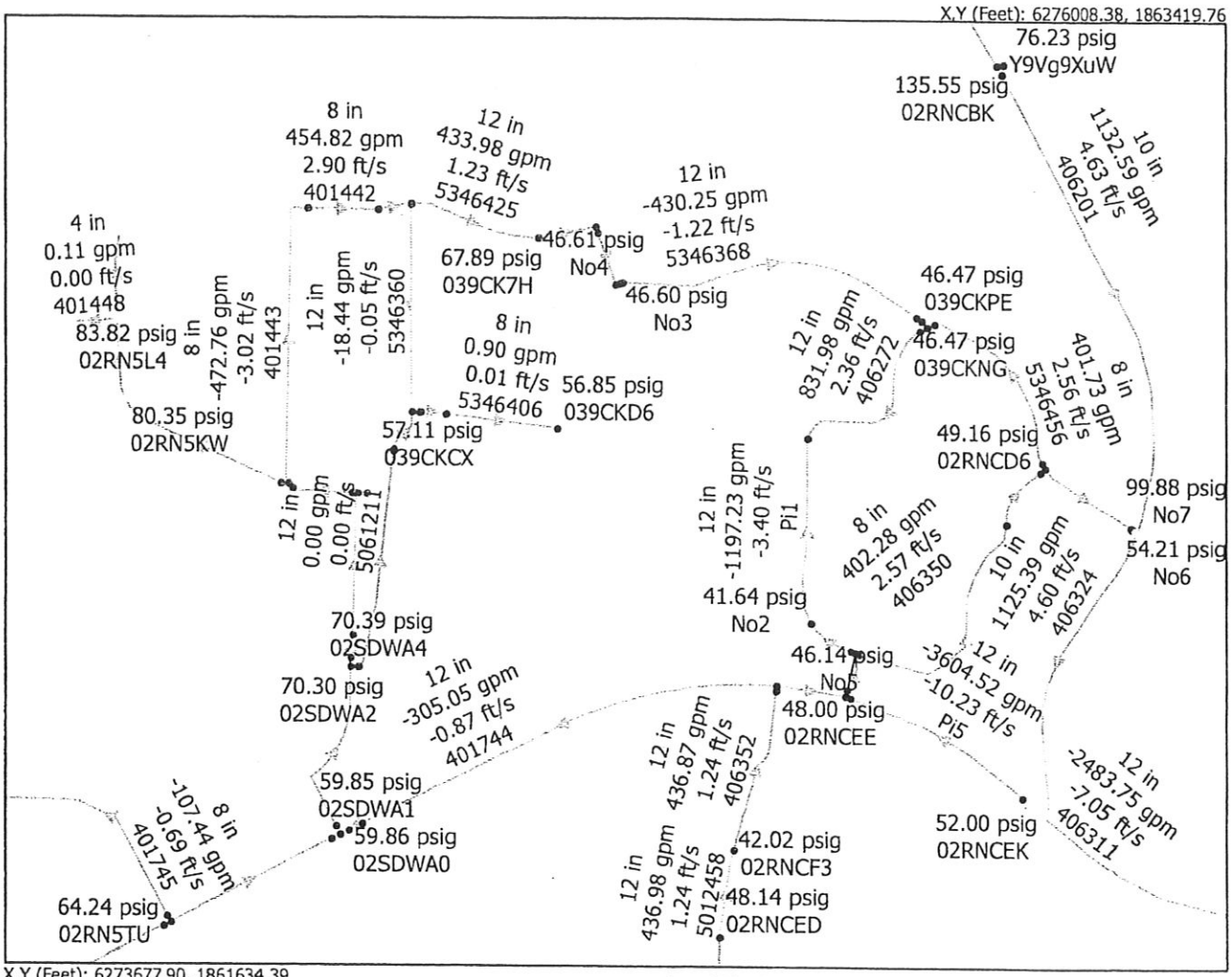
NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
02RNCEH	262.0	371.97	47.66
02RNCEJ	262.0	453.65	83.05
02RNCEK	252.5	372.49	52.00
02RNCF2	258.0	355.37	42.20
02SDTCR	184.0	357.55	75.21
02SDTCT	220.0	358.44	59.99
02SDW9P	198.0	357.80	69.25
02SDW9Q	195.0	357.77	70.54
02SDW9R	220.0	358.13	59.86
02SDW9Z	220.0	358.12	59.86
02SDWA0	220.0	358.13	59.86
02SDWA1	220.0	358.11	59.85
02SDWA2	195.6	357.82	70.30
02SDWA4	195.4	357.82	70.39
039CDRK	109.5	358.80	108.04
039CDS9	195.0	358.69	70.94
039CDTA	182.0	358.69	76.57
039CDUP	196.0	358.69	70.50
039CDUV	180.0	358.69	77.44
039CDUW	195.0	358.69	70.94
039CDUY	202.0	358.69	67.90
039CDVQ	202.0	358.69	67.90
039CDYU	195.0	358.69	70.94
039CDZL	194.0	358.69	71.37
039CE0C	182.0	358.69	76.57
039CE0P	185.0	358.69	75.27
039CJWG	245.0	352.55	46.61
039CJX2	198.0	352.60	67.00
039CJYX	245.0	352.53	46.60
039CK7H	196.0	352.66	67.89
039CKCG	218.6	352.79	58.15
039CKCH	220.2	352.79	57.46
039CKCT	202.7	352.79	65.04
039CKCU	221.2	352.79	57.02
039CKCX	221.0	352.79	57.11
039CKCY	198.0	352.60	67.00
039CKD6	221.6	352.79	56.85
039CKK3	245.0	352.23	46.47
039CKLY	248.0	352.19	45.15
039CKMQ	248.0	352.27	45.19
039CKNG	245.0	352.24	46.47
039CKPE	245.0	352.24	46.47
039E5UJ	199.0	358.69	69.20
039E5W8	199.0	358.69	69.20
039E5XF	141.5	358.74	94.14
039E5YC	49.5	358.89	134.08
039E639	199.0	358.69	69.20
039E644	199.0	358.69	69.20

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
401749	12.0	205.73	15.64	0.58
401748	12.0	386.62	0.00	1.10
401747	12.0	386.73	14.06	1.10
401746	8.0	-107.56	-0.01	-0.69
401745	8.0	-107.45	-5.38	-0.69
401741	8.0	-73.07	-9.67	-0.47
401740	8.0	-72.85	-0.01	-0.46
401739	8.0	106.21	15.19	0.68
401738	8.0	-72.96	0.00	-0.47
401737	8.0	106.32	0.87	0.68
401731	6.0	51.21	0.00	0.58
401449	10.0	9.11	0.00	0.04
401448	4.0	0.11	-2.60	0.00
401447	10.0	-25.85	0.87	-0.11
401446	6.0	9.00	-3.47	0.10
401443	8.0	-472.76	-4.22	-3.02
401442	8.0	454.82	1.23	2.90
401441	12.0	-40.69	0.00	-0.12
401440	12.0	-37.00	4.33	-0.10
401439	12.0	-480.11	0.00	-1.36
406308	**12.0**	**CLOSED**		
401417	12.0	22.85	4.33	0.06
401445	12.0	22.85	0.00	0.06
401744	12.0	-305.05	12.00	-0.87
406272	12.0	831.98	2.23	2.36
406349	12.0	-3307.49	-0.12	-9.38
5061056	12.0	565.91	-1.28	1.61
5061059	12.0	278.95	4.38	0.79
5061204	12.0	278.95	0.00	0.79
5061206	12.0	-305.05	0.00	-0.87
5061208	12.0	584.01	0.01	1.66
5061212	12.0	584.01	-10.54	1.66
5061232	12.0	0.00	0.09	0.00
5061234	12.0	565.91	1.13	1.61
5061289	12.0	565.91	-4.67	1.61
5061290	12.0	-527.58	0.00	-1.50
5061292	12.0	-305.05	-0.14	-0.87
5346360	12.0	-18.44	-7.58	-0.05
5346361	12.0	-433.98	0.00	-1.23
5346362	12.0	-433.98	0.00	-1.23
5346363	12.0	-433.98	-0.89	-1.23
5346368	12.0	-430.25	-0.12	-1.22
5346370	12.0	-433.98	-20.39	-1.23
5346405	12.0	0.90	0.09	0.00
5346406	8.0	0.90	0.17	0.01
5346411	12.0	18.44	0.35	0.05
5346425	12.0	433.98	-2.85	1.23
5346426	12.0	0.00	0.69	0.00

NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
039E67G	199.0	358.69	69.20
039E6UD	50.0	358.90	133.86
039E6UE	50.0	358.89	133.86
039E6UF	51.0	358.89	133.43
03BMUDM	162.0	358.69	85.24
03BMUL3	202.0	358.69	67.90
03BMUN5	202.0	358.69	67.90
03BMUPZ	194.0	358.69	71.37
03BMUSB	195.0	358.69	70.94
03BMUUC	202.0	358.69	67.90
03BMUUV	202.0	358.69	67.90
03BMUVK	195.0	358.69	70.94
03BMUVV	195.0	358.69	70.94
03BMUYF	204.0	358.66	67.02
C_02_010	218.6	357.82	60.33
SAI020ZN	252.9	358.75	45.88
Y9AF9Xps	202.7	352.79	65.04
Y9AY9Xh8	221.0	352.79	57.11
Y9WV9XU	252.5	453.02	86.90
No1	**252.4**	**351.46**	**42.92**
No2	**256.8**	**352.90**	**41.64**
No3	245.0	352.53	46.60
No4	245.0	352.54	46.61
No5	252.3	358.75	46.14
No6	228.4	353.48	54.21

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
5346450	12.0	-430.25	0.00	-1.22
5346452	8.0	401.73	-1.28	2.56
5346454	12.0	831.98	1.31	2.36
5346456	8.0	401.73	3.97	2.56
5346460	12.0	-430.25	0.00	-1.22
401894	12.0	118.31	27.33	0.34
5348006	12.0	214.80	13.89	0.61
5348043	12.0	-214.80	-0.22	-0.61
5348044	12.0	129.59	0.00	0.37
5348105	12.0	-116.11	-1.30	-0.33
5348107	12.0	151.78	24.94	0.43
5348112	12.0	333.11	-0.21	0.94
5348115	12.0	-214.80	-25.82	-0.61
5348117	12.0	118.31	0.65	0.34
5348133	12.0	13.48	0.00	0.04
5348134	12.0	13.48	0.00	0.04
5348138	8.0	13.48	0.00	0.09
5061211	12.0	0.00	9.97	0.00
Pi1	12.0	-1197.24	1.28	-3.40
Pi2	12.0	-3235.71	-0.55	-9.18
Pi3	12.0	-433.98	0.00	-1.23
Pi5	12.0	-3604.52	-1.52	-10.23
Pi6	12.0	3709.99	3.71	10.52
Pi7	8.0	0.00	-0.17	0.00
Pi9	12.0	454.71	5.52	1.29

USD Central & Eastern Campus



Legend

Facilities Symbols
Nodes Symbols
- Default Known Flow Node
- Default Known Flow Node Sub
- Default Known Pressure Node
- Default Known Pressure Node Sub
- Default Known Node
- Default Known Node Sub

Polygons Symbols
Isolation Valves Symbols

Facilities Color By
Pipe Velocity (ft/s)
- Not Applicable (710)
- < 1.00 (18627)
- 1.00 - 2.00 (2570)
- 2.00 - 15.00 (1231)
- > 15.00 (10)

Nodes Color By
Pressure (psig)
- Not Applicable (0)
- < 20.00 (78)
- 20.00 - 65.00 (2298)
- 65.00 - 80.00 (4567)
- 80.00 - 120.00 (7117)
- > 120.00 (7142)

Simulation Data:
State: Steady State
Date: 2:00pm
Time: 2/25/2008

Model Description:
Ultimate Demands; FF=4000 gpm; 12" dia. water main connection at Alcala Apts. taken out of service

Model Name: USD campus master plan

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

SynerGEE Water 4.3.0 (22 Oct 2007)

3/6/2008 3:58:13 PM

MAX-DAY DEMAND WITH /FIRE FLOW DEMAND @ 039CKCH, PIPE 5061212 (CONNECTION TO LINDA VISTA ROAD TAKEN OUT OF SERVICE)

NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
02RN5K5	184.0	347.12	70.69
02RN5K6	194.0	347.12	66.35
02RN5KU	182.0	347.09	71.54
02RN5KV	182.0	347.10	71.55
02RN5KW	172.0	347.09	75.88
02RN5KX	182.0	347.09	71.55
02RN5KY	190.0	346.58	67.86
02RN5KZ	188.0	346.66	68.76
02RN5L0	184.0	347.12	70.69
02RN5L1	162.0	347.09	80.21
02RN5L2	170.0	347.09	76.74
02RN5L3	170.0	347.09	76.74
02RN5L4	164.0	347.09	79.34
02RN5T6	118.0	356.02	103.15
02RN5T7	140.0	355.73	93.49
02RN5TC	140.0	355.76	93.50
02RN5TF	202.0	356.42	66.92
02RN5TH	208.0	355.95	64.11
02RN5TJ	210.0	355.89	63.22
02RN5TK	244.0	352.64	47.08
02RN5TL	244.0	352.64	47.08
02RN5TM	244.0	352.64	47.08
02RN5TN	222.0	352.62	56.60
02RN5TQ	210.0	352.63	61.81
02RN5TS	210.0	352.63	61.81
02RN5TT	178.0	355.04	76.72
02RN5TU	210.0	352.68	61.83
02RN5TV	176.0	355.05	77.59
02RN5TW	176.0	355.10	77.61
02RN5TY	114.0	356.02	104.88
02RN5TZ	118.0	356.06	103.17
02RNCBJ	230.0	468.05	103.16
02RNCD5	238.0	357.40	51.74
02RNCD6	240.0	357.34	50.85
02RNCD8	240.0	357.45	50.90
02RNCD9	240.0	358.13	51.19
02RNCDA	228.0	357.40	56.07
02RNCDZ	258.0	360.71	44.51
02RNCE0	252.0	360.96	47.22
02RNCE1	248.0	360.38	48.70
02RNCE3	264.0	463.49	86.45
02RNCEE	248.0	360.39	48.70
02RNCEF	258.0	360.73	44.52
02RNCEG	264.0	463.56	86.48
02RNCEH	262.0	372.06	47.70
02RNCEJ	262.0	462.97	87.09

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
5348000	8.0	0.11	4.77	0.00
5348001	12.0	36.55	0.00	0.10
5348003	10.0	0.22	-0.87	0.00
5348046	12.0	37.43	0.00	0.11
5348047	10.0	0.67	-5.20	0.00
5348079	12.0	37.66	0.00	0.11
5348085	12.0	166.92	0.00	0.47
5348089	12.0	37.54	-3.03	0.11
5348091	10.0	0.78	-0.43	0.00
5348093	10.0	0.33	0.00	0.00
5348095	8.0	0.22	1.30	0.00
5479281	10.0	0.11	-7.80	0.00
5479295	12.0	-36.10	0.00	-0.10
5479336	12.0	-202.47	0.00	-0.57
5479339	12.0	35.88	0.00	0.10
5479341	8.0	-202.36	-0.90	-1.29
5479342	12.0	0.11	-0.43	0.00
5479360	12.0	-35.99	-3.03	-0.10
5479363	12.0	166.81	0.00	0.47
5479364	12.0	202.58	0.00	0.57
5479365	12.0	36.43	0.00	0.10
5479366	12.0	-0.22	0.00	0.00
5479368	8.0	-194.90	-1.90	-1.24
406328	12.0	-3258.35	-4.30	-9.24
401754	6.0	-95.33	-0.02	-1.08
401753	12.0	-368.91	-1.74	-1.05
401727	12.0	464.13	9.66	1.32
401444	12.0	-201.90	0.86	-0.57
406322	12.0	120.25	0.00	0.34
406312	12.0	-1178.07	1.48	-3.34
406274	8.0	-477.42	-0.29	-3.05
406273	8.0	-477.31	0.84	-3.05
406324	10.0	1017.74	16.68	4.16
406275	8.0	0.00	-0.31	0.00
406350	8.0	477.54	-6.67	3.05
406329	12.0	-3262.52	3.89	-9.26
406327	12.0	-3262.63	0.64	-9.26
406326	12.0	-2036.64	0.06	-5.78
406325	10.0	1017.63	0.03	4.16
406323	12.0	-743.95	-0.01	-2.11
406276	8.0	-0.11	4.33	0.00
406271	8.0	477.09	0.89	3.05
401751	8.0	-375.15	-0.89	-2.39
401750	12.0	583.19	0.87	1.65
401749	12.0	584.31	15.89	1.66
401748	12.0	958.12	0.02	2.72

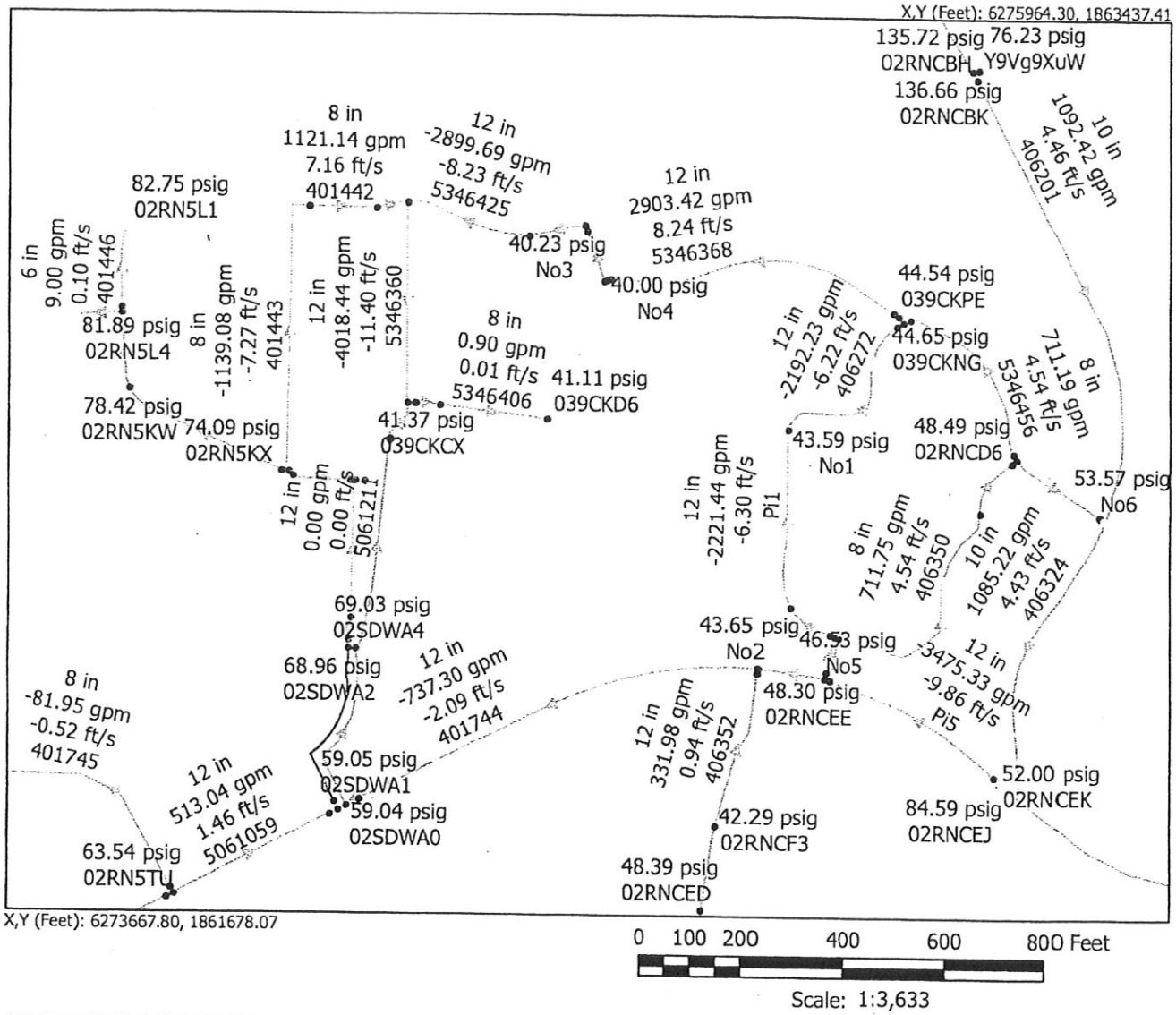
NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
02RNCEK	252.5	372.49	52.00
02RNCF2	258.0	360.64	44.48
02SDTCR	184.0	347.12	70.69
02SDTCT	220.0	355.96	58.92
02SDW9P	198.0	347.17	64.64
02SDW9Q	195.0	347.16	65.94
02SDW9R	220.0	351.64	57.05
02SDW9Z	220.0	351.59	57.03
02SDWA0	220.0	351.54	57.00
02SDWA1	220.0	351.59	57.03
02SDWA2	195.6	347.17	65.69
02SDWA4	195.4	347.17	65.77
039CDRK	109.5	356.51	107.04
039CDS9	195.0	356.42	69.95
039CDTA	182.0	356.42	75.59
039CDUP	196.0	356.42	69.52
039CDUV	180.0	356.42	76.45
039CDUW	195.0	356.42	69.95
039CDUY	202.0	356.42	66.92
039CDVQ	202.0	356.42	66.92
039CDYU	195.0	356.42	69.95
039CDZL	194.0	356.42	70.38
039CE0C	182.0	356.42	75.59
039CE0P	185.0	356.42	74.29
039CJWG	245.0	350.38	45.67
039CJX2	198.0	349.48	65.64
039CJYX	245.0	350.71	45.81
039CK7H	196.0	348.58	66.12
039CKCG	**218.6**	**343.59**	**54.17**
039CKCH	220.2	342.91	53.18
039CKCT	202.7	346.58	62.35
039CKCU	221.2	342.91	52.74
039CKCX	221.0	342.91	52.83
039CKCY	198.0	349.57	65.69
039CKD6	221.6	342.91	52.57
039CKK3	245.0	355.67	47.96
039CKLY	248.0	355.75	46.70
039CKMQ	248.0	355.73	46.69
039CKNG	245.0	355.51	47.89
039CKPE	245.0	355.38	47.84
039E5UJ	199.0	356.42	68.22
039E5W8	199.0	356.42	68.22
039E5XF	141.5	356.46	93.16
039E5YC	49.5	356.58	133.08
039E639	199.0	356.42	68.22
039E644	199.0	356.42	68.22
039E67G	199.0	356.45	68.23
039E6UD	50.0	356.60	132.87
039E6UE	50.0	356.58	132.86
039E6UF	51.0	356.58	132.42
03BMUDM	162.0	356.42	84.25

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
401747	12.0	958.23	14.89	2.72
401746	8.0	-18.98	0.00	-0.12
401745	8.0	-18.87	-5.21	-0.12
401741	8.0	15.51	-9.53	0.10
401740	8.0	15.73	0.00	0.10
401739	8.0	194.79	16.15	1.24
401738	8.0	15.62	0.00	0.10
401737	8.0	194.90	0.89	1.24
401731	6.0	126.73	0.01	1.44
401449	10.0	9.11	0.00	0.04
401448	4.0	0.11	-2.60	0.00
401447	10.0	-25.85	0.87	-0.11
401446	6.0	9.00	-3.47	0.10
401443	8.0	-147.19	-2.79	-0.94
401442	8.0	129.25	0.90	0.82
401441	12.0	-40.69	0.00	-0.12
401440	12.0	-37.00	4.33	-0.10
401439	12.0	-154.54	0.00	-0.44
406308	12.0	-858.35	-2.29	-2.43
401417	12.0	22.85	4.33	0.06
401445	12.0	22.85	0.00	0.06
401744	12.0	-1275.02	10.22	-3.62
406272	12.0	-1462.73	1.00	-4.15
406349	12.0	-1602.19	-0.03	-4.55
5061056	12.0	240.33	-1.30	0.68
5061059	12.0	939.03	4.76	2.66
5061204	12.0	939.03	0.02	2.66
5061206	12.0	939.03	0.02	2.66
5061208	12.0	0.00	0.00	0.00
5061212	**12.0**	**CLOSED**		
5061232	12.0	-258.43	0.09	-0.73
5061234	12.0	240.33	1.13	0.68
5061289	12.0	240.33	-4.75	0.68
5061290	12.0	-202.01	0.00	-0.57
5061292	12.0	-1275.02	-1.92	-3.62
5346360	12.0	-2062.83	-9.10	-5.85
5346361	12.0	1935.98	0.02	5.49
5346362	12.0	1935.98	0.04	5.49
5346363	12.0	1935.98	-0.48	5.49
5346368	12.0	1939.71	2.03	5.50
5346370	12.0	1935.98	-20.02	5.49
5346405	12.0	0.90	0.09	0.00
5346406	8.0	0.90	0.17	0.01
5346411	12.0	18.44	0.35	0.05
5346425	12.0	-1935.98	-3.77	-5.49
5346426	12.0	1955.61	0.99	5.55
5346450	12.0	1939.71	0.07	5.50
5346452	8.0	476.98	-1.27	3.04
5346454	12.0	-1462.73	1.26	-4.15
5346456	8.0	476.98	4.16	3.04
5346460	12.0	1939.71	0.05	5.50

NAME	Node Elevation (ft.)	Node HGL (ft)	Node Pressure (psig)
03BMUL3	202.0	356.41	66.92
03BMUN5	202.0	356.42	66.92
03BMUPZ	194.0	356.42	70.38
03BMUSB	195.0	356.42	69.95
03BMUUC	202.0	356.42	66.92
03BMUUV	202.0	356.42	66.92
03BMUVK	195.0	356.42	69.95
03BMUVV	195.0	356.42	69.95
03BMUYF	204.0	356.34	66.02
C_02_010	218.6	343.75	54.23
SAI020ZN	252.9	360.87	46.80
Y9AF9Xps	202.7	346.40	62.27
Y9AY9Xh8	221.0	342.91	52.83
Y9WV9XU	252.5	462.45	90.99
No1	252.4	357.85	45.70
No2	256.8	360.02	44.73
No3	245.0	350.67	45.79
No4	245.0	350.43	45.69
No5	252.3	361.09	47.16
No6	228.4	357.40	55.91
No7	229.3	468.05	103.47

Pipe Number	Pipe Diameter (in.)	Facility Flow (gpm)	Facility Delta Pressure (psig)	Pipe Velocity (fps)
401894	12.0	369.25	27.54	1.05
5348006	12.0	192.98	13.89	0.55
5348043	12.0	-192.98	-0.22	-0.55
5348044	12.0	107.77	0.00	0.31
5348105	12.0	-204.69	-1.30	-0.58
5348107	12.0	129.96	24.94	0.37
5348112	12.0	562.23	-0.21	1.59
5348115	12.0	-192.98	-25.82	-0.55
5348117	12.0	369.25	0.65	1.05
5348133	12.0	-96.92	0.00	-0.27
5348134	12.0	-96.92	0.00	-0.27
5348138	8.0	-96.92	-0.01	-0.62
5061211	12.0	1955.61	11.45	5.55
Pi1	12.0	-1491.94	0.97	-4.23
Pi2	12.0	-1530.41	0.25	-4.34
Pi3	12.0	1935.98	0.02	5.49
Pi5	12.0	-3258.24	-0.54	-9.24
Pi6	12.0	1221.60	2.64	3.47
Pi7	8.0	0.00	-0.17	0.00
Pi9	12.0	129.14	5.51	0.37
Pi10	12.0	2214.05	-8.68	6.28

USD Central & Eastern Campus



Legend

Facilities Symbols
Nodes Symbols
- Default Known Flow Node
- Default Known Flow Node Sub
- Default Known Pressure Node
- Default Known Pressure Node Sub
- Default Known Node
- Default Known Node Sub

Polygons Symbols
Isolation Valves Symbols

Facilities Color By
Pipe Velocity (ft/s)
- Not Applicable (710)
- < 1.00 (18604)
- 1.00 - 2.00 (2580)
- 2.00 - 15.00 (1245)
- > 15.00 (10)

Nodes Color By
Pressure (psig)
- Not Applicable (0)
- < 20.00 (78)
- 20.00 - 65.00 (2307)
- 65.00 - 80.00 (4561)
- 80.00 - 120.00 (7113)
- > 120.00 (7143)

Simulation Data:
State: Steady State
Date: 2/25/08
Time: 2:15pm

Model Description:
Ultimate demands; FF=4000gpm;
12" dia. water main connection to
Linda Vista Road taken out of service

Model Name: USD campus master plan

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

SynerGEE Water 4.3.0 (22 Oct 2007)

APPENDIX B

PRELIMINARY WATER DEMAND ESTIMATES AND HYDRAULIC CALCULATIONS

Residential | Academic | Sports facilities | Dining | Estimated

Plumbing Fixture Calculation - Residential based on the # beds estimated within the Master Plan Study

Proj #	Building Gross	Group	Occupant Load	# Occupants	# Beds MWS	# Apt	Men	Women	WC (M)	WC (W)	Urinal	Lavatory M)	Lavatory (W)	Drinking Fountain	Service sink	Shower/ BathTubs	Kitchen Sink	Washer (clothes)	Dishwasher - pro
1	2,500	A-3	30	83			42	42	1	2	1	1	1	1	1	2			
2	16,500	E	50	330			165	165	3	6	2	4	4	2	1				
3	33,750	E	50	675			338	338	7	11	3	8	8	5	1				
4	5,400	A-2	30	180			90	90	2	3	1	1	1	1	1		1		1
5	73,250	E	50	1,465			733	733	15	24	7	18	18	10	1	-			
6	22,960	E	50	459			230	230	5	8	2	6	6	3	1				
7	76,780	E	50	1,536			768	768	15	26	8	19	19	10	1				
8	NA																		
9	133,507	A-3	30	4,450			2,225	2,225	7	23	9	10	13	10	1	25		2	
10	25,000	E	50	500			250	250	5	8	3	6	6	3	1				
11	24,000	Dorm			80		40	40	10	10	2	20	20	1	1	20	2	7	
12	NA																		
13	67,642	E/B	50	1,353			676	676	14	23	7	17	17	9	1	10			
14	NA																		
15	80,600	Apt	200		179	90	90	90	90		_	90		_		90	90	15	
16	9,010	A-3	30	300			150	150	2	4	2	1	2	2	1	3			
17	NA																		
18	NA																		
19	NA																		
20	NA														1				
21	13,500	E / B	50	270			135	135	3	5	1	3	3	2	1				
22	206,000	E	50	4,120			2,060	2,060	41	69	21	52	52	27	1				
23	148,240	Apt			329	165	165	165	165		_	165		_		165	165	27	
	3,600	A-2	30	120			60	60	2	3	1	1	1	1	1		1		1
24	65,000	Dorm			186		93	93	23	23	4	46	46	1	1	46	5	15	
25	71,100	E	50	1,422			711	711	14	24	7	18	18	9	1				
26	69,500	E	50	1,390			695	695	14	23	7	17	17	9	1				
27	85,710	Dorm			245		122	122	31	31	5	61	61	1	1	61	7	20	
	5,000	A-2	30	167			83	83	2	3	1	1	1	1	1		1		1
28	12,400	A-3	30	413			207	207	3	6	3	2	4	2	1	2			
29	8,500	H/B	2000	4			2	2	1	1		1	1			2			
30	109,500	Apt			243	122	122	122	122		_	122		_		122	122	20	
	3,500	A-2	30	117			58	58	2	3	1	1	1	1	1		1		1
CFH	64,500	E/B	50	1,290			645	645	13	22	6	16	16	9	1				

Notes:

For Residential Occupancy Group:

1- Occupancy is based on the estimated beds calculated within the Master Plan Study

2- Fixture units calculation is based on USD standards

DORMS	WC:	1 per	8	Beds
	Shower:	1 per	8	Beds
	Lavatory:	1 per	8	Beds
	K. sink:	1 per	12	Beds
	Washer	1 per	12	Beds
APTS	WC:	1 per	8	Beds
	Shower:	1 per	8	Beds
	Lavatory:	1 per	8	Beds
	K. sink:	1 per	8	Beds
	washer	1 per	12	Beds

City of San Diego Fixture Unit Calculation

Proj #	WC (M)	WC (W)	Urinal	Lavatory (M)	Lavatory (W)	Drinking Fountain	Service sink	Shower / Bathtubs	Kitchen Sink - D	Washer	Dishwasher pro	Total
1	5	10	4	1	1	1	3	4				29
2	17	28	7	4	4	1	3					63
3	34	56	14	8	8	2	3					126
4	10	15	4	1	1	1	3		2		6	42
5	73	122	29	18	18	5	3	-				269
6	23	38	9	6	6	2	3					86
7	77	128	31	19	19	5	3					282
8												
9	33	113	38	10	13	5	3	50	0	8		273
10	25	42	10	6	6	2	3					94
11	50	50	6	20	20	1	3	40	3	27		220
12												
13	68	113	27	17	17	5	3	20				269
14												
15	448			90				179	134	60		910
16	10	20	8	1	2	1	3	6	0	0		51
17												
18												
19												
20												
21	14	23	5	3	3	1	3					52
22	206	343	82	52	52	14	3					751
23	824			165				329	247	110		1,675
	10	15	4	1	1	1	3				6	41
24	116	116	15	46	46	1	3	93	8	62		506
25	71	119	28	18	18	5	3					261
26	70	116	28	17	17	5	3					256
27	153	153	20	61	61	1	3	122	10	82		666
	10	15	4	1	1	1	3		2		6	42
28	15	30	12	2	4	1	3	4	0	0		71
29	5	5	0	1	1			4				16
30	608			122				243	183	81		1,237
	10	15	4	1	1	1	3		2		6	42
CFH	65	108	26	16	16	4	3					237
TOTAL	4,667		389	1,014		56	66	1,095	590	429	24	8,567

Notes:

Assumptions and Data not provided within the Plumbing Fixtures Code:

1- Professional Dishwasher counted as 4 Domestic Dishwasher

Demolition / Existing -Plumbing Fixture estimation (from plans)

Proj #	WC	Urinal	Lavatory	Drinking Fountain	Service sink	Shower	Common shower	Kitchen sink	Washer	Dishwasher
1	5	1	5			1				
2						_				
3						_				
4						_				
5						_				
6	2		2			2				
7	0		0			0		0		
8						_				
9						_				
10						_				
11	41		72			41		41		
12						-				
13						_				
14	32	12	32			19	3		2	
15	8		8					1		1
16	3	2	2							
17						_				
18						_				
19						_				
20						_				
21						_				
22						_				
23	51		51			51		51		
24						_				
25						_				
26						_				
27	78	2	149			73		2	12	
28						_				
29						-				
30						_				
						_				
CFH	49		218			78		1	10	

Notes:

Site 27: Existing Dorms in Mission A have a high ratio of fixtures / bed
1WC, 1 Shower and 2 sinks per 2 double BR (4 persons)

Site 11: Existing San Antonio de Padua Apartments have a high ratio of fixtures / bed
1WC, 1 shower and 2 sinks / Aptms (1 or 2 persons)

Notes:

1- Washer and dishwasher units are indicative (designated as laundry or not designed on plans)

2- Drinking fountain and service sink couldn't be estimated

Demolition / Existing - Fixture Units Calculation

Proj #	WC	Urinal	Lavatory	Drinking Fountain	Service sink	Shower	Common shower	Kitchen sink	Washer	Dishwasher	Total
1	25	4	5			2	0				36
2						_					
3						_					
4						_					
5						_					
6	10		2			4					16
7	0		0			0					0
8						_					
9						_					
10						_					
11	205		72			82		61.5			421
12						-					
13						_					
14	160	48	32			38	0		8		286
15	40		8			0		1.5		1.5	51
16	15	8	2			0					25
17						_					
18						_					
19						_					
20						_					
21						_					
22						_					
23	255		51			102		76.5			485
24						_					
25						_					
26						_					
27	390	8	149			146		3	48		744
28						_					
29						-					
30						_					
						_					
CFH	245		218			156		2	40		661
TOTAL	1,345	68	539	0	0	530	0	144	96	2	2,724

Notes:

1- Common showers counted as 3 Shower units

Fixture unit difference per site

Proj #	Δ
1	-8
2	63
3	126
4	42
5	269
6	70
7	282
8	0
9	273
10	94
11	-201
12	0
13	269
14	-286
15	859
16	26
17	0
18	0
19	0
20	0
21	52
22	751
23	1,190
	41
24	506
25	261
26	256
27	-78
	42
28	71
29	16
30	1,237
	42
CFH	-423
TOTAL	5,844

Jacob Wittler

From: Steve Kettler <steve@kettlerleweck.com>
Sent: Monday, February 08, 2016 3:38 PM
To: 'Keshavarzi, Mahmood'
Cc: 'Diego Velasco'; 'Roger Manion'; jacob@kettlerleweck.com
Subject: RE: USD Water Main Replacement Phase I - Signed Drawings

Thank you! We will proceed to revise the water study and submit the "final" version to you for Leonard's final approval.

Steven Kettler, P.E., Principal
Kettler Leweck Engineering
303 A Street, Suite 302
San Diego, CA 92101
P: (619) 269-3444, Ext. 2
F: (619) 269-3459
email: steve@kettlerleweck.com
web: http://www.kettlerleweck.com/

PLEASE NOTE OUR NEW ADDRESS

From: Keshavarzi, Mahmood [mailto:MKeshavarzi@sandiego.gov]
Sent: Monday, February 08, 2016 2:03 PM
To: Steve Kettler
Subject: RE: USD Water Main Replacement Phase I - Signed Drawings

Hi Steve,

The Modeling group ran the following two fire flow scenarios for the USD master plan. Modeling results meets the city design requirements.

- 4,000 gpm fire flow plus 300 gpm domestic demand at hydrant#849 on East Campus with proposed 390 zone changes per master plan study
- 4,000 gpm fire flow plus 300 gpm domestic demand at hydrant#427 on Linda Vista Rd and Marian Way 390 zone

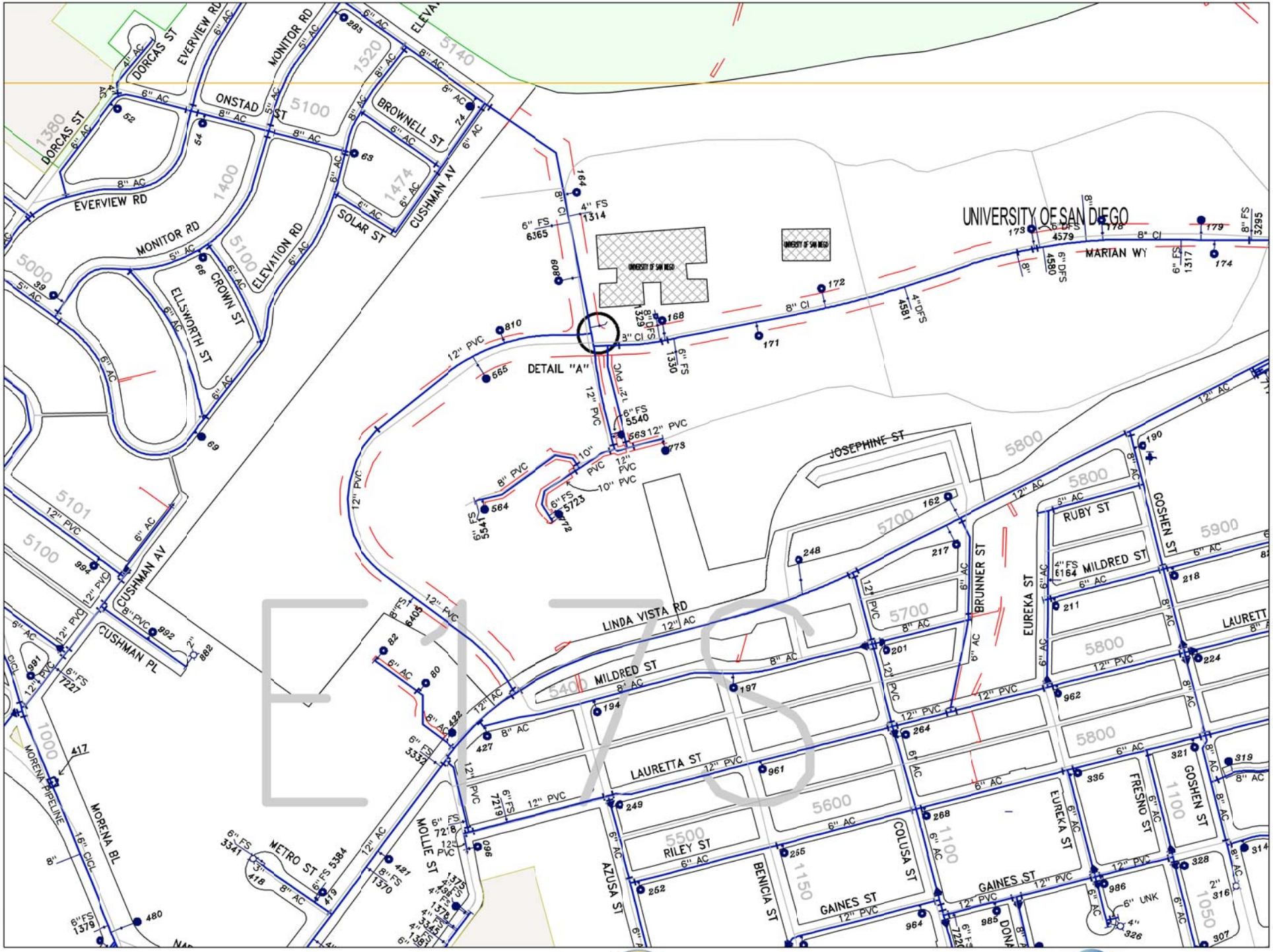
Attached is the hydraulic map and data.

Moe

From: Steve Kettler [mailto:steve@kettlerleweck.com]
Sent: Tuesday, February 02, 2016 10:22 AM
To: Keshavarzi, Mahmood
Subject: RE: USD Water Main Replacement Phase I - Signed Drawings

Thank you!

Steven Kettler, P.E., Principal
Kettler Leweck Engineering
303 A Street, Suite 302



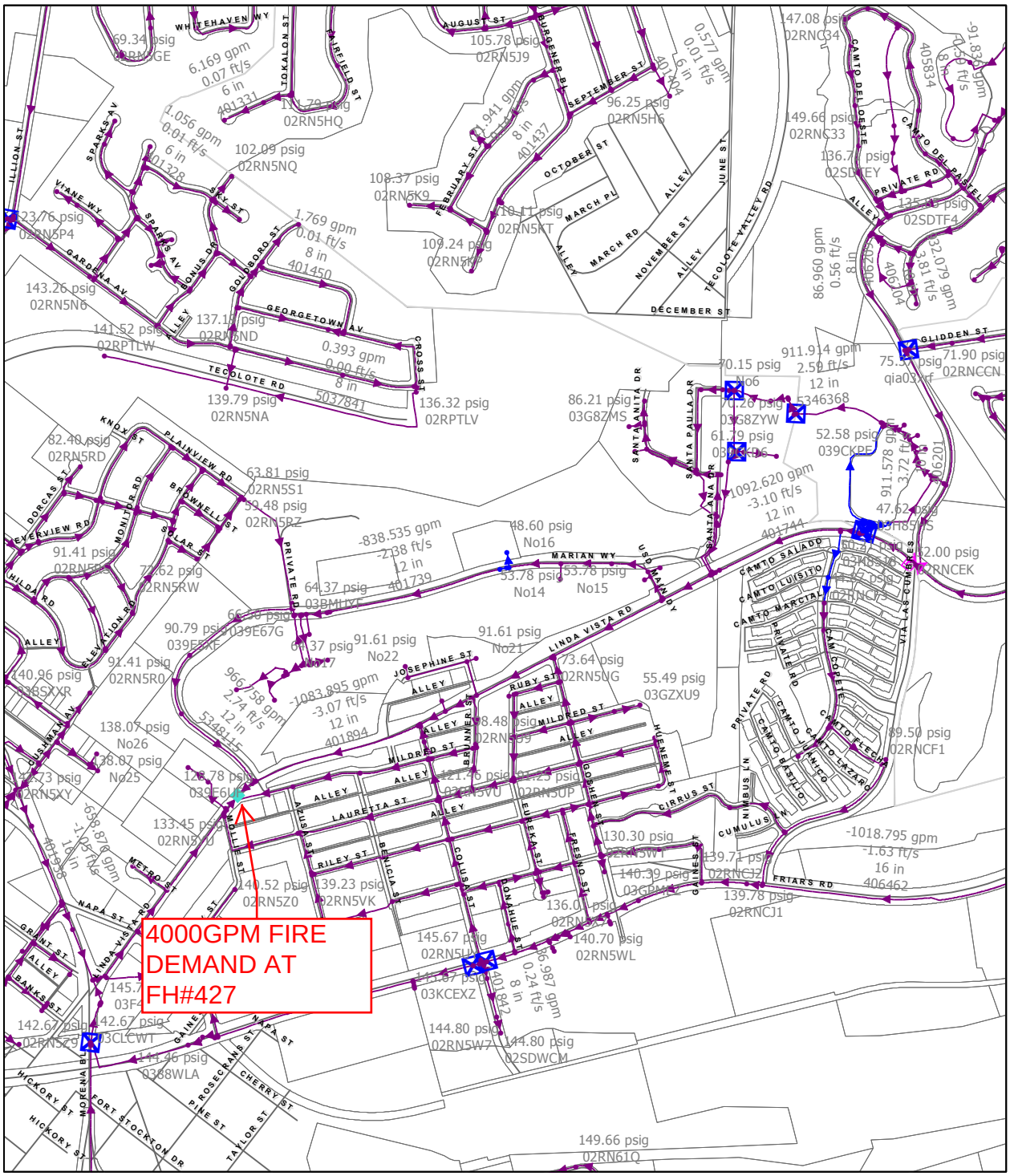
THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANY®.

City of San Diego Public Utilities Water & Wastewater

City of San Diego PUBLIC UTILITIES Water & Wastewater

Date Printed : 02-03-16

USD MASTER PLAN - HYDRAULIC MODELING - 4000GPM FIRE DEMAND



X,Y (Feet): 6269706.99, 1857990.92

0 320 640 1,280 1,920 2,560 Feet

Scale: 1 = 7,778

Legend

Facilities Color By
Average Pressure (psig)
- Not Applicable (21)
- < 20.00 (716)
- 20.00 - 30.00 (308)
- 30.00 - 40.00 (490)
- 40.00 - 50.00 (2836)
- > 50.00 (63043)

Nodes Color By
Pressure (psig)
- Not Applicable (9)
- < 10.00 (470)
- 10.00 - 20.00 (228)
- 20.00 - 30.00 (299)
- 30.00 - 40.00 (488)
- 40.00 - 50.00 (2598)
- > 50.00 (57360)

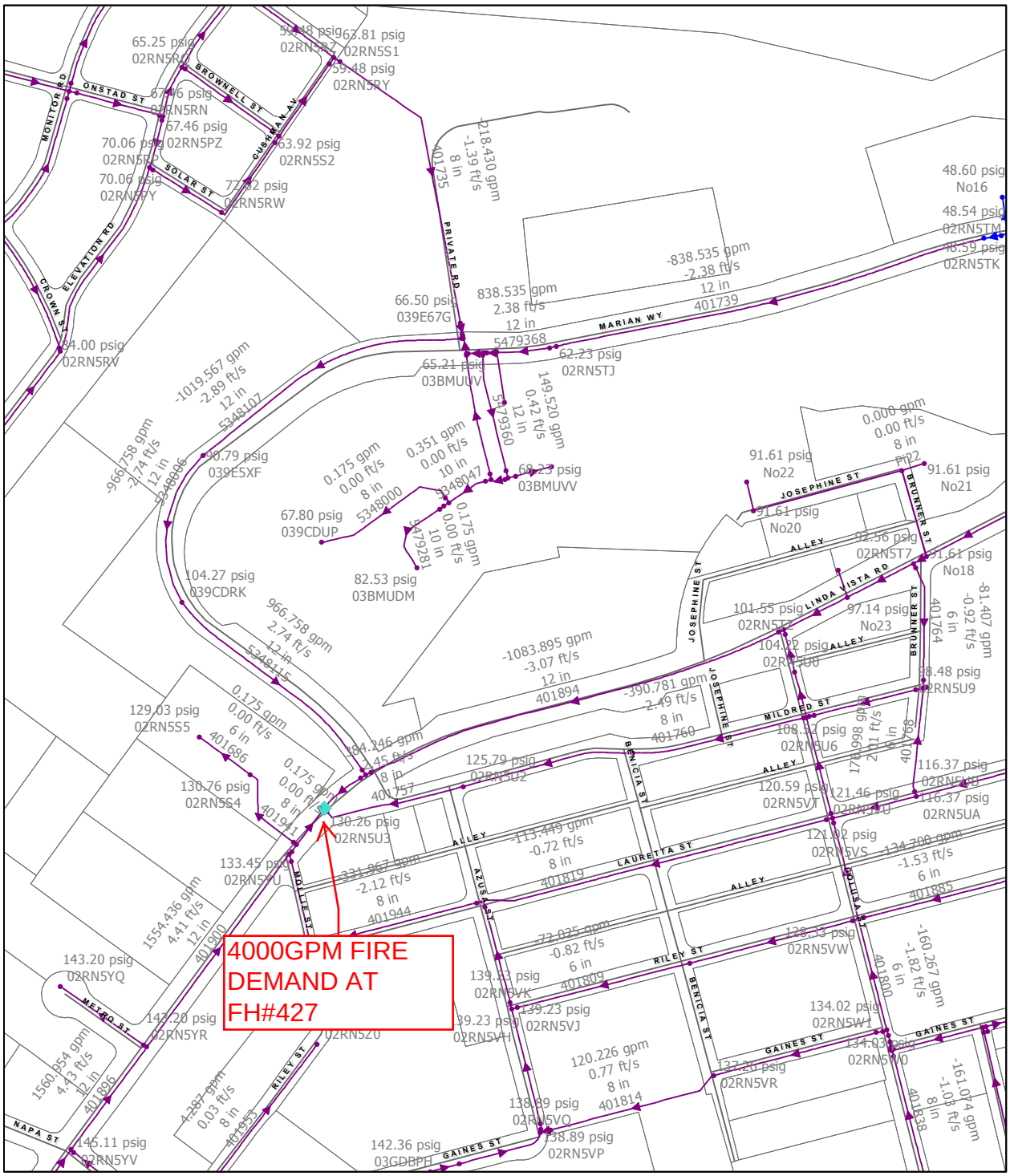
Facilities Symbols
- Default Pipe
- Default Valve
- Default Check Valve
- Default Tank Fill Valve
- Default Pump
- Default Energy Reporting Pump
- Default Tank/Reservoir
- Default Pressure Regulator
- Default Meter

Simulation Data:
State: Solved
Date: 2/4/2016
Time: 7.30000

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

USD MASTER PLAN - HYDRAULIC MODELING - 4000GPM FIRE DEMAND



Legend

Facilities Color By
Average Pressure (psig)
- Not Applicable (21)
- < 20.00 (716)
- 20.00 - 30.00 (308)
- 30.00 - 40.00 (490)
- 40.00 - 50.00 (2836)
- > 50.00 (63043)

Nodes Color By
Pressure (psig)
- Not Applicable (9)
- < 10.00 (470)
- 10.00 - 20.00 (228)
- 20.00 - 30.00 (299)
- 30.00 - 40.00 (488)
- 40.00 - 50.00 (2598)
- > 50.00 (57360)

Facilities Symbols
- Default Pipe
- Default Valve
- Default Check Valve
- Default Tank Fill Valve
- Default Pump
- Default Energy Reporting Pump
- Default Tank/Reservoir
- Default Pressure Regulator
- Default Meter

Simulation Data:
State: Solved
Date: 2/4/2016
Time: 7.30000

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

MAX-DAY DEMAND WITH FIRE FLOW DEMAND @NODE #02RN5U3
Linda Vista Road and Marian Way 390 HGL Zone

Name node	Elevation (ft)	Pressure (psig)	Flow (gpm)
02RN5U3	46	128.94	-4301.803
039E5XF	141	90.84	-52.809
02RNCE1	248	51.24	-44.675
02RN5TN	222	58.79	-40.819
02RNCEK	256.6	52	-36.042
02RN5TM	244	48.55	-24.249
039E5W8	199	66.49	-22.683
03G8ZMS	164	86.2	-14.62
03G8ZME	172	82.74	-12.764
02RNCBJ	230	108.69	-10.637
039E6UD	50	129.28	-10.537
02SDTCR	184	77.55	-10.467
No16	244	48.6	-10
03BMUYF	204	64.4	-8.367
02RN5KZ	188	76.17	-6.191
02RN5T7	140	92.48	-6.127
03BMUUC	202	65.24	-5.821
02RNCEG	256.6	95.59	-4.932
02RN5TC	140	92.48	-4.22
02RNCEE	248	51.24	-3.394
02RN5XK	42	132.59	-3.372
02RN5YU	40	133.54	-2.284
02RN5TV	176	77.91	-1.713
02RN5XJ	43	131.65	-1.608
02RN5XT	40	133.59	-1.523
02RN5TY	114	103.19	-0.627
03BMUDM	162	82.56	-0.175
03G8ZYJ	190	75.4	-0.175
03G8ZXT	162	87.08	-0.175
03G8ZW5	170	83.61	-0.175
02RN5S5	50	129.12	-0.175
039CKD6	221	61.78	-0.175
02RN5K6	194	73.22	-0.175
03BMUPZ	194	68.7	-0.175
039CDUP	196	67.83	-0.175
02RN5TZ	118	101.47	0
02RN5TF	202	65.22	0
02SDWA4	195	72.79	0
02RN5TS	210	64.43	0
02RN5TH	208	62.79	0
02RN5TL	244	48.6	0
039CDUY	202	65.22	0

02RN5TJ	210	62.25	0
02SDW9P	198	71.49	0
02RN5K5	184	77.55	0
02SDWA2	195	72.79	0
02RN5T6	118	101.47	0
02RN5TK	244	48.59	0
02RN5TW	176	77.91	0
039CJYX	245	52.02	0
039CE0P	185	72.6	0
039CJWG	245	52.02	0
039CDRK	109	104.32	0
02RN5TQ	204.2	66.94	0
039CKCX	221	61.78	0
039CDVQ	202	65.22	0
039CDYU	195	68.26	0
039CDZL	194	68.7	0
039CE0C	182	73.9	0
039CKNG	245	52.67	0
039CKPE	245	52.57	0
039CJX2	198	72.29	0
02RNCD6	240	55.12	0
039CDTA	182	73.9	0
039E5YC	49	129.71	0
039E639	199	66.49	0
02SDTCT	220	61.93	0
039E67G	199	66.53	0
02RN5TT	178	77.04	0
02SDW9Z	215.5	63.8	0
039CKK3	245	52.8	0
039CKMQ	248	51.5	0
03BMUL3	202	65.25	0
03BMUN5	202	65.24	0
039E5UJ	199	66.49	0
03BMUSB	195	68.26	0
039CK7H	196	73.06	0
03BMUUV	202	65.24	0
03BMUVK	195	68.26	0
039CDUV	180	74.76	0
039CDUW	195	68.26	0
03BTK1F	214	62.48	0
03D0LZ0	256	48.43	0
02SDWA0	220	61.85	0
03D0M2Y	230	59.51	0
03D0M3R	232	58.64	0
03D0M4L	232	58.64	0
03G8ZHN	178.3	80.02	0
03G8ZJD	177	80.58	0

03G8ZKC	182	78.41	0
03G8ZM6	182	78.41	0
039CKCG	218	63.04	0
039CKCH	220	62.21	0
039CKCU	221	61.78	0
03G8ZWD	170	83.61	0
039CKCY	198	72.29	0
03D0M2U	232	58.64	0
03G8ZYW	202	70.25	0
qhpo3xfv	245	52.07	0
qhew3x92	221	61.78	0
qhej3xjy	202	70.2	0
03H2BML	215.5	63.79	0
03H2BNH	215	63.97	0
03H2BQD	194	73.15	0
03H2BQY	215	63.97	0
03H2BRS	215	63.97	0
039E644	199	66.49	0
03H84ZH	254	49.42	0
02SDW9Q	195	72.79	0
039E6UE	50	129.28	0
039E6UF	51	128.85	0
02SDWA1	220	61.85	0
03H850U	254	49.33	0
03H8518	252	50.2	0
02RNCDA	228	60.38	0
03H852G	258	47.6	0
039CDS9	195	68.26	0
03H857M	258	47.6	0
03H85FT	248	51.5	0
03BMUVV	195	68.26	0
03H85HS	258	47.61	0
Y9Qj9XYC	254	49.33	0
Y9R89XY5	255	48.98	0
No6	202.16	70.13	0
No1	241.9	54.26	0
No2	241.9	54.26	0
No5	243.97	53.32	0
No7	243.97	53.32	0
No8	245.97	52.42	0
No9	245.97	52.42	0
No10	172	82.74	0
No11	214	62.48	0
No12	213.31	62.82	0
No13	213.31	62.82	0
No14	232.83	53.77	0
No15	232.83	53.77	0

02RN5TU	210	64.43	0
No17	204	64.4	0
No18	142.33	91.54	0
No19	142.33	91.54	0
No20	142.33	91.54	0
No21	142.33	91.54	0
No22	142.33	91.54	0
No23	128.79	97.06	0
No24	128.79	97.06	0
02RN5S4	46	130.86	0
03H2BTS	177	80.58	0
02RN5U2	58	124.79	0
03H84ZM	255	48.99	0
03H8501	254	49.42	0
03H850B	254	49.39	0
03H850N	252	50.2	0
02RN5YS	42	132.59	0
02RN5YT	40	133.59	0
03H851Q	258	47.6	0
02RNCE3	256.6	95.59	0
03H853W	258	47.61	0
02RNCEH	256.6	51.85	0
02RNCEJ	256.6	95.4	0
03H85HL	258	47.61	0
qib13woo	256.6	95.22	0

Model State: Solved

Generated on 2/4/2016 12:44:35 PM

Synergi Water 4.9.0: Query

MAX-DAY DEMAND WITH FIRE FLOW DEMAND @NODE #02RN5U3
Linda Vista Road and Marian Way 390 HGL Zone

Name Pipe	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Friction Factor
401417	12	0.175	0	110
401439	12	221.511	0.63	110
401440	12	13.087	0.04	109
401441	12	13.087	0.04	110
401442	8	-242.351	-1.55	120
401443	8	-236.159	-1.51	120
401444	12	-140.258	-0.4	110
401445	12	0.175	0	110
401446	6	0.175	0	115
401447	10	14.971	0.06	115
401448	4	14.62	0.37	111
401449	10	-0.175	0	115
401686	6	0.175	0	115
401727	12	-1029.69	-2.92	116
401731	6	-99.659	-1.13	106
401737	8	-829.086	-5.29	69
401738	12	-853.335	-2.42	120
401739	12	-829.086	-2.35	120
401740	12	-853.335	-2.42	120
401741	12	-863.335	-2.45	120
401744	12	-1094.9	-3.11	114
401745	12	-904.154	-2.56	120
401746	12	-904.154	-2.56	120
401747	12	-1059.31	-3.01	114
401748	12	-1059.31	-3.01	113
401749	12	-1135.48	-3.22	116
401750	12	-1137.19	-3.23	114
401751	8	-77.884	-0.5	104
401753	12	1036.107	2.94	116
401754	6	-6.415	-0.07	62
401757	8	469.497	3	106
401894	12	-1035.48	-2.94	116
401895	12	1852.883	5.26	116
401941	8	0.175	0	115
401942	8	-0.175	0	106
401943	8	-323.475	-2.06	73
401945	12	1858.714	5.27	116
401946	12	1856.43	5.27	116
401947	8	3832.305	24.46	105
406271	8	-207.043	-1.32	133
406275	8			133
406276	8	0	0	133

406312	12	-1968.42	-5.58	114
406322	12	-828.843	-2.35	116
406324	10	902.016	3.68	117
406325	10	897.084	3.66	117
406326	12	2881.898	8.18	114
406327	12	-2917.94	-8.28	114
406328	12	-2881.9	-8.18	114
406329	12	-2917.94	-8.28	114
406350	8	207.043	1.32	133
5061056	12	150.901	0.43	136
5061059	12	-1614.78	-4.58	114
5061204	12	1614.778	4.58	114
5061206	12	-1094.9	-3.11	114
5061208	12	-519.879	-1.47	136
5061211	12	-670.78	-1.9	136
5061212	12	-519.879	-1.47	136
5061232	12	-670.78	-1.9	136
5061234	12	150.901	0.43	136
5061289	12	150.901	0.43	136
5061290	12	140.258	0.4	110
5061292	12	-1094.9	-3.11	114
5346360	12	-670.956	-1.9	136
5346361	12	913.482	2.59	136
5346362	12	913.482	2.59	137
5346363	12	913.482	2.59	136
5346368	12	913.482	2.59	136
5346370	12	913.482	2.59	137
5346405	12	0.175	0	136
5346406	8	0.175	0	133
5346411	12	0.175	0	136
5346425	12	913.482	2.59	136
5346426	12	-670.78	-1.9	136
5346450	8	913.482	5.83	133
5346452	8	207.043	1.32	133
5346454	8	-706.439	-4.51	133
5346456	8	207.043	1.32	133
5346460	8	913.482	5.83	133
5348000	8	0.175	0	133
5348001	12	-147.633	-0.42	136
5348003	10	0.175	0	135
5348006	12	-956.088	-2.71	136
5348043	12	956.088	2.71	136
5348044	12	-1031.58	-2.93	136
5348046	12	-147.282	-0.42	136
5348047	10	0.351	0	135
5348079	12	-147.282	-0.42	136
5348085	12	-667.089	-1.89	136

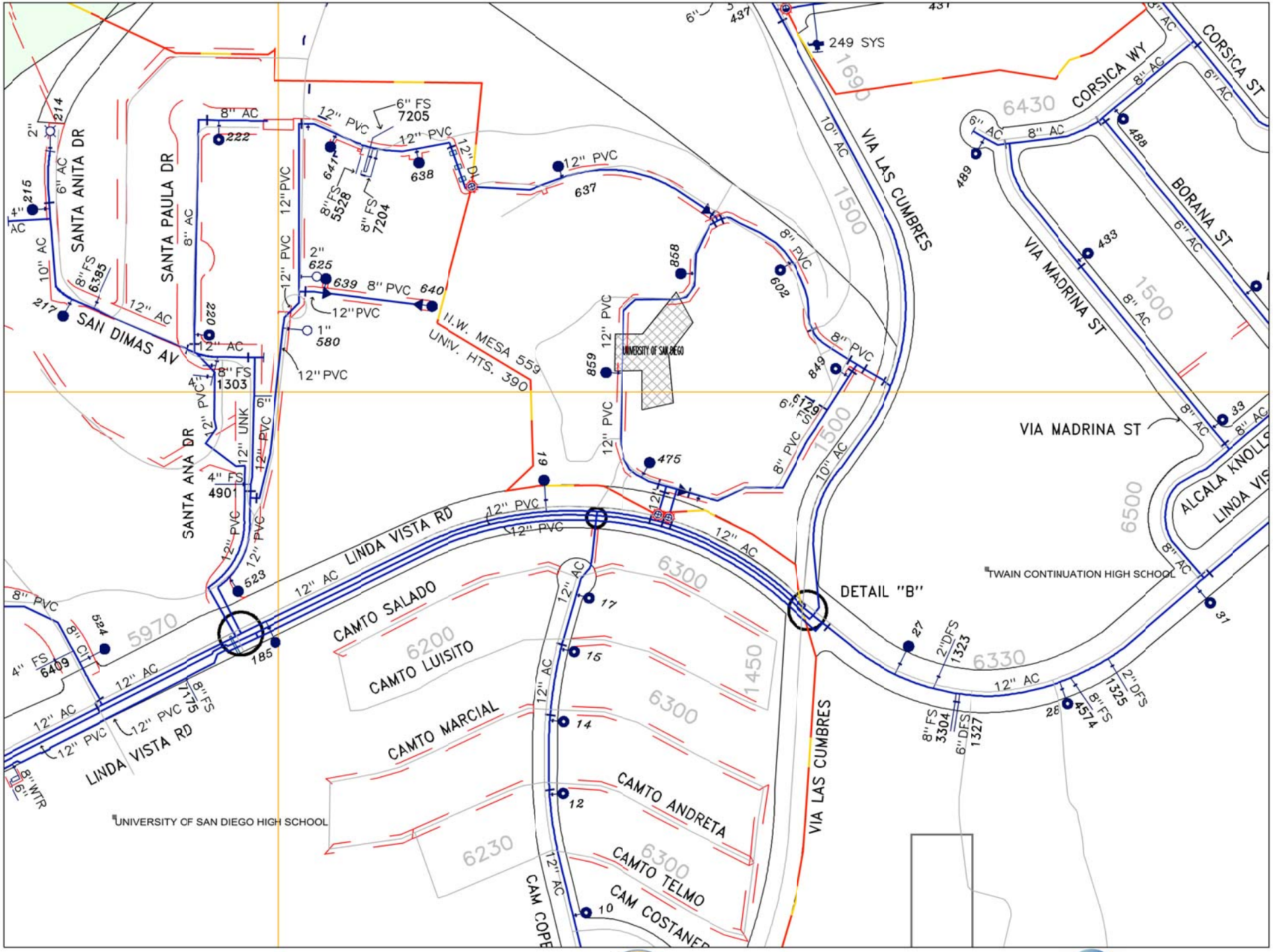
5348089	12	-147.282	-0.42	136
5348091	10	0.351	0	135
5348093	10	0.175	0	135
5348095	8	0.175	0	133
5348105	12	814.371	2.31	136
5348107	12	-1008.9	-2.86	136
5348112	12	-1991.57	-5.65	116
5348115	12	956.088	2.71	136
5348117	12	-1035.48	-2.94	116
5348119	12	-1981.03	-5.62	116
5348133	12	-217.209	-0.62	136
5348134	12	-217.209	-0.62	136
5348138	8	-217.209	-1.39	70
5479281	10	0.175	0	135
5479295	12	147.808	0.42	136
5479336	12	820.718	2.33	136
5479339	12	-147.808	-0.42	136
5479341	12	820.718	2.33	120
5479342	12	0.175	0	136
5479360	12	147.808	0.42	136
5479363	12	-667.089	-1.89	136
5479364	12	-820.718	-2.33	136
5479365	12	-147.633	-0.42	136
5479366	12	-0.175	0	136
5479368	12	829.086	2.35	120
5484997	12	-904.154	-2.56	133
5535798	8	207.043	1.32	133
5535799	8	207.043	1.32	133
5535800	8	0	0	133
5540406	8	207.043	1.32	133
5590368	12	-348.683	-0.99	120
5590369	12	-1963.46	-5.57	114
5590370	12	-348.683	-0.99	120
5590373	12	-1963.46	-5.57	114
5590375	12	-348.683	-0.99	120
5590378	12	208.425	0.59	110
5611200	12	896.83	2.54	136
5611202	12	896.83	2.54	136
5611231	12	207.043	0.59	136
5611232	12	706.439	2	136
5611277	12	-2881.9	-8.18	136
5611279	12	-1985.07	-5.63	136
5611281	12	-1985.07	-5.63	136
5611282	12	16.652	0.05	136
5611284	12	-1968.42	-5.58	136
5611286	12	16.652	0.05	136
5611287	12	16.652	0.05	136

	5611289	12	689.787	1.96	136
	5611291	8	207.043	1.32	133
	5611296	12	706.439	2	136
Pi1		8	207.043	1.32	133
Pi10		8	0	0	140
Pi11		8	0	0	140
Pi12		8	0	0	140
Pi13		12	-904.154	-2.56	120
Pi14		8	0	0	140
Pi15		12	-863.335	-2.45	120
Pi16		8	0	0	140
Pi17		8	10	0.06	140
Pi18		8	0	0	140
Pi19		12	-1135.48	-3.22	116
Pi20		8	0	0	140
Pi21		8	0	0	140
Pi22		8	0	0	140
Pi23		8	0	0	140
Pi24		12	-1029.69	-2.92	116
Pi25		8	0	0	140
Pi3		8	0	0	140
Pi4		8	207.043	1.32	133
Pi5		8	0	0	140
Pi6		12	-913.482	-2.59	136
Pi7		12	-242.526	-0.69	120
Pi8		12	14.648	0.04	120
Pi9		8	207.043	1.32	133

Model State: Solved

Generated on 2/4/2016 12:47:58 PM

Synergi Water 4.9.0: Query



THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANY® to SanGIS. This map is copyrighted by RAND MCNALLY & COMPANY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANY®.

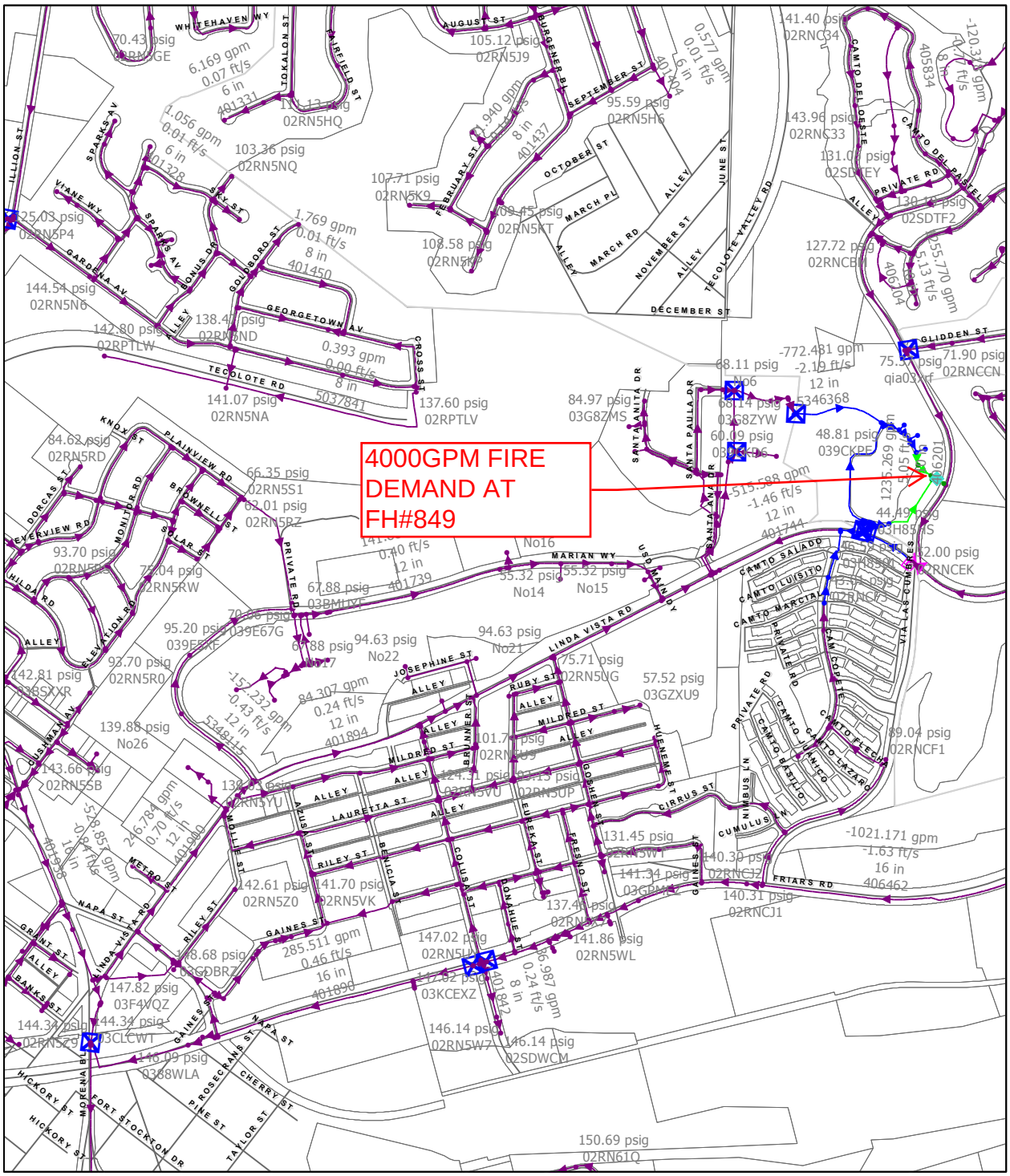
City of San Diego Public Utilities Water & Wastewater

PUBLIC UTILITIES

0 Feet 90 Feet 180 Feet 270 Feet 360 Feet 450 Feet

Date Printed : 02-03-16

USD MASTER PLAN - HYDRAULIC MODELING - 4000GPM FIRE DEMAND



X,Y (Feet): 6269706.99, 1857990.92

0 320 640 1,280 1,920 2,560 Feet

Scale: 1 = 7,778

Legend

Facilities Color By
Average Pressure (psig)
- Not Applicable (21)
- < 20.00 (715)
- 20.00 - 30.00 (311)
- 30.00 - 40.00 (479)
- 40.00 - 50.00 (2877)
- > 50.00 (63011)

Nodes Color By
Pressure (psig)
- Not Applicable (9)
- < 10.00 (469)
- 10.00 - 20.00 (226)
- 20.00 - 30.00 (304)
- 30.00 - 40.00 (469)
- 40.00 - 50.00 (2633)
- > 50.00 (57342)

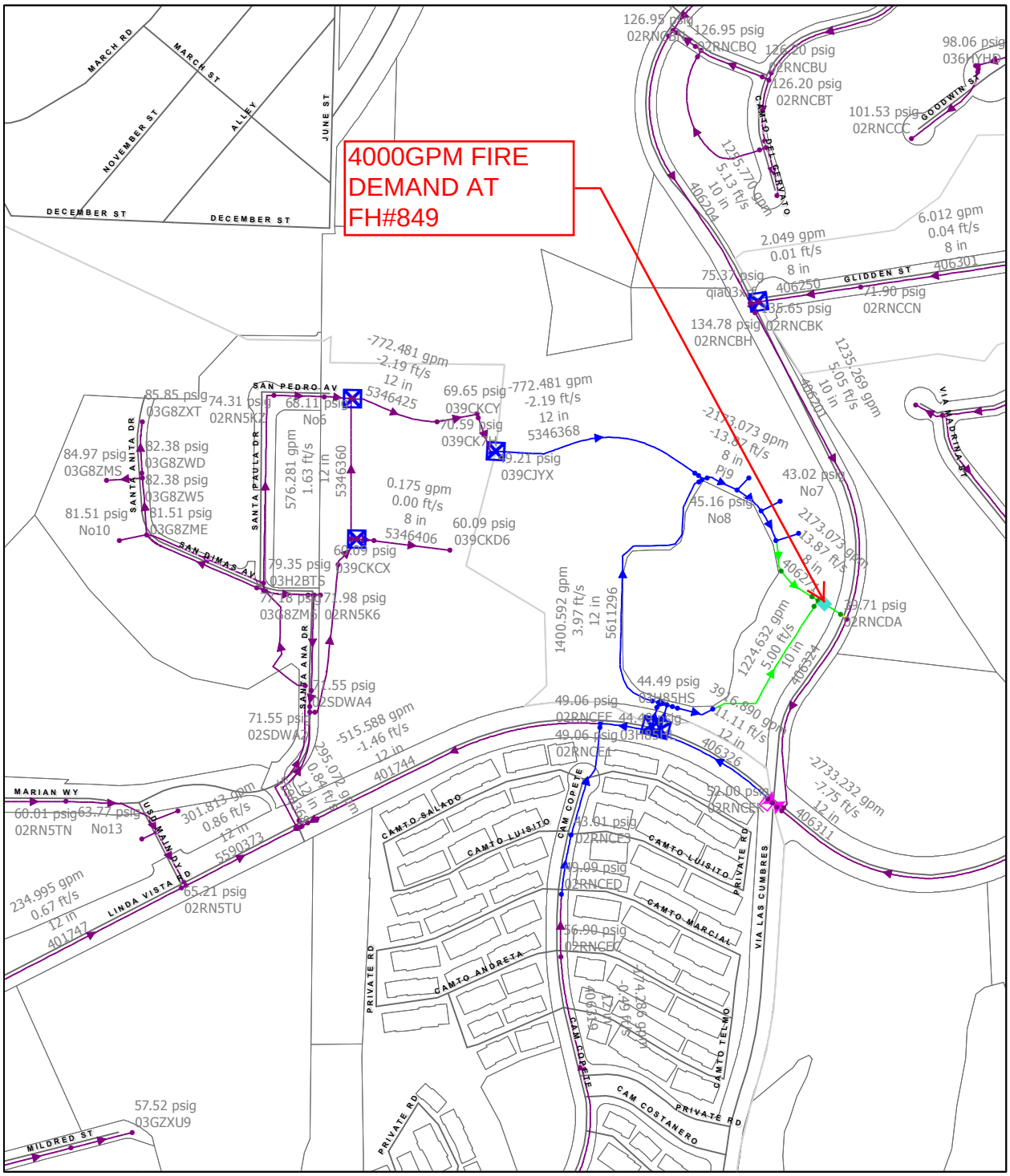
Facilities Symbols
- Default Pipe
- Default Valve
- Default Check Valve
- Default Tank Fill Valve
- Default Pump
- Default Energy Reporting Pump
- Default Tank/Reservoir
- Default Pressure Regulator
- Default Meter

Simulation Data:
State: Solved
Date: 2/4/2016
Time: 7.30000

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

USD MASTER PLAN - HYDRAULIC MODELING - 4000GPM FIRE DEMAND



X,Y (Feet): 6273489.01, 1860916.80

0 137.5 275 550 825 1,100 Feet

Scale: 1 = 3,330

N W E S

Legend

Facilities Color By
Average Pressure (psig)
- Not Applicable (21)
- < 20.00 (715)
- 20.00 - 30.00 (311)
- 30.00 - 40.00 (479)
- 40.00 - 50.00 (2877)
- > 50.00 (63011)

Nodes Color By
Pressure (psig)
- Not Applicable (9)
- < 10.00 (469)
- 10.00 - 20.00 (226)
- 20.00 - 30.00 (304)
- 30.00 - 40.00 (469)
- 40.00 - 50.00 (2633)
- > 50.00 (57342)

Facilities Symbols
- Default Pipe
- Default Valve
- Default Check Valve
- Default Tank Fill Valve
- Default Pump
- Default Energy Reporting Pump
- Default Tank/Reservoir
- Default Pressure Regulator
- Default Meter

Simulation Data:
State: Solved
Date: 2/4/2016
Time: 7.30000

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

MAX-DAY DEMAND WITH FIRE FLOW DEMAND @NODE #03D0M2Y
EAST CAMPUS ZONE 390HGL/559HGL

Name Node	Elevation (ft)	Pressure (psig)	Flow (gpm)	Description
03D0M2Y	230	38.84	-4300	
039E5XF	141	95.2	-52.809	
02RNCE1	248	49.06	-44.675	
02RN5TN	222	60.01	-40.819	
02RNCEK	256.6	52	-36.042	
02RN5TM	244	50.49	-24.249	
039E5W8	199	70.05	-22.683	
03G8ZMS	164	84.97	-14.62	
03G8ZME	172	81.51	-12.764	
02RNCBJ	230	99	-10.637	
039E6UD	50	134.67	-10.537	
02SDTCR	184	76.31	-10.467	
No16	244	50.49	-10	
03BMUYF	204	67.88	-8.367	
02RN5KZ	188	74.31	-6.191	
02RN5T7	140	95.64	-6.127	
03BMUUC	202	68.75	-5.821	
02RNCEG	256.6	84.69	-4.932	
02RN5TC	140	95.64	-4.22	
02RNCEE	248	49.06	-3.394	
02RN5XK	42	138.16	-3.372	
02RN5YU	40	139.03	-2.284	
02RN5U3	46	136.41	-1.802	
02RN5TV	176	80.02	-1.713	
02RN5XJ	43	137.71	-1.608	
02RN5XT	40	139.03	-1.523	
02RN5TY	114	106.91	-0.627	
03G8ZXT	162	85.85	-0.175	
03G8ZYJ	190	73.38	-0.175	
03BMUPZ	194	72.22	-0.175	
03BMUDM	162	86.08	-0.175	
039CKD6	221	60.09	-0.175	
02RN5S5	50	134.69	-0.175	
02RN5K6	194	71.98	-0.175	
03G8ZW5	170	82.38	-0.175	
039CDUP	196	71.35	-0.175	
02RN5TJ	210	65.26	0	
02RN5T6	118	105.18	0	
02RN5TS	210	65.21	0	
02RN5TZ	118	105.18	0	
02RNCE3	256.6	84.69	0	
02RN5U2	58	131.21	0	

02RN5TT	178	79.15	0
02RNCEJ	256.6	84.36	0
02RN5TU	210	65.21	0
02RN5YT	40	139.03	0
02RN5TF	202	68.75	0
02RN5S4	46	136.43	0
02SDWA2	195	71.55	0
02RNCD6	240	38.76	0
02SDTCT	220	60.84	0
02SDWA1	220	60.82	0
039CDTA	182	77.42	0
02RN5TH	208	66.14	0
039CDRK	109	109.08	0
02RN5TL	244	50.49	0
039CDUY	202	68.75	0
02SDW9Q	195	71.55	0
02SDW9Z	215.5	62.77	0
02RN5TQ	204.2	67.72	0
02RN5TW	176	80.02	0
039CE0P	185	76.12	0
039CJWG	245	49.21	0
039CJX2	198	69.65	0
02RN5TK	244	50.49	0
039CK7H	196	70.59	0
02RN5K5	184	76.31	0
039CDUV	180	78.28	0
02RN5YS	42	138.16	0
039CKCX	221	60.09	0
039CDVQ	202	68.75	0
039CDYU	195	71.78	0
02RNCDA	228	39.71	0
039CKMQ	248	47.34	0
039CKNG	245	48.74	0
039CKPE	245	48.81	0
039E5UJ	199	70.05	0
039CJYX	245	49.21	0
02RNCEH	256.6	51.74	0
039E5YC	49	135.1	0
039E639	199	70.05	0
039E644	199	70.05	0
039E67G	199	70.06	0
02SDW9P	198	70.25	0
039E6UE	50	134.67	0
039CKK3	245	48.64	0
02SDWA0	220	60.82	0
03BMUL3	202	68.75	0
03BMUN5	202	68.75	0

02SDWA4	195	71.55	0
03BMUSB	195	71.78	0
039CDS9	195	71.78	0
03BMUUV	202	68.75	0
03BMUVK	195	71.78	0
03BMUVV	195	71.78	0
039CDUW	195	71.78	0
03BTK1F	214	63.47	0
03D0LZ0	256	41.67	0
039E6UF	51	134.23	0
039CDZL	194	72.22	0
039CE0C	182	77.42	0
03D0M4L	232	37.98	0
03G8ZHN	178.3	78.78	0
03G8ZJD	177	79.35	0
03G8ZKC	182	77.18	0
03G8ZM6	182	77.18	0
039CKCG	218	61.42	0
039CKCH	220	60.52	0
039CKCU	221	60.09	0
03G8ZWD	170	82.38	0
039CKCY	198	69.65	0
03D0M2U	232	37.98	0
03G8ZYW	202	68.14	0
03H2BML	215.5	62.77	0
03H2BNH	215	62.99	0
03H2BQD	194	72.03	0
03H2BQY	215	62.99	0
03H2BRS	215	62.99	0
03H2BTS	177	79.35	0
03H84ZH	254	46.59	0
03H84ZM	255	46.16	0
03H8501	254	46.59	0
03H850B	254	46.55	0
03H850N	252	47.36	0
03H850U	254	46.5	0
03H8518	252	47.36	0
03H851Q	258	44.56	0
03H852G	258	44.56	0
03H853W	258	44.55	0
03H857M	258	44.56	0
03H85FT	248	47.34	0
03H85HL	258	44.49	0
03H85HS	258	44.49	0
No1	241.9	40.8	0
No10	172	81.51	0
No11	214	63.47	0

No12	213.31	63.77	0
No13	213.31	63.77	0
No14	232.83	55.32	0
No15	232.83	55.32	0
03D0M3R	232	37.98	0
No17	204	67.88	0
No18	142.33	94.63	0
No19	142.33	94.63	0
No2	241.9	40.8	0
No20	142.33	94.63	0
No21	142.33	94.63	0
No22	142.33	94.63	0
No23	128.79	100.5	0
No24	128.79	100.5	0
No5	243.97	43.02	0
No6	202.16	68.11	0
No7	243.97	43.02	0
No8	245.97	45.16	0
No9	245.97	45.16	0
qhej3xjy	202	68.18	0
qhew3x92	221	60.09	0
qhpo3xfv	245	49.18	0
qib13woo	256.6	84.04	0
Y9Qj9XYC	254	46.47	0
Y9R89XY5	255	46.12	0

Model State: Solved

Generated on 2/4/2016 10:08:13 AM

Synergi Water 4.9.0: Query

MAX-DAY DEMAND WITH FIRE FLOW DEMAND @NODE #03D0M2Y
EAST CAMPUS ZONE 390HGL/559HGL

Name Pipe	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Friction Factor
401417	12	0.175	0	110
401439	12	-217.179	-0.62	110
401440	12	13.124	0.04	109
401441	12	13.124	0.04	110
401442	8	196.377	1.25	120
401443	8	202.568	1.29	120
401444	12	64.771	0.18	110
401445	12	0.175	0	110
401446	6	0.175	0	115
401447	10	14.971	0.06	115
401448	4	14.62	0.37	111
401449	10	-0.175	0	115
401686	6	0.175	0	115
401727	12	110.535	0.31	116
401731	6	33.603	0.38	106
401737	8	141.893	0.91	69
401738	12	117.643	0.33	120
401739	12	141.893	0.4	120
401740	12	117.643	0.33	120
401741	12	107.643	0.31	120
401744	12	-515.574	-1.46	114
401745	12	66.825	0.19	120
401746	12	66.825	0.19	120
401747	12	235.007	0.67	114
401748	12	235.007	0.67	113
401749	12	138.011	0.39	116
401750	12	136.299	0.39	114
401751	8	-98.708	-0.63	104
401753	12	-83.686	-0.24	116
401754	6	-26.849	-0.3	62
401757	8	-14.339	-0.09	106
401894	12	84.313	0.24	116
401895	12	264.838	0.75	116
401941	8	0.175	0	115
401942	8	-0.175	0	106
401943	8	-25.393	-0.16	73
401945	12	270.669	0.77	116
401946	12	268.385	0.76	116
401947	8	16.141	0.1	105
406271	8	2173.073	13.87	133
406275	8			133
406276	8	0	0	133

406312	12	-389.344	-1.1	114
406322	12	170.906	0.48	116
406324	10	1224.622	5	117
406325	10	1219.69	4.98	117
406326	12	3916.858	11.11	114
406327	12	-3952.9	-11.21	114
406328	12	-3916.858	-11.11	114
406329	12	-3952.9	-11.21	114
406350	8	2126.927	13.58	133
5061056	12	-54.128	-0.15	136
5061059	12	6.758	0.02	114
5061204	12	-6.758	-0.02	114
5061206	12	-515.574	-1.46	114
5061208	12	522.332	1.48	136
5061211	12	576.46	1.64	136
5061212	12	522.332	1.48	136
5061232	12	576.46	1.64	136
5061234	12	-54.128	-0.15	136
5061289	12	-54.128	-0.15	136
5061290	12	-64.771	-0.18	110
5061292	12	-515.574	-1.46	114
5346360	12	576.285	1.63	136
5346361	12	-772.486	-2.19	136
5346362	12	-772.486	-2.19	137
5346363	12	-772.486	-2.19	136
5346368	12	-772.486	-2.19	136
5346370	12	-772.486	-2.19	137
5346405	12	0.175	0	136
5346406	8	0.175	0	133
5346411	12	0.175	0	136
5346425	12	-772.486	-2.19	136
5346426	12	576.46	1.64	136
5346450	8	-772.486	-4.93	133
5346452	8	-2173.073	-13.87	133
5346454	8	-1400.587	-8.94	133
5346456	8	-2173.073	-13.87	133
5346460	8	-772.486	-4.93	133
5348000	8	0.175	0	133
5348001	12	28.235	0.08	136
5348003	10	0.175	0	135
5348006	12	152.238	0.43	136
5348043	12	-152.238	-0.43	136
5348044	12	76.747	0.22	136
5348046	12	28.586	0.08	136
5348047	10	0.351	0	135
5348079	12	28.586	0.08	136
5348085	12	128.021	0.36	136

5348089	12	28.586	0.08	136
5348091	10	0.351	0	135
5348093	10	0.175	0	135
5348095	8	0.175	0	133
5348105	12	-156.607	-0.44	136
5348107	12	99.429	0.28	136
5348112	12	236.552	0.67	116
5348115	12	-152.238	-0.43	136
5348117	12	84.313	0.24	116
5348119	12	247.089	0.7	116
5348133	12	-79.861	-0.23	136
5348134	12	-79.861	-0.23	136
5348138	8	-79.861	-0.51	70
5479281	10	0.175	0	135
5479295	12	-28.06	-0.08	136
5479336	12	-150.26	-0.43	136
5479339	12	28.06	0.08	136
5479341	12	-150.26	-0.43	120
5479342	12	0.175	0	136
5479360	12	-28.06	-0.08	136
5479363	12	128.021	0.36	136
5479364	12	150.26	0.43	136
5479365	12	28.235	0.08	136
5479366	12	-0.175	0	136
5479368	12	-141.893	-0.4	120
5484997	12	66.825	0.19	133
5535798	8	2126.927	13.58	133
5535799	8	-2173.073	-13.87	133
5535800	8	4300	27.45	133
5540406	8	2126.927	13.58	133
5590368	12	295.074	0.84	120
5590369	12	301.832	0.86	114
5590370	12	295.074	0.84	120
5590373	12	301.832	0.86	114
5590375	12	295.074	0.84	120
5590378	12	-230.303	-0.65	110
5611200	12	1869.297	5.3	136
5611202	12	1869.297	5.3	136
5611231	12	2126.927	6.03	136
5611232	12	1400.587	3.97	136
5611277	12	-3916.858	-11.11	136
5611279	12	-2047.56	-5.81	136
5611281	12	-2047.56	-5.81	136
5611282	12	1658.217	4.7	136
5611284	12	-389.344	-1.1	136
5611286	12	1658.217	4.7	136
5611287	12	1658.217	4.7	136

5611289	12	-257.63	-0.73	136
5611291	8	2126.927	13.58	133
5611296	12	1400.587	3.97	136
Pi1	8	-2173.073	-13.87	133
Pi10	8	0	0	140
Pi11	8	0	0	140
Pi12	8	0	0	140
Pi13	12	66.825	0.19	120
Pi14	8	0	0	140
Pi15	12	107.643	0.31	120
Pi16	8	0	0	140
Pi17	8	10	0.06	140
Pi18	8	0	0	140
Pi19	12	138.011	0.39	116
Pi20	8	0	0	140
Pi21	8	0	0	140
Pi22	8	0	0	140
Pi23	8	0	0	140
Pi24	12	110.535	0.31	116
Pi25	8	0	0	140
Pi3	8	0	0	140
Pi4	8	-2173.073	-13.87	133
Pi5	8	0	0	140
Pi6	12	772.486	2.19	136
Pi7	12	196.201	0.56	120
Pi8	12	14.61	0.04	120
Pi9	8	-2173.073	-13.87	133

Model State: Solved

Generated on 2/4/2016 10:21:15 AM

Synergi Water 4.9.0: Query

APPENDIX C

EXISTING AND PROPOSED CONDITIONS MAPS

DATE: 3-7-16

GENERAL LEGEND

USD BOUNDARY
CONTROL (HV-1 1350.00, V-1 1350.00)
EDGE OF CONC.
EDGE OF ASPH.
EDGE OF DIRT
AWNING
BUILDING
SIDEWALK
CURB AND GUTTER
FENCE
WALL
RETAINING WALL
GUARD RAIL
PIPE LINE
PARKING STRIPES
ROAD STRIPING
POOL
RAILROAD
RAIL SIGNAL
TANK
VAULT
DROP INLET
VALVE
CATCH BASIN
WATER LINE
FIRE HYDRANT
MANHOLE
STANDPIPE
SIGN
POWER POLE
GUY WIRE
POWER POLE
STREET LIGHT
STREET LIGHT
STOP LIGHT
MISCELLANEOUS
TREES
SINGLE TREE
PALM
INDEX CONTOUR (1350)
INTER CONTOUR (1340)

ABBREVIATIONS:

A.–Asph. = ASPHALT C.–Conc = CONCRETE OBS. = OBSCURED
U/C = UNDER CONSTRUCTION W/L = WATER LEVEL.

BUILDING ID SUMMARY

ACADEMIC/ADMINISTRATIVE

- 7 ALCALÁ PARKWEST - CORONADO
- 8 ALCALÁ PARKWEST - BARCELONA
- 10 ALCALÁ PARKWEST - ÁVILA
- 11 ALCALÁ PARKWEST - DURANGO
- 16 CAMINO HALL
- 14 COPLEY LIBRARY
- 49 DEGHERI ALUMNI CENTER
- 4 FACILITIES MANAGEMENT COMPLEX
- 20 FOUNDERS HALL
- 31 GUADALUPE HALL
- 23 HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
- 33 HAHN UNIVERSITY CENTER
- 25 HUGHES ADMINISTRATION CENTER
- 12 JOAN B. KROC INSTITUTE FOR PEACE & JUSTICE
- 36 LOMA HALL AND BOOKSTORE
- 27 MAHER HALL
- 21 MANCHESTER EXECUTIVE CONFERENCE CENTER
- 57 MANCHESTER CHILD DEVELOPMENT CENTER
- 39 MISSION CROSSROADS
- 5 MOTHER ROSALIE HILL HALL

ACADEMIC/ADMINISTRATIVE

- 19 OLIN HALL
- 40 PARDEE LEGAL RESEARCH CENTER
- 24 PROCUREMENT; COPY AND GRAPHICS
- 28 PUBLIC SAFETY, PARKING SERVICES AND VISITOR INFO
- 15 SACRED HEART HALL
- 32 SERRA HALL
- 17 SHILEY CENTER FOR SCIENCE AND TECHNOLOGY
- 13 STUDENT HEALTH CENTER
- 34 STUDENT LIFE PAVILION
- 35 WARREN HALL

PARKING STRUCTURES

- 48 MISSION PARKING
- 2 WEST MARIANWAY PARKING

ATHLETIC FACILITIES

- 47 CUNNINGHAM BASEBALL FIELD
- 60 EAST TENNIS COURTS
- 52 FIELD HOUSE
- 51 JENNY CRAIG PAVILION
- 44 MANCHESTER VALLEY FIELD
- 59 POOL
- 46 SOFTBALL FIELD
- 55 SPORTS CENTER
- 41 SPORTS FIELD
- 56 TORERO STADIUM
- 43 VALLEY FIELD
- 58 WEIGHT ROOM
- 3 WEST TENNIS COURT

ON CAMPUS DINING

- 5 BERT'S BISTRO
- 12 LA PALOMA
- 33 LA GRAN TERRAZA
- 34 PAVILION DINING/TU MERCADO
- 50 ATM/CONCESSIONS
- 27 AROMAS
- 38 MISSIONS CAFÉ

RESIDENCE HALLS/HOUSING

- 61 ALCALÁ VISTA APARTMENTS
- 16 CAMINO HALL
- 1 CASA DE ALCALÁ
- 6 CASA DE LA PAZ
- 20 FOUNDERS HALL
- 27 MAHER HALL
- 54 MANCHESTER VILLAGE APARTMENTS
- 37 MISSION HOUSING COMPLEX
- 30 PRESIDIO TERRACE APARTMENTS
- 42 SAN ANTONIO DE PADUA
- 38 SAN BUENAVENTURA

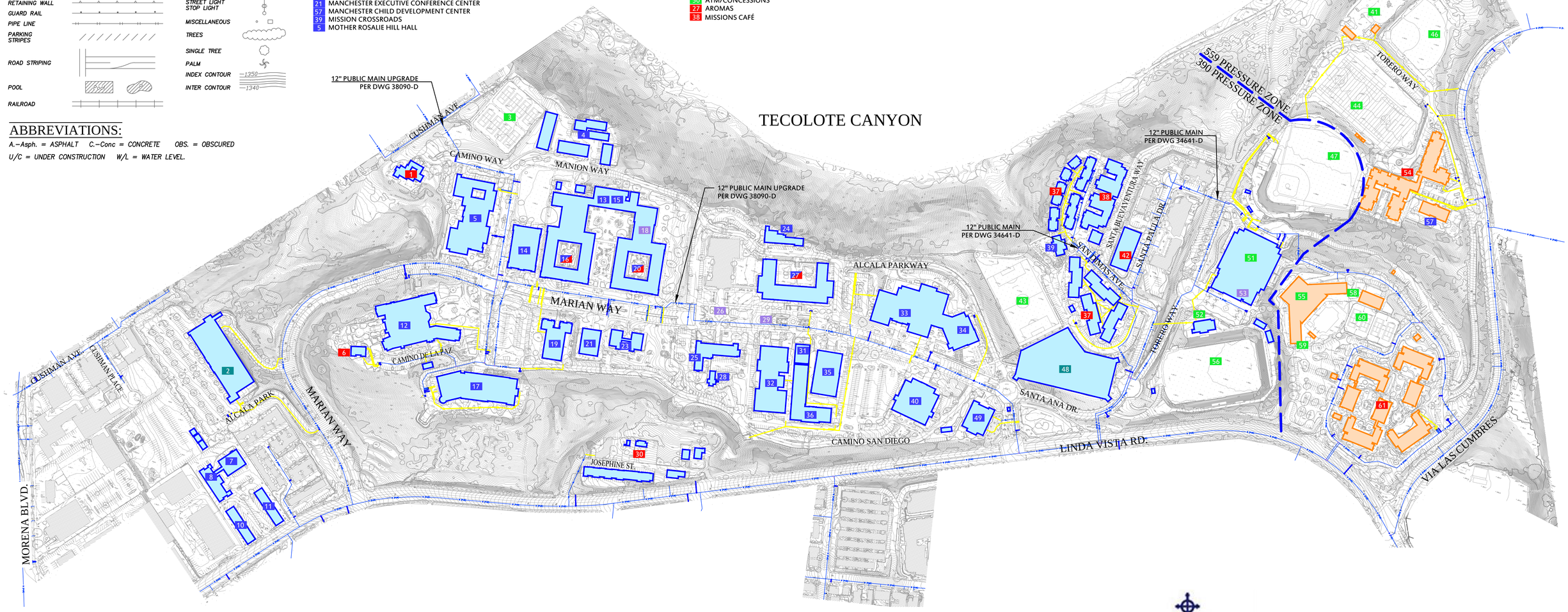
CURCHES/PLAZAS

- 18 FOUNDERS CHAPEL
- 26 COLACHIS PLAZA
- 29 PLAZA DE SAN DIEGO
- 55 EAGAN PLAZA

WATER MAP LEGEND

EXISTING WATER (PUBLIC) — W (PUB) —
EXISTING WATER (PRIVATE) — W —

SCALE: 1"=200'
N



KETTLER LEWECK
ENGINEERING
303 A STREET, SUITE 302
SAN DIEGO, CA 92101
t: 619 269-3444 | f: 619 269-3459
www.kettlerleweck.com

DRAWING SCALE

200 0 200 400
SCALE IN FEET
GRAPHIC SCALE

University of San Diego

~ USD MASTER PLAN 2015 ~

EXISTING WATER MAP

A:\PROJECTS\X059 – USD MASTER PLAN (MPS0)\ENGR\EXHIBITS\MASTER PLAN ---- WATER STUDY\X059 USD EXISTING WATER MAP.DWG (03-04-16 9:00 Plotted by: User2

DATE: 3-7-16

GENERAL LEGEND

USD BOUNDARY
CONTROL (HV-1 1350.00, V-1 1350.00)
EDGE OF CONC.
EDGE OF ASPH.
EDGE OF DIRT
AWNING
BUILDING
SIDEWALK
CURB AND GUTTER
FENCE
WALL
RETAINING WALL
GUARD RAIL
PIPE LINE
PARKING STRIPES
ROAD STRIPING
POOL
RAILROAD

RAIL SIGNAL
TANK
VAULT
DROP INLET
VALVE
CATCH BASIN
WATER LINE
FIRE HYDRANT
MANHOLE
STANDPIPE
SIGN
POWER POLE GUY WIRE
POWER POLE STREET LIGHT
STREET LIGHT STOP LIGHT
MISCELLANEOUS
TREES
SINGLE TREE
PALM
INDEX CONTOUR (1350)
INTER CONTOUR (1340)

ABBREVIATIONS:

A.-Asph. = ASPHALT C.-Conc = CONCRETE OBS. = OBSCURED
U/C = UNDER CONSTRUCTION W/L = WATER LEVEL.

BUILDING ID SUMMARY

PREVIOUSLY APPROVED PROJECTS (SHOWN FOR REFERENCE ONLY)

2	ENVIRONMENTAL STUDIES
3	COPLEY LIBRARY ADDITION
4	LANDSCAPED PEDESTRIAN MALL
6	HUGHES EXPANSION
7	SERRA HALL ADDITION
8	PEDESTRIAN MALL
9	RECREATION, WELLNESS, & AQUATIC CENTER
10	PUBLIC SAFETY
12	STADIUM GRANDSTANDS
13	ATHLETIC CENTER
14	PARKING AND SOCCER FIELD
15	EAST STUDENT HOUSING
16	SOFTBALL, GOLF & CLUB SPORTS BUILDING

MODIFIED PROJECTS

		NET FIXTURE UNITS
1	ATHLETICS/ADMIN	-7
5	ACADEMIC/ADMIN	269
11	HOUSING/STUDENT SERV.	-201

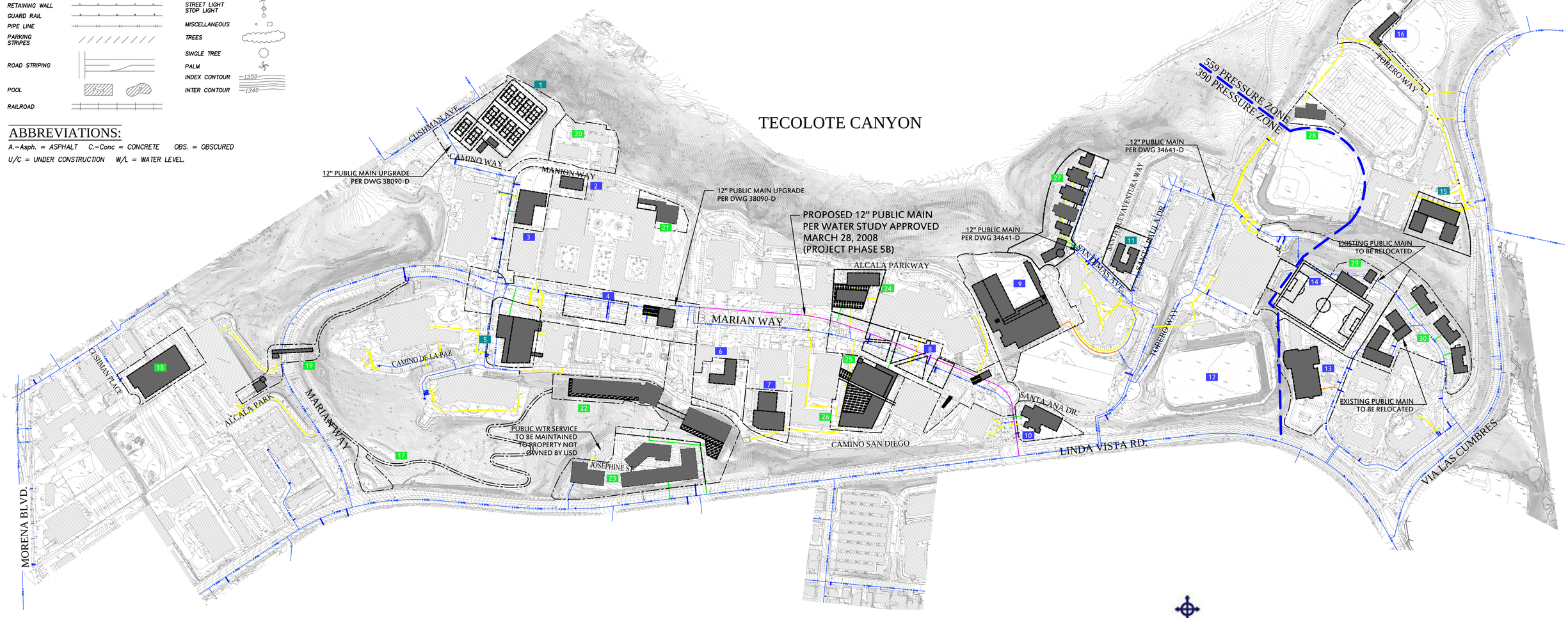
PROPOSED FACILITY

		NET FIXTURE UNITS
17	PROPOSED TRAILS/LANDSCAPE ENHANCEMENT	0
18	SERVICE SUPPORT SPACE & PARKING	0
19	PEDESTRIAN BRIDGE	0
20	ACADEMIC/ADMINISTRATIVE	0
21	ACADEMIC/ADMINISTRATIVE/STUDENT SERV.	52
22	ACADEMIC/ADMINSTRATIVE	751
23	HOUSING/PARKING	1231
24	HOUSING/PARKING	506
25	ACADEMIC/ADMINSTRATIVE	261
26	ENGINEERING EXPANSION OF LOMA HALL	256
27	HOUSING/STUDENT SERVICES	-36
28	ATHLETICS/ ADMINISTRATIVE	71
29	FACILTIES/ATHLETICS	16
30	STUDENT HOUSING/ATHLETICS/PARKING	1237

WATER MAP LEGEND

EXISTING WATER (PUBLIC) — W (PUB)
EXISTING WATER (PRIVATE) — W
PROPOSED WATER (PVT)
PROPOSED WATER (PUB) (PREVIOUSLY APPROVED PER 2008 WATER STUDY)
PROPOSED WATER (PVT) (PREVIOUSLY APPROVED PER PRIOR SCR/CUP PROCESS)

SCALE: 1"=200'
N



DRAWING SCALE

200 0 200 400
SCALE IN FEET
GRAPHIC SCALE

KETTLER LEWECK
ENGINEERING
303 A STREET, SUITE 302
SAN DIEGO, CA 92101
t: 619 269-3444 | f: 619 269-3459
www.kettlerleweck.com

~ USD MASTER PLAN 2015 ~

PROPOSED WATER MAP

X:\PROJECTS\0059 - USD MASTER PLAN (WMSS)\ENGR\EXHIBITS\MASTER PLAN ---- WATER STUDY\0059 USD PROP WATER MAP.DWG (03-04-16 9:07:34A Plotted by: User2

APPENDIX D

CITY OF SAN DIEGO SPLASH MAPS/REFERENCE DRAWINGS

City of San Diego
PUBLIC UTILITIES
Water & Wastewater

Legend

WATER [Site]
- Water Air Vacuum Release Current Water Location
- Water Blow-Off Current Water Location
- Water Cap Current Water Location
- Water Hydrant Current Location - Commercial
- Water Hydrant Current Location - Other
- Water Main Current Water Route - Treated Water As-built
- Water Reducer Current Water Location
- Water Reducer Current 400 Location - Inside Inset
- Water Regulator Valve Current Water Location - Inside Inset
- Water Sample Location Current Water Location
- Water Service Current Water Blowoff Annalve Route - As-built Service
- Water Service Current Water Display 400 100 Route - As-built Service
- Water Service Current Water Display 400 100 Route - Operational Service
- Water Service Current Water Display 400 100 Route - Private Service
- Water Station Current Water Extent
- Water Valve Current Water Location - Open Butterfly Valve
- Water Valve Current Water Location - Open Gate Valve
- Water Valve Current Water Location - Red Butterfly Valve
- Water Valve Current Water Location - Red Gate Valve
- Water Valve Current Water Location - WI Open Gate Valve
- Water Valve Current Water Location - WI Open Gate Valve with bypass
- Water Valve Current Water Isolation Location - Open Gate Valve
- Water Valve Current Water Isolation Location - WI Open Gate Valve

COMMON [Site]
- Footprint Stop Current Water Location
- Footprint Current Common Extent
- Jump Over Current Water Location
- Stabilizing Structure Current Water 400 Extent

OTHER FACILITIES [Site]
- Fuel Line Current Common Route
- HCL Water Extent
- HCL Water Location

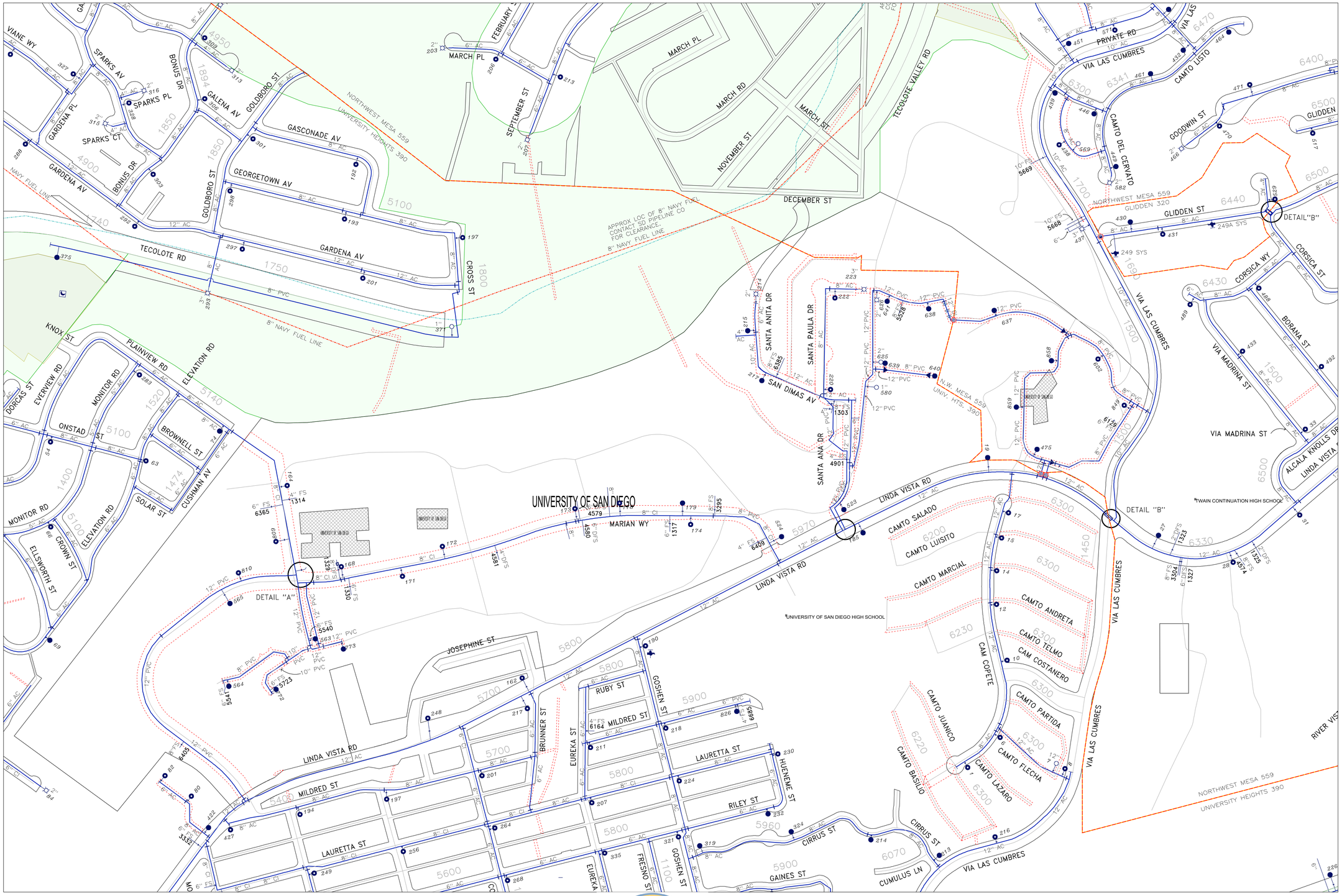
LAND SPLASH [Site]
- Easement Splash Drainage Extent
- Easement Splash General Util. Extent
- Easement Splash Private Street Extent
- Easement Splash Sewer Extent
- Easement Splash Water Extent

MAPPING [Site]
- Detail Inset Water (400) Extent
- Detail Inset Water (Common) Extent

LAND [Land]
- Road Segment Alley Route
- Road Segment Alley - New Land
- Road Segment Arterial/Collector - New Land
- Road Segment Local Street - New Land
- Road Segment Minor Hwy/Major Road - New Land
- Road Segment Paper Street - New Land
- Road Segment Private Road - New Land
- Road Segment Speed Hump - New Land
- Road Segment Walkway - New Land

Site [Site]
- Cultural Footprint Government Extent
- Cultural Point School University Location
- Cultural School Univty Footprint College University
- Hydrology Natural Line River Route
- Hydrology Natural Line Stream Route
- Hydrology Natural Poly Ocean Extent
- Hydrology Natural Poly River Extent
- Ownership Poly Environment Extent
- Ownership Poly School University Extent
- Ownership Recreation Poly Cities Extent
- Ownership Recreation Poly Park Extent

OTHER [Site]
- Railroad Route



THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANY® to SanGIS. This map is copyrighted by RAND MCNALLY & COMPANY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANY®.

City of San Diego Public Utilities
Water & Wastewater

0 Feet 100 Feet 200 Feet 300 Feet 400 Feet 500 Feet

Date Printed: 03-18-13

City of San Diego
PUBLIC UTILITIES
Water & Wastewater

Legend

WATER [Size]
- Water Hydrant.Current Location - Commercial
- Water Hydrant.Current Location - Other
- Water Main.Current Water Route - Treated Water As-built
- Water Meter.Current Water Location
- Water Meter.Small Current Location
- Water Service.Current Water 100 Route - As-built Service
- Water Service.Current Water Display 400 100 Route - As-built Service
- Water Valve.Current Water Location - Open Gate Valve
- Water Valve.Current Water Isolation Location - Open Gate Valve

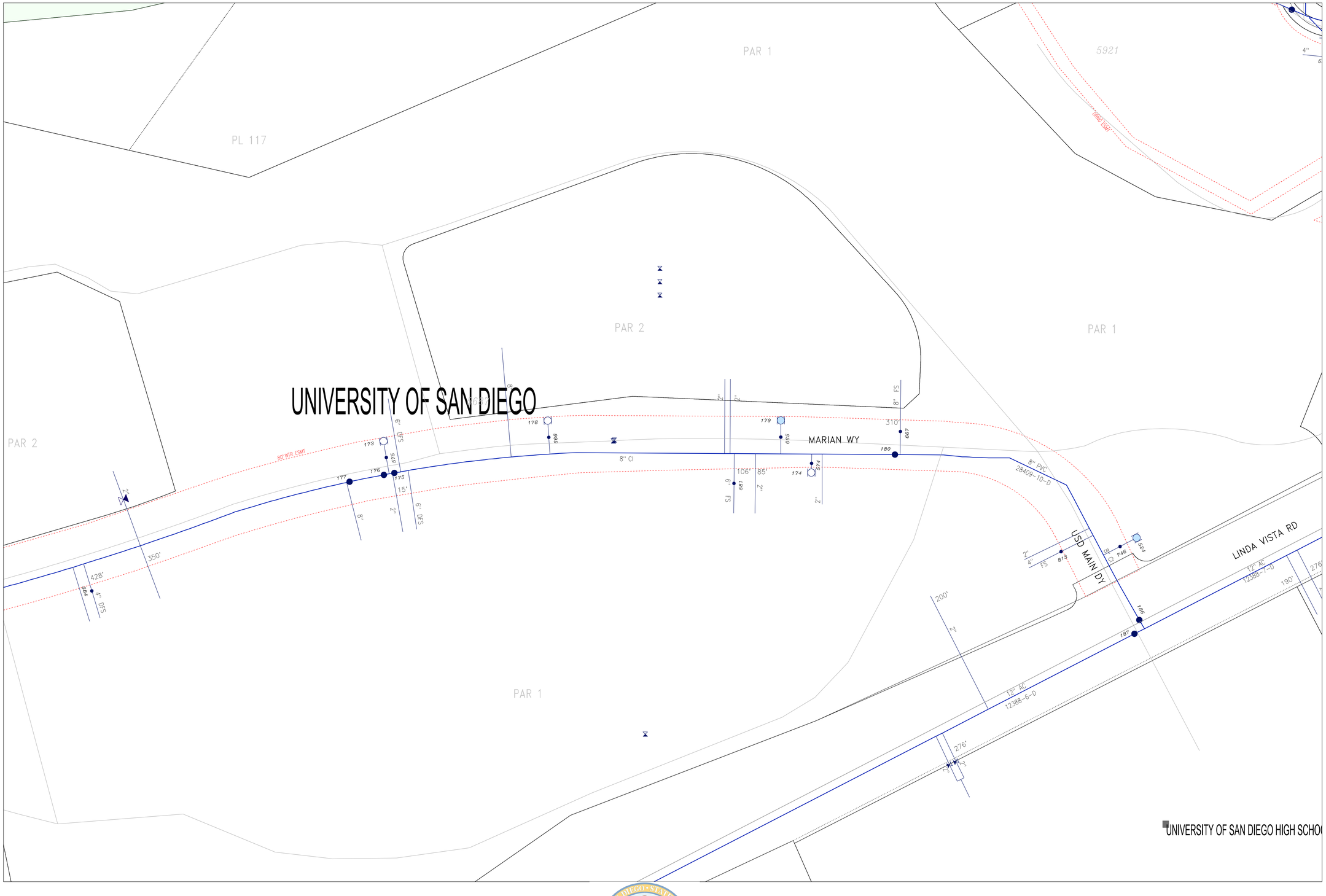
OTHER FACILITIES [Size]
- Fiber Line.Current Common Route
- HOL Water Extent

LAND [Size]
- Easement Splash Drainage Extent
- Easement Splash General Util. Extent
- Easement Splash Water Extent

LAND [Land]
- Land Area.Extent
- Parcel Area.Extent
- Road Segment.Minor Hwy/Major Road - New Land
- Road Segment.Paper Street - New Land
- Road Segment.Private Road - New Land
- Road Segment.Speed Hump - New Land
- Road Segment.Walkway - New Land

Hydrology [BROWNS] [Group]
- Hydrology Natural Line.University Location
- Hydrology Natural Line.River Route
- Hydrology Natural Line.Stream Route
- Hydrology Natural Poly.Ocean Extent
- Hydrology Natural Poly.River Extent
- Ownership Poly.Environment Extent
- Ownership Poly.School University Extent

OTHER [Group]
- Railroad.Route



THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANY® to SanGIS. This map is copyrighted by RAND MCNALLY & COMPANY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANY®.

City of San Diego Public Utilities
Water & Wastewater

0 Feet 30 Feet 60 Feet 90 Feet 120 Feet 150 Feet

Date Printed: 10-22-13

City of San Diego
PUBLIC UTILITIES
Water & Wastewater

Legend

WATER [Dis]
- Water Back-Flow Current Water Location
- Water Cap Current Water Location
- Water Hydrant Current Location - Commercial
- Water Hydrant Current Location - Other
- Water Main Current Water Route - Treated Water As-built
- Water Meter Current Water Location
- Water Meter Small Current Location
- Water Reducer Current 400 Location - Inside Inset
- Water Service Current Water 100 Route - As-built Service
- Water Service Current Water 100 Route - Operational Service
- Water Service Current Water Display 400 100 Route - As-built Service
- Water Station Current Water Extent
- Water Valve Current Water Location - Open Gate Valve
- Water Valve Current Water Location - Open Gate Valve
- Water Valve Current Water Location - W/I Open Gate Valve
- Water Valve Current Water Isolation Location - Open Gate Valve
- Water Valve Current Water Isolation Location - W/I Open Gate Valve

OTHER FACILITIES [Dis]
- Fuel Line Current Common Route
- HGL Water Extent

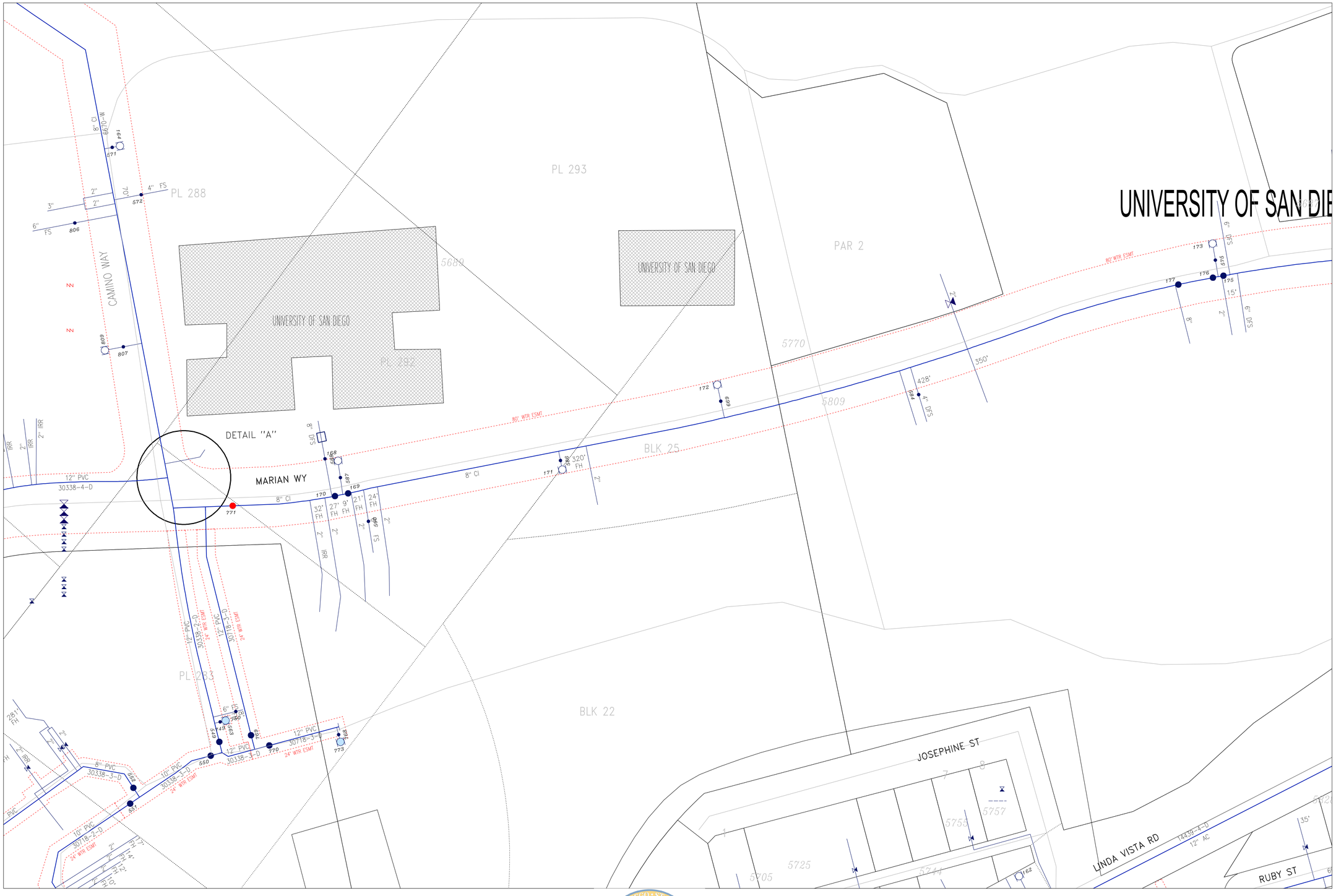
LAND SPLASH [Dis]
- Easement Splash Drainage Extent
- Easement Splash Water Extent

LAYERS [Dis]
- Detail Inset Water (Common) Extent

LAND [Dis]
- Land Area Extent
- Parcel Area Extent
- Road Segment Alley - New Land
- Road Segment Local Street - New Land
- Road Segment Minor Hwy/Major Road - New Land
- Road Segment Paper Street - New Land
- Road Segment Private Road - New Land
- Road Segment Speed Hump - New Land

THOMAS BROTHERS [Dis]
- Cultural School Univty Footprint College University
- Hydrology Natural Line River Route
- Hydrology Natural Line Stream Route
- Hydrology Natural Poly Ocean Extent
- Hydrology Natural Poly River Extent
- Ownership Poly School University Extent

OTHER [Dis]
- Railroad Route



THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANY® to SanGIS. This map is copyrighted by RAND MCNALLY & COMPANY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANY®.

City of San Diego Public Utilities
Water & Wastewater

0 Feet 30 Feet 60 Feet 90 Feet 120 Feet 150 Feet

Date Printed: 10-22-13

IMPROVEMENT PLANS
FOR THE UNIVERSITY OF SAN DIEGO
MISSION APARTMENT AREA
PUBLIC 12-INCH WATER MAIN

GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER DOES NOT AUTHORIZE ANY WORK TO BE PERFORMED UNTIL A PERMIT HAS BEEN ISSUED.

2. THE APPROVAL OF THIS PLAN OR ISSUANCE OF A PERMIT BY THE CITY OF SAN DIEGO DOES NOT AUTHORIZE THE SUBDIVIDER AND OWNER TO VIOLATE ANY FEDERAL, STATE OR CITY LAWS, ORDINANCES, REGULATIONS, OR POLICIES, INCLUDING, BUT NOT LIMITED TO, THE FEDERAL ENDANGERED SPECIES ACT OF 1973 AND AMENDMENTS THERETO (16 USC SECTION 1531 ET.SEQ.)

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LAND SURVEYOR MUST FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK. IF DESTROYED, A LAND SURVEYOR SHALL REPLACE SUCH MONUMENTS WITH APPROPRIATE MONUMENTS. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED AS REQUIRED BY THE PROFESSIONAL LAND SURVEYORS ACT. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF SAN DIEGO FIELD SURVEY SECTION MUST BE NOTIFIED, IN WRITING, AT LEAST 3 DAYS PRIOR TO THE CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

4. IMPORTANT NOTICE: SECTION 4216 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER, CALL UNDERGROUND SERVICE ALERT, TOLL FREE 1-800-422-4133, TWO DAYS BEFORE YOU DIG.

5. CONTRACTOR SHALL IMPLEMENT AN EROSION AND SEDIMENT CONTROL PROGRAM DURING THE PROJECT GRADING AND/OR CONSTRUCTION ACTIVITIES. THE PROGRAM SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE STATE WATER RESOURCE CONTROL BOARD AND THE CITY OF SAN DIEGO MUNICIPAL CODE AND STORM WATER STANDARDS MANUAL.

6. "PUBLIC IMPROVEMENT SUBJECT TO DESUETUDE OR DAMAGE." IF REPAIR OR REPLACEMENT OF SUCH PUBLIC IMPROVEMENTS IS REQUIRED, THE OWNER SHALL OBTAIN THE REQUIRED PERMITS FOR WORK IN THE PUBLIC RIGHT-OF-WAY, SATISFACTORY TO THE PERMIT- ISSUING AUTHORITY.

7. ALL EXISTING AND/OR PROPOSED PUBLIC UTILITY SYSTEM AND SERVICE FACILITIES SHALL BE INSTALLED UNDERGROUND IN ACCORDANCE WITH SECTION 144.0240 OF THE MUNICIPAL CODE.

8. PRIOR TO ANY DISTURBANCE TO THE SITE, EXCLUDING UTILITY MARK-OUTS AND SURVEYING, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR A PRE-CONSTRUCTION MEETING WITH THE CITY OF SAN DIEGO FIELD ENGINEERING DIVISION (858) 627-3200.

9. DEVIATIONS FROM THESE SIGNED PLANS WILL NOT BE ALLOWED UNLESS A CONSTRUCTION CHANGE IS APPROVED BY THE CITY ENGINEER OR THE CHANGE IS REQUIRED BY THE CITY INSPECTOR.

10. AS-BUILT DRAWINGS MUST BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO ACCEPTANCE OF THIS PROJECT BY THE CITY OF SAN DIEGO.

11. CONTRACTOR SHALL REMOVE AND REPLACE ALL UTILITY BOXES SERVING AS HANDHOLES THAT ARE NOT IN "AS-NEW" CONDITION IN PROPOSED SIDEWALK. DAMAGED BOXES, OR THOSE THAT ARE NOT IN COMPLIANCE WITH CURRENT CODE SHALL BE REMOVED AND REPLACED WITH NEW BOXES, INCLUDING WATER, SEWER, TRAFFIC SIGNALS, STREET LIGHTS, DRY UTILITIES-SDG&E, COX, ETC. ALL NEW METAL LIDS SHALL BE SLIP RESISTANT (FRICTION FACTOR >/= 0.50) AND INSTALLED FLUSH WITH PROPOSED SIDEWALK GRADE. IF A SLIP RESISTANT METAL LID IS NOT COMMERCIALLY AVAILABLE FOR THAT USE, NEW BOXES AND LIDS SHALL BE INSTALLED.

WATER AND SEWER NOTES

1. LOCATE WATER SERVICE AND SEWER HOUSE CONNECTIONS OUT OF DRIVEWAYS. THE SEWER HOUSE CONNECTIONS SHALL BE A MINIMUM OF 5 FEET DOWNHILL FROM THE WATER SERVICE.

2. ALL CONNECTIONS TO EXISTING WATER MAINS ARE TO BE DONE BY THE CITY'S WATER DEPARTMENT FOR WHICH THE FOLLOWING FEES WILL BE CHARGED. IF THE CONNECTIONS ARE NOT READY TO BE MADE AND THE FEES PAID BEFORE AUG. 28, 2008, THE CITY RESERVES THE RIGHT TO ADJUST THE FEES ACCORDING TO THE FEE SCHEDULE IN EFFECT AT THE TIME THE CONNECTIONS ARE MADE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXPOSE THE EXISTING MAIN AT THE CONNECTION POINT AND TO INSTALL THE NEW MAIN AT THE ALIGNMENT AND GRADE WHICH WILL PERMIT THE CITY TO MAKE A "STRAIGHT-IN" CONNECTION WITHOUT USING MORE THAN 10 LINEAL FEET OF PIPE.

	COST	TYPE OF CONNECTION	SHEET
ITEM NO. 1:	$11,080	12"x12"x12" TEE CUT-IN	2
ITEM NO. 2:	$11,080	12"x12"x12" TEE CUT-IN	2
ITEM NO. 3:	$2,570	ABANDON (CAP) 8" SERVICE	3
ITEM NO. 4:	$3,254	2" WET TAP	3
ITEM NO. 5:	$4,174	8"x8" STRAIGHT IN CONNECTION	4
ITEM NO. 6:	$10,111	12"x12"x12" TEE CUT-IN	4
ITEM NO. 7:	$15,158.38	12" CROSS CUT-IN	2

CONTRACTOR TO SET SADDLE/TAPPING SLEEVE AND CORPORATION STOP/TAPPING VALVE FOR ALL WET TAPS

3. ALL VALVES WILL BE FLANGED TO CROSSES AND TEES. ONLY GATE VALVES SHALL BE USED IN FIRE HYDRANTS INSTALLATIONS.

4. ALL BURIED DUCTILE AND GRAY CAST IRON PIPE, FITTINGS, VALVES AND APPURTENANCES SHALL BE COATED WITH A DIALECTIC COATING AND A LIQUID EPOXY COATING SYSTEM PER AWWA C-210 AT 24 MIL. MINIMUM DRY FILM THICKNESS (MDFT) OR COLD APPLIED THREE PART SYSTEM PETROLEUM WAX TAPE SYSTEM PER AWWA C-217 OR A 100% POLYURETHANE COATING OF 24 MIL. MDFT SUITABLE FOR BURIED USE.

5. ALL PROPOSED WATER AND SEWER FACILITY INSTALLATIONS SHALL BE CONSTRUCTED WITH MATERIALS CURRENTLY LISTED IN THE MOST CURRENT EDITION OF THE CITY OF SAN DIEGO WATER UTILITIES DEPARTMENT APPROVED MATERIALS LIST AS REFERENCED IN THE STANDARD SPECIFICATONS FOR PUBLIC WORKS CONSTRUCTION. RECENT REVISIONS INCLUDE BUT IS NOT LIMITED TO THE REQUIREMENT FOR POLYMER CONCRETE WATER METER BOXES INSTEAD OF STANDARD PRECAST CONCRETE WATER METER BOXES.

6. ALL HORIZONTAL AND VERTICAL SEPARATION DIMENSIONS SHOWN BETWEEN WATER AND SEWER MAINS SHALL BE MEASURED FROM THE NEAREST EDGE OF EACH PIPELINE PER STATE OF CALIFORNIA, DEPARTMENT OF HEALTH SERVICES, BASIC SEPARATION STANDARDS.

7. NO TREES OR SHRUBS GREATER THAN 3 FEET IN HEIGHT AT MATURITY ARE ALLOWED WITHIN 10 FEET HORIZONTALLY OF ANY SEWER MAIN OR SEWER LATERAL.

8. PROVIDING WATER AND SEWER FOR THIS DEVELOPMENT IS DEPENDENT UPON PRIOR CONSTRUCTION OF CERTAIN WATER AND SEWER FACILITIES IN PREVIOUSLY APPROVED DEVELOPMENTS. IF THESE FACILITIES HAVE NOT BEEN CONSTRUCTED AND ACCEPTED BY THE CITY AT THE TIME OF CONNECTION, THEN CERTAIN PORTIONS OF THESE PREVIOUSLY APPROVED OR PLANNED WATER AND SEWER FACILITIES, AS REQUIRED BY THE CITY ENGINEER, WILL BECOME OFF-SITE IMPROVEMENTS AS PART OF THIS DEVELOPMENT. PRIOR TO CONNECTION TO PUBLIC WATER AND SEWER FACILITIES, THESE OFF-SITE IMPROVEMENTS MUST BE CONSTRUCTED AND ACCEPTED BY THE CITY AND DOCUMENTED AS A CONSTRUCTION CHANGE TO THIS DEVELOPMENT.

9. ALL EXISTING UNUSED SEWER LATERALS SHALL BE PLUGGED AT PROPERTY LINE BY CONTRACTOR.

SPECIAL NOTE

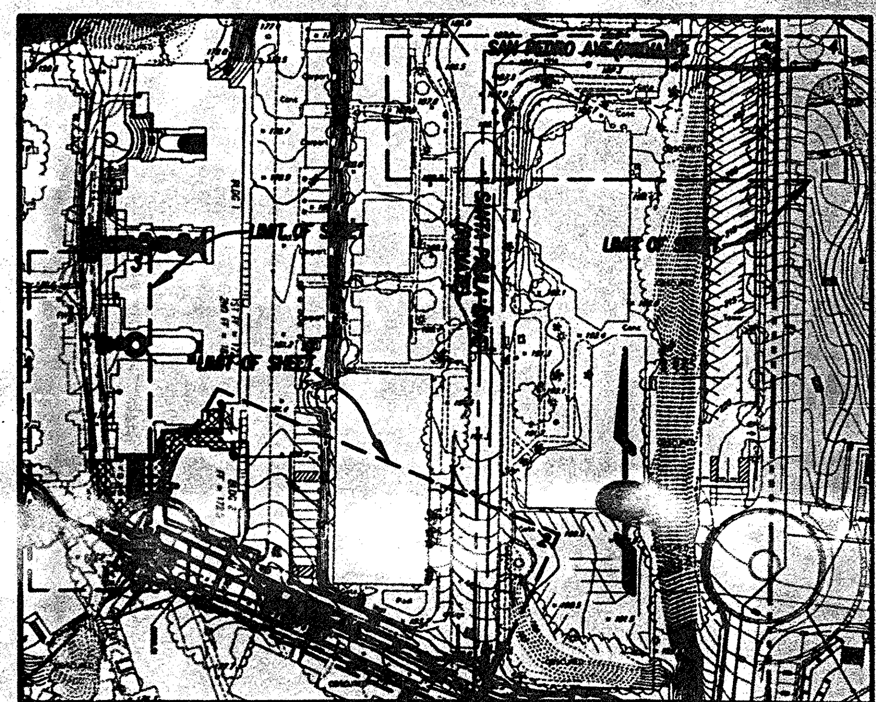
THE FOLLOWING NOTES ARE PROVIDED TO GIVE DIRECTION TO THE CONTRACTOR BY THE ENGINEER OF WORK. THE CITY ENGINEER'S SIGNATURE ON THESE PLANS DOES NOT CONSTITUE APPROVAL OF ANY OF THESE NOTES AND THE CITY WILL NOT BE RESPONSIBLE FOR THERE ENFORCEMENT.

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INLCUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD COUNTY OF SAN DIEGO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF COUNTY OF SAN DIEGO PROFESSIONAL.

UNAUTHORIZED CHANGES & USES:
THE ENGINEER PREPARING THE PLANS WILL NOT BE RESPONSIBLE FOR, LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

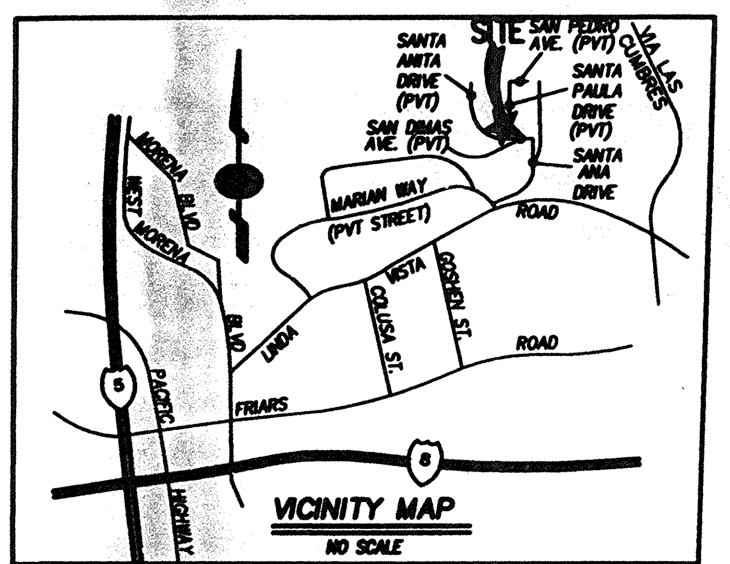
CONSTRUCTION CHANGE TABLE

CHANGE	DATE	EFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.
A	12/3/08	1,3	



KEY MAP
1"=100'

LEGEND
4: SHEET NUMBER



VICINITY MAP
NO SCALE

SHEET INDEX

TITLE SHEET .... SHEET 1
IMPROVEMENT PLANS .... SHEET 2-4

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

STEVEN C. KETTLER R.C.E 48358 EXPIRES: 6-30-2008 — 1/28/08 DATE

OWNER/APPLICANT

OWNER
UNIVERSITY OF SAN DIEGO,
A CALIFORNIA CORPORATION
FACILITIES MANAGEMENT
5998 ALCALA PARK
SAN DIEGO, CA 92110
P. 619-260-4600
F. 619-260-4634

REFERENCE DRAWINGS

5757-D, 5758-D, 29534-D, 19325-D

SITE ADDRESS

SAN DIMAS AVE., SAN PEDRO AVE.

TOPOGRAPHY SOURCE

EXISTING TOPOGRAPHY SHOWN ON THIS PLAN IS BASED UPON AERIAL TOPOGRAPHY FLOWN ON 04-14-99 BY;

SAN-LO AERIAL SURVEYS
4875 VIEWRIDGE AVENUE
SAN DIEGO, CA 92123-1667
P. 619-565-1024

ADDITIONAL SURVEY INFORMATION PROVIDED ON 1-07 BY;

MELCHIOR LAND SURVEYING
5731 PALMER WAY, SUITE G
CARLSBAD, CA 92008
P. 760-438-1726

BENCHMARK

BRASS PLUG AT NOSE OF CENTER MEDIAN LINDA VISTA ROAD AND MARIAN WAY WEST ENTRANCE TO U.S.D. ELEVATION: 57.842 DATUM: M.S.L.

ASSESSORS PARCEL NUMBER

APN: 437-640-27, 437-640-32, 437-640-33, 437-010-22

LEGAL DESCRIPTION

PARCEL 1 & 2 OF PARCEL MAP NO. 18098, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JULY 9th, 1998.

PARCEL 3 OF PARCEL MAP NO. 17820, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JANUARY 31, 1997.

PARCEL 1 OF PARCEL MAP NO. 14447, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, SEPTEMBER 4, 1986.

PRIVATE WATER AND WASTEWATER

ALL PROPOSED PRIVATE WATER/SEWER IMPROVEMENTS SHOWN ON THESE PLANS ARE FOR REFERENCE ONLY TO AVOID CONFLICTS AND TO SHOW CONNECTIONS TO PUBLIC WATER/SEWER LATERALS AND MAINS. CITY ENGINEER SIGNATURE DOES NOT CONSTITUTE APPROVAL OF PRIVATE WATER/SEWER SHOWN ON THESE PLANS. ALL PROPOSED PRIVATE WATER/SEWER SHOWN ON THESE PLANS SHALL BE INSTALLED UNDER SEPERATE PLUMBING PERMIT ISSUED BY THE CITY OF SAN DIEGO.

TOTAL DISTURBED AREA

0.08 ACRES (3,447 SQ. FT.)

IMPORTANT NOTICE
Section 4216 of the Government Code requires that a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number Call Underground Service Alert
TOLL FREE 1-800-422-4133
Two working days before you dig

Latitude 33
Planning and Engineering
4933 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
Tel 858-751-0633 Fax 858-751-0634

DESIGNED BY	DRAWN BY	CHECKED BY
JCW	RR	SCK

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS:

1. STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2006 EDITION (GREENBOOK), DOCUMENT NO. AEC1231081, FILED DECEMBER 31, 2006, INCLUDING THE REGIONAL AND CITY OF SAN DIEGO SUPPLEMENT, DOCUMENT NO. AEC1231082, FILED DECEMBER 31, 2006.

2. 1999 STANDARD SPECIAL PROVISIONS FOR SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS OF THE CITY OF SAN DIEGO, DOCUMENT NO. 769842, FILED OCTOBER 22, 1999.

3. CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (FHWA'S MUTCD, 2003 EDITION, AS AMENDED FOR USE IN CALIFORNIA), DOCUMENT NO. AEC1231084, FILED DECEMGER 31, 2006.

4. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DOCUMENT NO. AEC0925082, FILED SEPTEMBER 25, 2006.

STANDARD DRAWINGS:

1. CITY OF SAN DIEGO STANDARD DRAWINGS, INCLUDING ALL REGIONAL STANDARD DRAWINGS, DOCUMENT NO. AEC1231083, FILED DECEMBER 31, 2006.

2. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD PLANS, DOCUMENT NO. AEC0925081, FILED SEPTEMBER 25, 2006.

LEGEND

ITEM	STANDARD DRAWING	SYMBOL
EXISTING		
PROPERTY LINE		
EXISTING EASEMENT		
EXISTING SPOT ELEVATIONS		(426.33) X 426.33
EXISTING CONTOUR		424
EXISTING SANITARY SEWER & MANHOLE		S
EXISTING WATER MAIN		W
EXISTING FIRE HYDRANT ASSEMBLY		
EXISTING WATER GATE VALVE		W
EXISTING CHILLED WATER		CW
EXISTING GAS MAIN		G
EXISTING STORM DRAIN		
EXISTING STORM DRAIN STRUCTURE		
EXISTING UNDERGROUND TELEPHONE		T
EXISTING UNDERGROUND CABLE TV		TV
EXISTING ELECTRICAL LINE		E
EXISTING CURB & GUTTER		
EXISTING GUARDRAIL		
EXISTING TREES		
EXISTING STREET LIGHT		
PROPOSED		
TRENCH RESURFACING (PVT)	SDG-107	
PROPOSED 12" PVC WATER	SDW-100, WP-01, WP-02, WT-01	W
PROPOSED WATER GATE VALVE	SDW-100, SDW-108, WT-01, WV-02, WV-03, WV-04	
2-2" MANIFOLDED WATER METER (SEE DETAIL SHT. 3)	SDW-100, SDW-115, WP-01, WS-02, WS-03	W
PRIVATE CMU WALL (PER SEPARATE PERMIT)		
THRUST BLOCK	WT-01	
SIDEWALK REMOVAL/ REPLACEMENT (PVT)	G-11	
PROPOSED 2" IRRIGATION SERVICE	SDW-100, SDW-135 WP-01, WS-02, WS-03	I

ENGINEERING PERMIT NO. 480052 CONSTRUCTION SITE PRIORITY: MEDIUM

PRIVATE CONTRACT

IMPROVEMENT PLANS
UNIVERSITY OF SAN DIEGO
MISSION APARTMENT AREA
PUBLIC 12-INCH WATER

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 1 OF 4 SHEETS

W.O. NO. 428361
P.T.S NO. 137899
FOR CITY ENGINEER — DATE 2/19/08
T.M.

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	L33			
A CHANGE	L33		12/3/08	
AS-BUILTS				

1861-6272 NAD83 COORDINATES
221-1712 LAMBERT COORDINATES

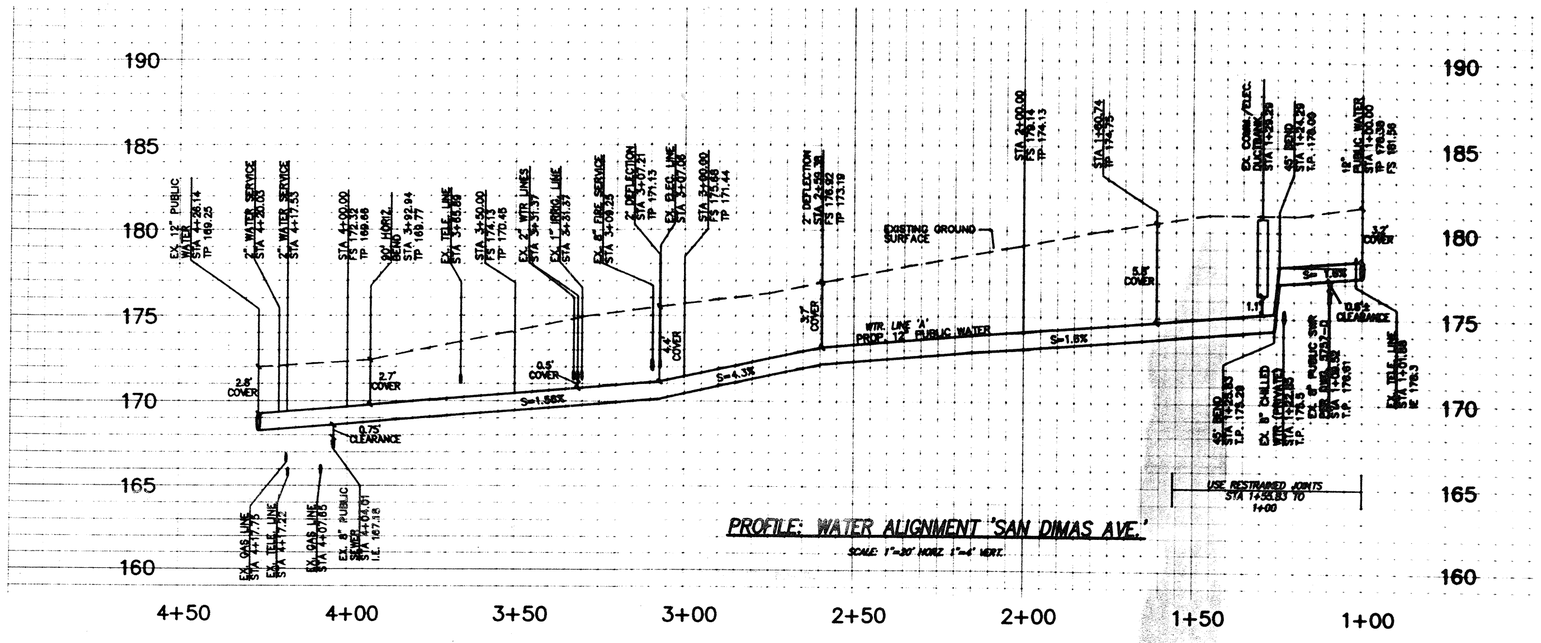
CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

34641-1-D

A REVISED CONSTRUCTION CHANGE TABLE; REVISED WATER AND SEWER NOTE NO. 2; REVISED LEGEND

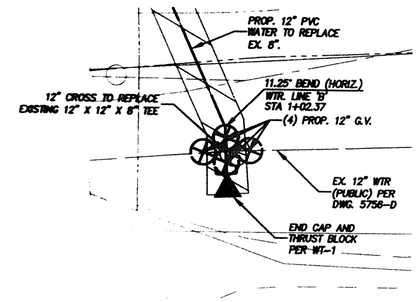
H:\800\886.00\IP\886-IP-01.dwg 1/2/2008 11:48:53 AM PST

FILMED FROM THE ORIGINAL. BEST QUALITY OBTAINABLE. EXCESSIVE GRAY BACKGROUND MAY CAUSE A POOR QUALITY REPRODUCTION.

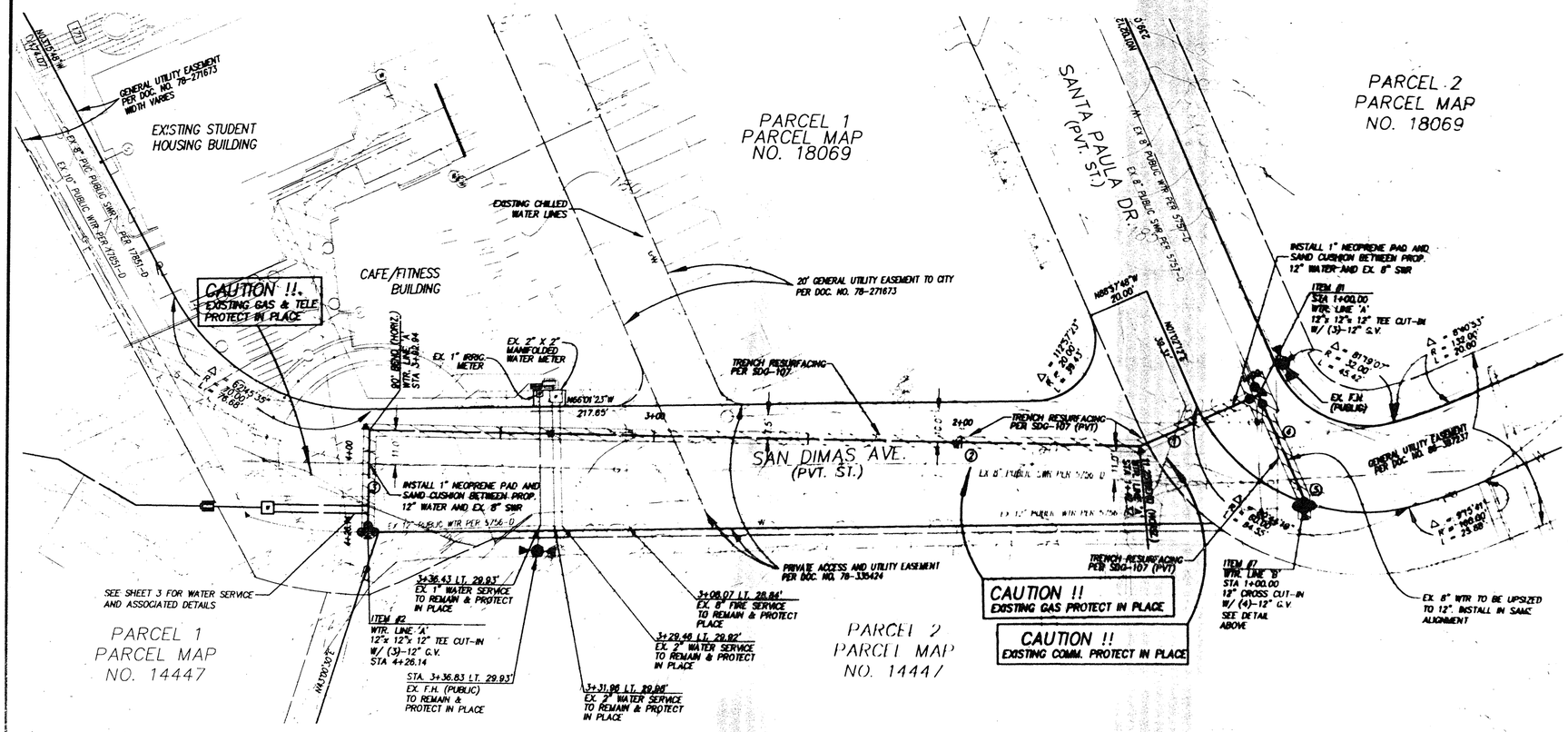


WATER DATA (PUBLIC)			
NO.	DELTA/BRNG RADIUS	LENGTH	REMARKS
1	N88°57'48"W	42.37'	12" PVC (SDR-14)
2	N84°08'54"W	250.58'	"
3	N25°51'06"E	33.19'	"
4	N01°02'12"E	36.80'	"
5	N23°14'37"E	2.37'	"

NOTE:
CONTRACTOR TO REPLACE ALL DAMAGED OR DESTROYED SURFACE IMPROVEMENTS IN KIND.



ITEM #7 CONNECTION DETAIL
NO SCALE
NOTE: THE EXISTING PIPE ALIGNMENT MAY VARY FROM WHAT IS SHOWN. THE NEW 12" MAIN SHALL BE INSTALLED IN THE SAME ALIGNMENT AS THE EXISTING 8" MAIN.



STEVEN C. KETTLER R.C.E. 48358 EXPIRES: 6-30-2008 1/23/08 DATE

PRIVATE CONTRACT

DESIGNED BY	DRAWN BY	CHECKED BY
SCW	RR	SCL

IMPROVEMENT PLANS

UNIVERSITY OF SAN DIEGO MISSION APARTMENT AREA PUBLIC 12-INCH WATER

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 2 OF 4 SHEETS

FOR CITY ENGINEER — DATE 2/12/08

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	LJS			
AS-BUILTS				

W.O. NO. 428361
P.T.S NO. 137899
T.M.
1881-6272 NAD83 COORDINATES
221-1712 LAMBERT COORDINATES

CONTRACTOR ..... DATE STARTED .....
INSPECTOR ..... DATE COMPLETED .....

34641-2-D

H:\800\886.00\IP\886-IP-02.dwg 1/2/2008 11:49:35 AM PST

...ED FROM THE ORIGINAL. BEST QUAL...
...AINABLE. EXCESSIVE GRAY BACKGRO...
...CAUSE A POOR QUALITY REPRODUCTI...

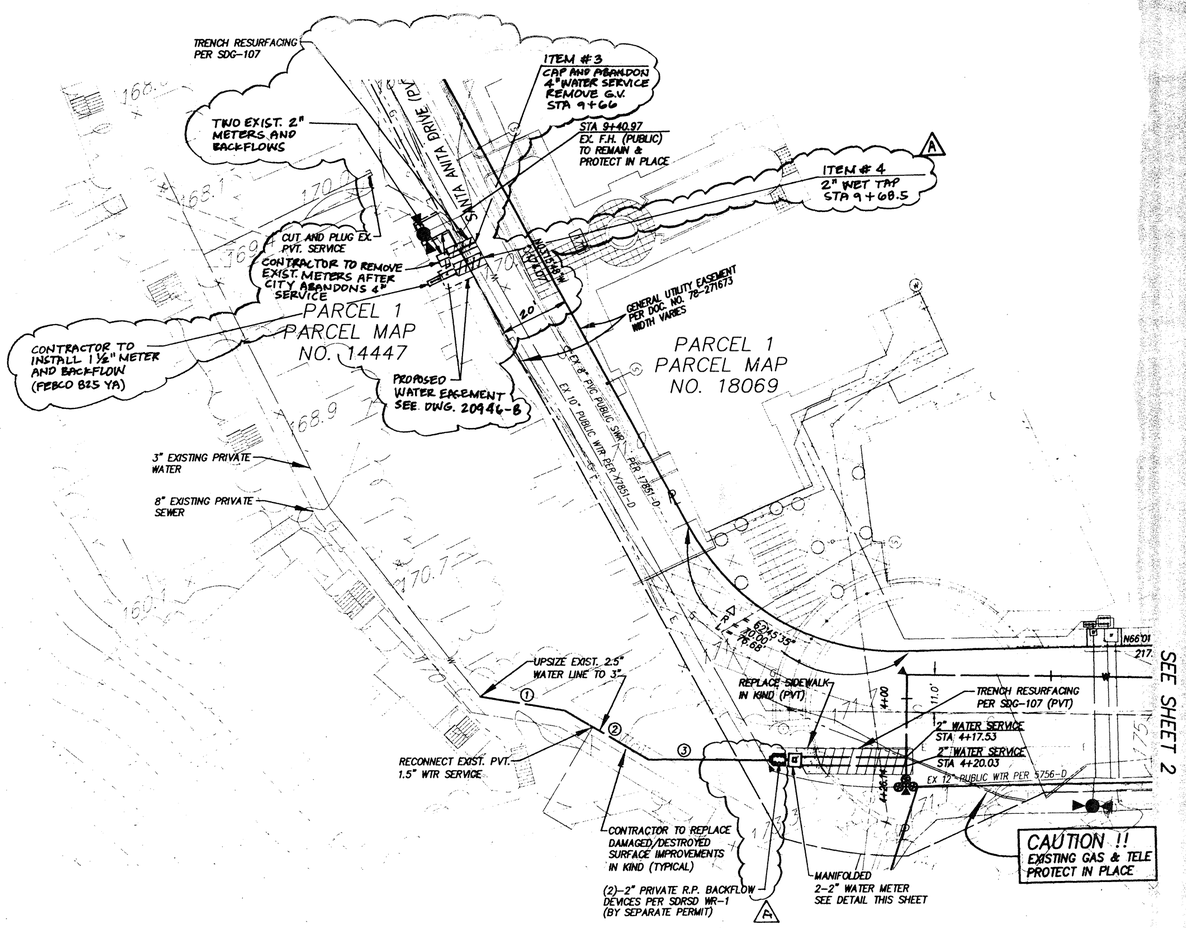
0 1 2 3 4 IN.

WATER DATA (PRIVATE)			
NO.	DELTA/BRNG RADIUS	LENGTH	REMARKS
1	N55°23'09"W	25.15'	3" PVC (CL-150)
2	N34°13'13"W	28.93'	"
3	N64°08'54"W	21.13'	"

NOTE:
CONTRACTOR TO REPLACE ALL DAMAGED OR DESTROYED SURFACE IMPROVEMENTS IN KIND.

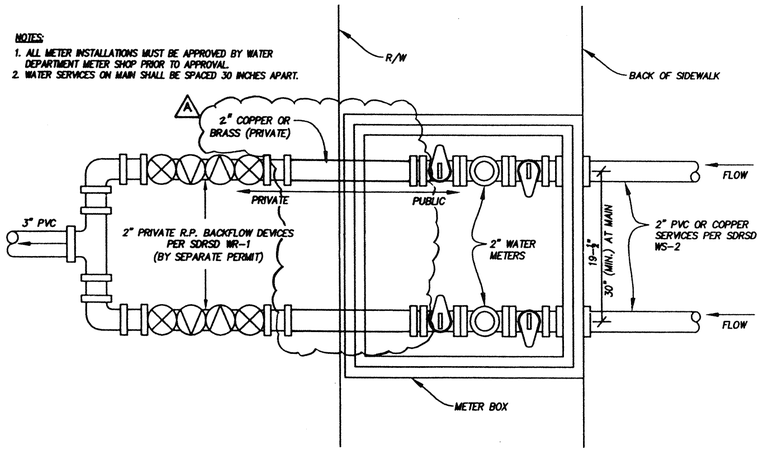
PRIVATE WATER NOTE

PRIVATE WATER: THE PRIVATE WATER SYSTEM IS DESIGNED IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE AND IS SHOWN ON THESE PLANS AS "INFORMATION ONLY." A SEPARATE PLUMBING PERMIT IS REQUIRED FOR CONSTRUCTION AND INSPECTION OF THE SYSTEM.



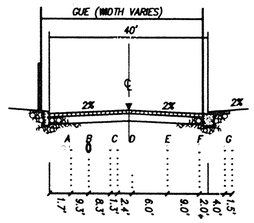
SCALE: 1"=20'

NOTES:
1. ALL METER INSTALLATIONS MUST BE APPROVED BY WATER DEPARTMENT METER SHOP PRIOR TO APPROVAL.
2. WATER SERVICES ON MAIN SHALL BE SPACED 30 INCHES APART.



DETAIL: MANIFOLDED 2" WATER SERVICES AND METER BOX

NO SCALE



SAN DIMAS AVE. (PVT) SECTION

NO SCALE

A EXIST. 2-4" CHILLED WATER (PRIVATE)
B PROPOSED 12" WATER (PUBLIC)
C EXIST. GAS/ELECTRIC
D EXIST. 8" SEWER (PUBLIC)
E EXIST. TELE
F EXIST. 12" WATER (PUBLIC)
G EXIST. TELE/ELEC

REGISTERED PROFESSIONAL ENGINEER STEVEN C. KETTLER No. 48358 Exp. 06-30-08 CIVIL STATE OF CALIFORNIA

STEVEN C. KETTLER R.C.E 48358 EXPIRES: 6-30-2008 DATE 1/28/08

Latitude 33
Planning and Engineering
4983 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
Tel 858-751-0633 Fax 858-751-0634

DESIGNED BY	DRAWN BY	CHECKED BY
JCW	RR	SK

PRIVATE CONTRACT

IMPROVEMENT PLANS
UNIVERSITY OF SAN DIEGO
MISSION APARTMENT AREA
PUBLIC 12-INCH WATER

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 3 OF 4 SHEETS

W.O. NO. 428361
P.T.S NO. 137899

FOR CITY ENGINEER — DATE 3/12/08 — T.M.

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	L33			
A CHANGE	L33		1/2/08	
AS-BUILTS				

1861-6272 NAD83 COORDINATES
221-1712 LAMBERT COORDINATES

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

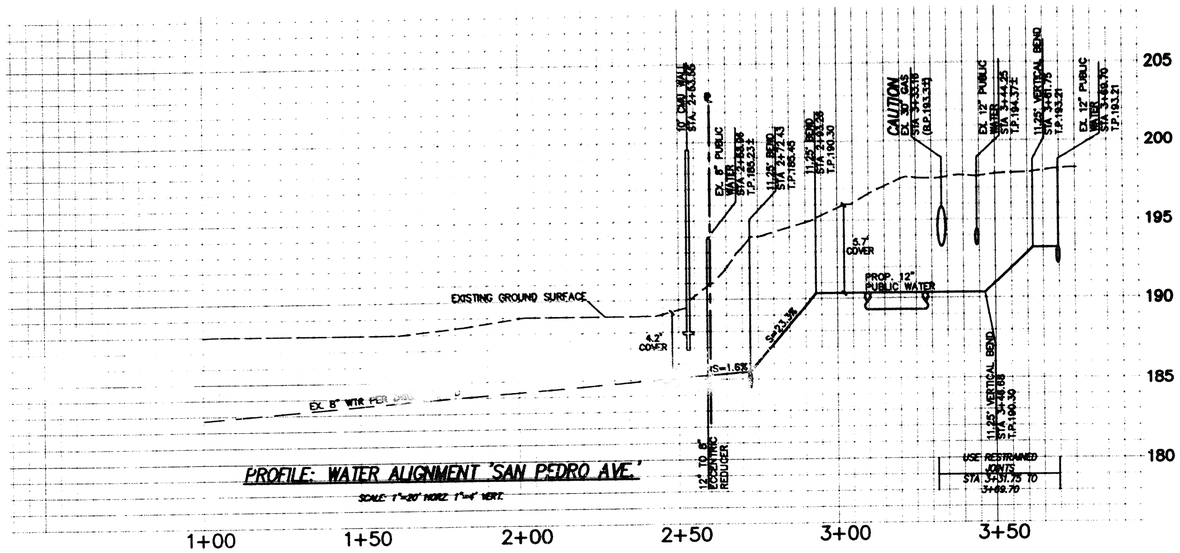
34641-3-D

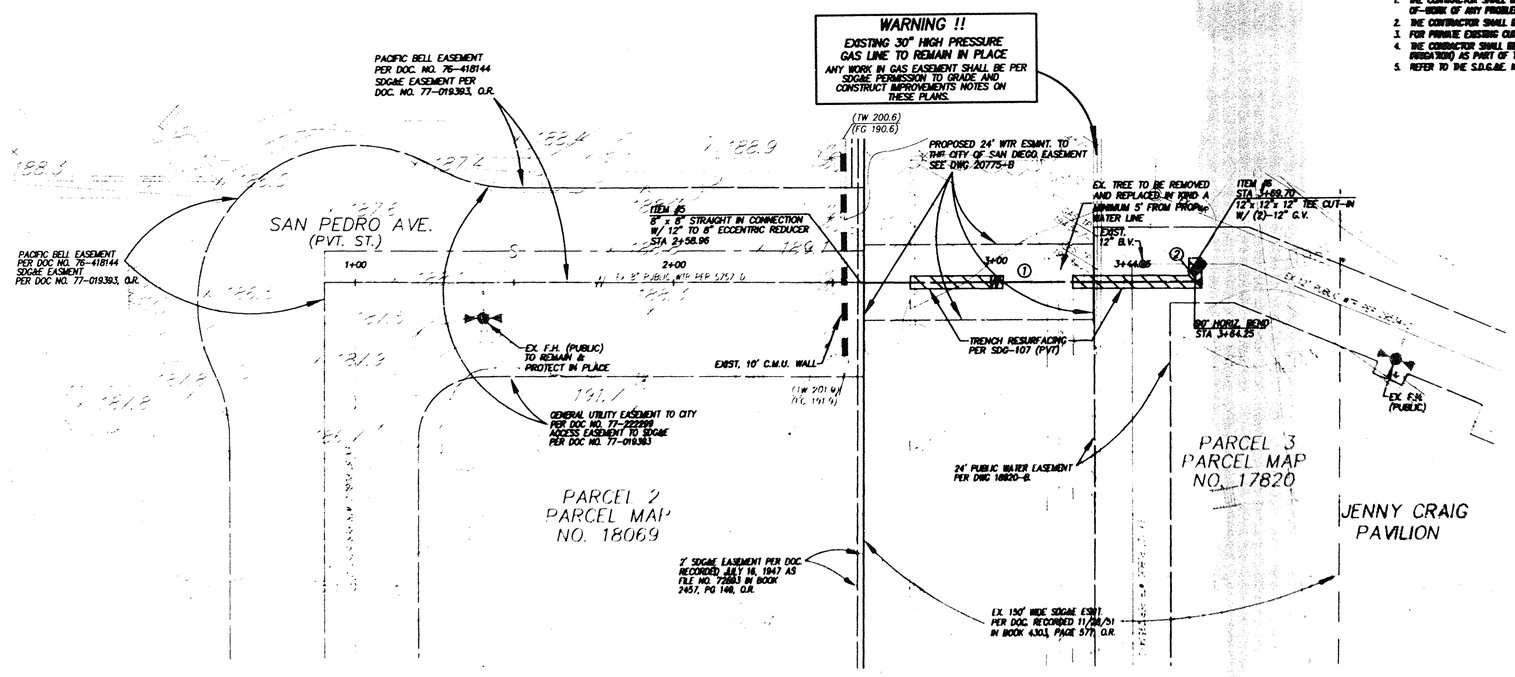
A KILL 4" SERVICE; ADD 2" SERVICE, RELOCATED BACKFLOW DEVICE, REVISED DETAIL

H:\800\886.00\IP\886-IP-03.dwg 1/2/2008 11:50:36 AM PST

FILMED FROM THE ORIGINAL. BEST QUALITY OBTAINABLE. EXCESSIVE GRAY BACKGROUND MAY CAUSE A POOR QUALITY REPRODUCTION.

0 1 2 3 4 IN.





San Diego Gas & Electric Permission to Grade and Construct Improvements

Permission is hereby granted to the University of San Diego (Permittee), to grade and construct improvements as shown on these plans within San Diego Gas & Electric Company's easement(s) subject to the following conditions:

1. **Submittals**
   - 1.1. Permittee agrees to supply SDG&E with 'as built' grading, improvement and profile plans to SDG&E specifications, if requested.
   - 1.2. Permittee agrees to submit for review and approval a blasting plan prior to blasting, if blasting is required.
2. **Pre-Construction Meetings** SDG&E's Land Management Representative (LMR) must be invited with at least three (3) working days prior notice.
3. **Grading**
   - 3.1. At least twenty-four (24) hours notice must be given to SDG&E's LMR before start of work. Field changes to plans within said easement shall be approved in writing by SDG&E LMR.
   - 3.2. Permittee is responsible to call DIG ALERT for all underground mark-out locations 48 hours before digging.
   - 3.3. SDG&E standby personnel are required when grading or ground penetration occurs within the gas transmission easement or within ten (10) feet of the gas line when in a trenchless position.
   - 3.4. No power-operated equipment shall be used within two (2) feet of any portion of the gas line, only hand digging is allowed and an SDG&E standby is required.
   - 3.5. If any contact is made with the gas line or its coating, SDG&E must be notified immediately at 1-800-411-7343 and the area left exposed.
   - 3.6. The gas easement shall be staked with ribboned lath at fifty-foot (50') increments and the staking shall be maintained at all times during grading and construction of the project.
   - 3.7. SDG&E reserves the right to inspect and perform quality control work during construction. SDG&E standby personnel are authorized to stop work around the gas line if all required precautions are not strictly adhered to.
   - 3.8. Equipment crossings of the gas line must be designed to eliminate any possible damage to the gas line and approved by SDG&E gas transmission engineering.
   - 3.9. Clearance of (30) feet minimum between the SDG&E electric transmission wires and the natural ground shall be maintained on any given day, noting this may vary depending on ambient temperature and line current. All requirements, including but not limited to OSHA, CAL-OSHA, ANSI, NESH, and NEC for clearances when working around energized electrical facilities must be maintained.
   - 3.10. No grading shall be allowed within ten (10) feet of a single wood pole structure or anchor, within fifteen (15) feet of multi-wood poles, within twenty (20) feet of steel lattice towers or within thirty (30) feet of steel poles.
4. **Special Conditions** Joint Use Agreement to follow
5. **Erosion Control**
   - 5.1. All disturbed and eroded slopes, within the SDG&E transmission easement, shall be hydro-seeded or planted by Permittee with an SDG&E approved mix.
   - 5.2. All drainage shall be designed to prevent erosion of SDG&E easement and access roads.
6. **Storage** This permission to grade letter does not permit storage of equipment, materials, dirt or debris on the easement or SDG&E fee owned property.
7. **Access**
   - 7.1. Access to all SDG&E facilities shall be maintained at all times. All costs associated with restoration of access and all associated damages shall be borne by Permittee.
   - 7.2. All gates shall provide for SDG&E access by padlock, lock-box or keyed bypass both during and upon completion of construction. Location and construction of gates to be approved by SDG&E LMR.
8. **Outstanding Agreements** Permittee agrees to pay for, sign and/or have signed all Consent Agreements, Consent to Use Land Agreements and/or Joint Use Agreements between SDG&E and owner or public agencies who encroach upon the SDG&E easements. Said agreements will be subject to the revocability clause as stated in the California Public Utilities Commission General Order 69-C as shown on web site: http://www.cpuc.ca.gov/PUBLISHED/Graphics/845.PDF.
9. **Indemnification**
   - 9.1. Permittee agrees to assume all risk of loss, damage to property and/or injury and/or death to persons, and to indemnify and hold SDG&E harmless from any and all liability in any way arising from the proposed grading or construction of improvements.
   - 9.2. SDG&E shall not be responsible in any manner for any maintenance or repair of the proposed grading or improvements. This includes, but is not limited to, drainage and/or erosion problems or damage caused to improvements that were not constructed to take the weight or stabilize of vehicles and equipment owned by or working on behalf of SDG&E.
10. **Terms and Conditions** The terms and conditions of this approval shall benefit and bind Permittee its successors, assigns, agents or contractors.
11. **Contact:** Brenda Chilvers 619-654-1270

NOTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY THE LOCATION (I.E. HORIZONTAL AND VERTICAL) OF ALL EXISTING IMPROVEMENTS AND NOTIFY ENGINEER-OF-WORK OF ANY PROBLEMS PRIOR TO COMMENCING WORK ON THE PROPOSED PUBLIC WATER MAIN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING IMPROVEMENTS AND REPLACE ALL DAMAGED OR DESTROYED IMPROVEMENTS.
3. FOR PRIVATE EXISTING CURBS AND LANDSCAPE IN PROPOSED WATER EASEMENT SEE E.M.U.A. APPROVAL NO. 488559.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF EXISTING IMPROVEMENTS (I.E. CURB, ASPHALT, STRIPING, LANDSCAPE AND IRRIGATION) AS PART OF THE WORK TO CONSTRUCT THE PROPOSED WATER IMPROVEMENTS.
5. REFER TO THE S.D.G.&E. NOTES HEREON.

San Diego Gas & Electric Company
Reviewed By: Brenda Chilvers Date: 1/28/08
Brenda Chilvers
Land Management Representative
Valid for 18 months from date of signature

WATER DATA (PUBLIC)			
NO.	DELTA/BRNG	RADIUS	LENGTH	REMARKS
1	N68°16'53"W	105.33'	12" PVC (CL-150)
2	N00°19'58"E	5.45'	12" PVC (CL-150)

Latitude 33
Planning and Engineering
4033 Paramount Dr. 2nd Flr.
San Diego, Ca. 92123
Tel 858-751-0633 Fax 858-751-0634

STEVEN C. KETTLER R.C.E. 48358 EXPIRES: 6-30-2008 1/28/08 DATE

DESIGNED BY	DRAWN BY	CHECKED BY
SCW	RR	SCK

PRIVATE CONTRACT

IMPROVEMENT PLANS

UNIVERSITY OF SAN DIEGO MISSION APARTMENT AREA PUBLIC 12-INCH WATER

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 4 OF 4 SHEETS

W.O. NO. 428361
P.T.S NO. 137899

FOR CITY ENGINEER — DATE 2/12/08

T.M.

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	LJJ			
AS-BUILTS				

1861-6272 N4083 COORDINATES
221-1712 LAMBERT COORDINATES

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

34641-4-D

SCALE: 1"=20'

H:\800\886.00\IP\886-IP-04.dwg 1/2/2008 11:51:25 AM PST

MED FROM THE ORIGINAL. BEST QUALITY
AILABLE. EXCESSIVE GRAY BACKGROU
CAUSE A POOR QUALITY REPRODUCTI

USD WATER MAIN REPLACEMENT–PHASE I

CONTRACTOR'S RESPONSIBILITIES

1. PURSUANT TO SECTION 4216 OF THE CALIFORNIA GOVERNMENT CODE, AT LEAST 2 WORKING DAYS PRIOR TO EXCAVATION, YOU MUST CONTACT THE REGIONAL NOTIFICATION CENTER (E.G., UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA) AND OBTAIN AN INQUIRY IDENTIFICATION NUMBER.
2. NOTIFY SDG&E AT LEAST 10 WORKING DAYS PRIOR TO EXCAVATING WITHIN 10' OF SDG&E UNDERGROUND HIGH VOLTAGE TRANSMISSION POWER LINES. (I.E., 69 KV & HIGHER).
3. LOCATE AND RECONNECT ALL SEWER LATERALS. LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. LATERAL RECORDS ARE AVAILABLE AT THE PUBLIC UTILITIES DEPARTMENT, 2797 CAMINITO CHOLLAS. LOCATE THE IMPROVEMENTS THAT WILL BE AFFECTED BY LATERAL REPLACEMENTS.
4. EXCAVATE AROUND WATER METER BOX (I.E., CITY PROPERTY SIDE) TO DETERMINE IN ADVANCE, THE SIZE OF EACH SERVICE BEFORE TAPPING THE MAIN.
5. CITY FORCES, WHEN SPECIFIED OR SHOWN ON THE PLANS, WILL MAKE PERMANENT CUTS AND PLUGS AND CONNECTIONS.
6. EXISTING MAINS SHALL BE KEPT IN SERVICE IN LIEU OF HIGH-LINING, UNLESS OTHERWISE SHOWN ON PLANS.
7. THE LOCATIONS OF EXISTING BUILDINGS AS SHOWN ON THE PLAN ARE APPROXIMATE.
8. STORM DRAIN INLETS REMAIN FUNCTIONAL AT ALL TIMES DURING CONSTRUCTION.
9. UNLESS OTHERWISE NOTED AS PREVIOUSLY POTHOLED (PH), ELEVATIONS SHOWN ON THE PROFILE FOR EXISTING UTILITIES ARE BASED ON A SEARCH OF THE AVAILABLE RECORD INFORMATION ONLY AND ARE SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CITY DOES NOT GUARANTEE THAT IT HAS REVIEWED ALL AVAILABLE DATA. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES EITHER SHOWN ON THE PLANS OR MARKED IN THE FIELD IN ACCORDANCE WITH THE SPECIFICATIONS SECTION 5-1.
10. EXISTING UTILITY CROSSING AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT REPRESENTATIVE OF ACTUAL LENGTH AND LOCATION OF CONFLICT AREAS. SEE PLAN VIEW.
11. FOR COORDINATION OF THE SHUTDOWN OF TRANSMISSION MAINS (16 INCHES AND LARGER), CONTACT THE CITY'S SENIOR WATER DISTRIBUTION OPERATIONS SUPERVISOR TATYANA FIKHMAN AT †fikhman@sandiego.gov OR AT (619) 527-7465. FOR COORDINATION OF THE SHUTDOWN OF DISTRIBUTION MAINS (LESS THAN 16 INCHES), CONTACT THE CITY'S WATER OPERATIONS DISTRICT MANAGER BERNARD POWELL AT bpowell@sandiego.gov OR AT (619) 527-3945.

STORM WATER PROTECTION

1. THIS PROJECT IS SUBJECT TO MUNICIPAL STORM WATER PERMIT ORDER NO. R9-2007-0001 AND WATER POLLUTION CONTROL PLAN.
2. TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY IS LOW.

ABBREVIATIONS

ABAND	ABANDON	EL, ELEV	ELEVATION	N/O	NORTH OF
ABAND'D	ABANDONED	ELEC	ELECTRIC	OVHD	OVER HEAD
AC	ASBESTOS CEMENT PIPE	EX, EXIST	EXISTING	PVC	POLYVINYL CHLORIDE
AHD	AHEAD	E/O	EAST OF	PROP	PROPOSED
ASSY	ASSEMBLY	F	FLANGE	RED	REDUCER
BK	BACK	FH	FIRE HYDRANT	RT	RIGHT
BTWN	BETWEEN	FS	FIRE SERVICE	⅊	SURVEY LINE
CATV	CABLE TV	GV	GATE VALVE	SO	STUB OUT
CI	CAST IRON PIPE	HDPE	HIGH-DENSITY POLYETHYLENE	S/O	SOUTH OF
℄	CENTER LINE	HH	HANDHOLE	SWR	SEWER
COND	CONDUIT	HP	HIGH PRESSURE	TEL	TELEPHONE
CONT	CONTINUED	IRRB	IRRIGATION BOX	UNK	UNKNOWN
CONTR	CONTRACTOR	IE	INVERT ELEVATION	VC	VITRIFIED CLAY PIPE
CW	CHILLED WATER	LT	LEFT	WM	WATER METER
DB	DIRECT BURIED	MJ	MECHANICAL JOINT	WTR	WATER
DCE	DEPUTY CITY ENGINEER	MTD	MULTIPLE TELEPHONE DUCT	W/O	WEST OF
EB	ENCASED BURIED				

EXISTING STRUCTURES

- EX WATER MAIN & VALVES
- EX CHILLED WATER
- EX HHW (ABANDONED)
- EX IRRIGATION PIPE
- EX WATER METER
- EX FIRE HYDRANT
- EX SEWER MAIN & MANHOLES
- EX DRAINS
- EX PAVEMENT (PROFILE)
- EX GROUND LINE (PROFILE)
- EX TRAFFIC SIGNAL — TS
- EX STREET LIGHT — SL
- GAS MAIN
- ELEC. COND., TEL. COND., CATV, COMMUNICATION, — E — T — C — COM —
- RAILROAD, TROLLEY TRACKS

LIMITS OF WORK

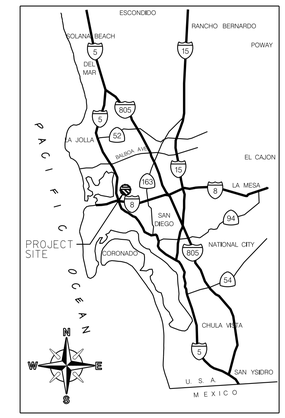
SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS	PIPE SIZE (IN)	PIPE MATERIAL	LENGTH (FT)
1	G-1	COVER SHEET				
2	C-1	CAMINO WAY	CUSHMAN AV TO MANION WAY	12	PVC	497.99
3	C-2	MANION WAY &	CAMINO WAY TO MARIAN WAY	12	PVC	350.00
		MARIAN WAY	MANION WAY TO COLACHIS PLAZA	12	PVC	349.39
4	C-3	MARIAN WAY	MANION WAY TO COLACHIS PLAZA	12	PVC	703.45
5	C-4	WATER MAIN ABANDONMENT		TOTAL	WATER	1,900.83
6	C-5	DETAILS				
7	C-6	DETAILS				
8	C-7	STREET RESURFACING				
9	C-8	WORK BY CITY FORCES				
10	C-9	HORIZONTAL ALIGNMENT COORDINATE INDEX REPORT				
11	C-10	WATER POLLUTION CONTROL PLAN				

DISCIPLINE CODE

G GENERAL
C CIVIL

WORK TO BE DONE

CONSTRUCTION OF WATER MAIN REPLACEMENTS CONSISTS OF THE INSTALLATION OF 1,900.83 LINEAR FEET (0.36 MILES) OF NEW 12-INCH WATER MAIN PIPE AND INSTALLATION OF VARIOUS FIRE AND WATER SERVICES, 6" FIRE HYDRANTS, TRENCH SHORING, RESURFACING, AND OTHER WORK AND APPURTENANCES SHOWN ON THESE PLANS AND ACCORDANCE WITH THE SPECIFICATIONS AND THESE DRAWINGS NUMBERED 38090-01-D THROUGH 38090-11-D.



VICINITY MAP
NOT TO SCALE

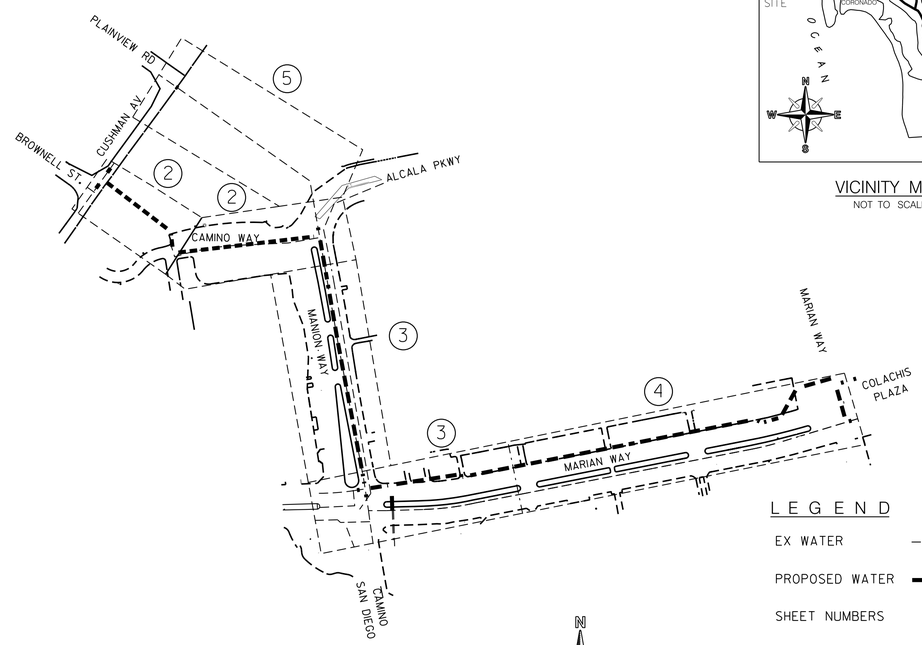
LEGEND

IMPROVEMENTS	STANDARD DRAWINGS	SYMBOL
SURVEY MONUMENT	M-10	
WATER MAIN & APPURTENANCES	SDW-110, SDW-148, SDW-151, SDW-161	
VALVES WITH CAPS AND WELLS	SDW-109, SDW-152, SDW-153, WV-05	
6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT	SDW-104, SDW-109, SDW-148 SDW-152, SDW-153	PROPOSED WATER
1" WATER SERVICE UNLESS OTHERWISE SPECIFIED	SDW-107, SDW-134, SDW-135 SDW-136, SDW-137, SDW-138, SDW-148, SDW-149, SDW-150-WS-03	WM P.L. W PROPOSED WATER
BLOW-OFF ASSEMBLY	SDW-106, SDW-143, SDW-144 SDW-145, SDW-146, SDW-148, WB-05	B.O. PROPOSED WATER
FIRE SERVICE CONNECTION	SDW-109, SDW-118, SDW-148, SDW-152, SDW-153	P.L. F
AIR & VACUUM VALVE	SDW-117, SDW-148, SDW-158, SDW-159, SDW-160	PROPOSED WATER A.V.
HIGHLINING BY CONTRACTOR	SDW-170, SDW-171, SDW-172, SDW-173	IF APPLICABLE
EASEMENT LIMITS		

FOR ADDITIONAL SYMBOLS SEE RESURFACING, CURB RAMP, HORIZONTAL ALIGNMENT COORDINATE AND TRAFFIC CONTROL SHEETS.

WORKING DAYS:
MONDAY THRU SATURDAY
WORKING HOURS:
8:00AM - 10:00PM

NOTE:
CONTRACTOR SHALL NOTIFY USD 5 WORKING DAYS PRIOR TO CONSTRUCTION.



LEGEND

EX WATER
PROPOSED WATER
SHEET NUMBERS (1)

FIELD DATA

BENCHMARK:
FIELD NOTES: CHIEF: RAMETTA, INDEX: 218-1707
DATUM: MEAN SEA LEVEL

KEY MAP
NO SCALE

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

AS-BUILT INFORMATION	
MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	-
GATE VALVES	-
FIRE HYDRANTS	-

SPEC. NO. 1314

REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 Exp. 9-30-16 CIVIL STATE OF CALIFORNIA

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 01 OF 11 SHEETS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
CARL E. SPIER, P.E. — RCE# C49744
PRINT NAME

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

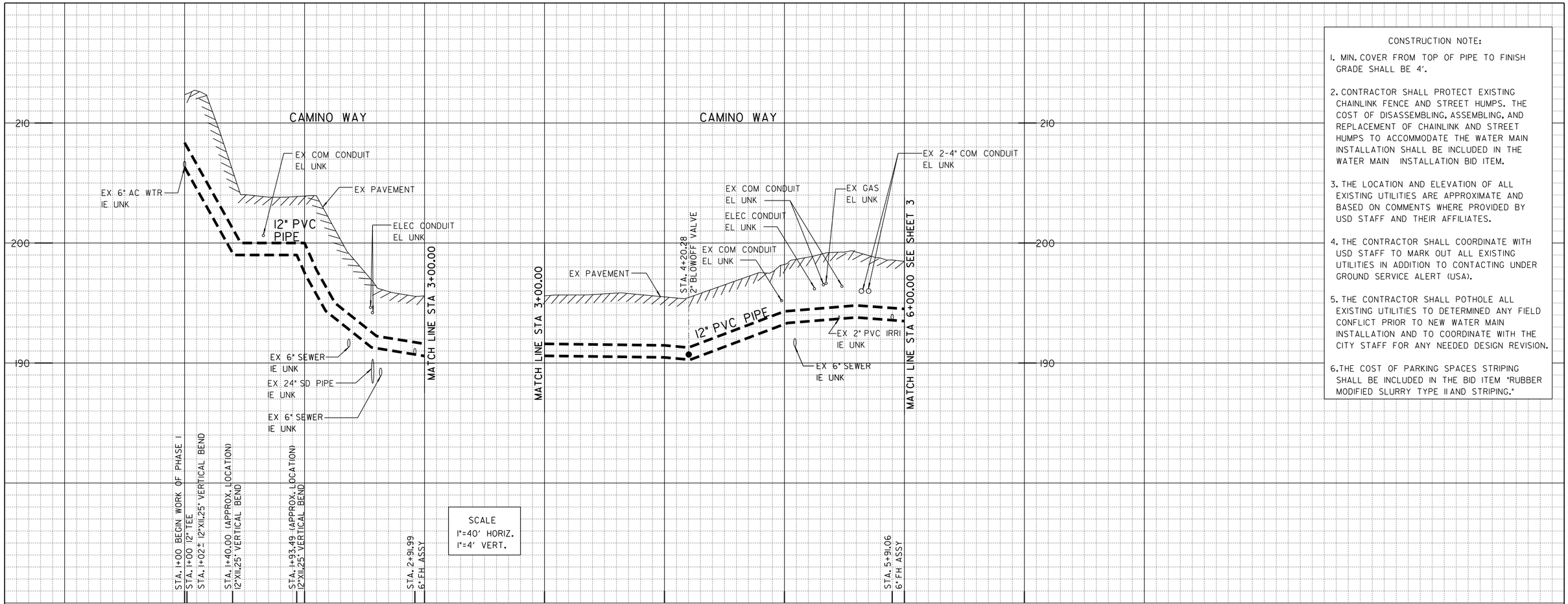
WATER WBS B14123
SEWER WBS

SUBMITTED BY: MAHMOUD ORIOAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER
SEE SHEETS, CCS27 COORDINATE
SEE SHEETS, CCS83 COORDINATE
38090-01-D

G-1

PLANS FOR THE CONSTRUCTION OF
USD WATER MAIN REPLACEMENT–PHASE I
COVER SHEET

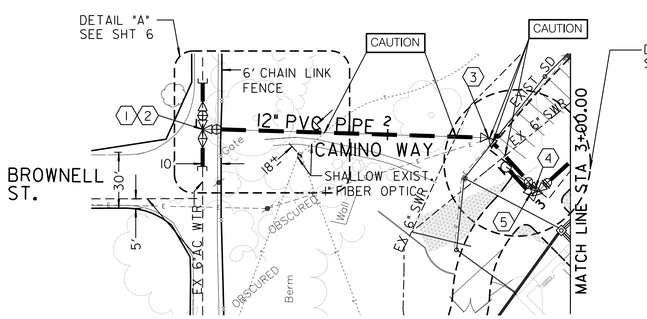
USD WATER MAIN REPLACEMENT–PHASE I

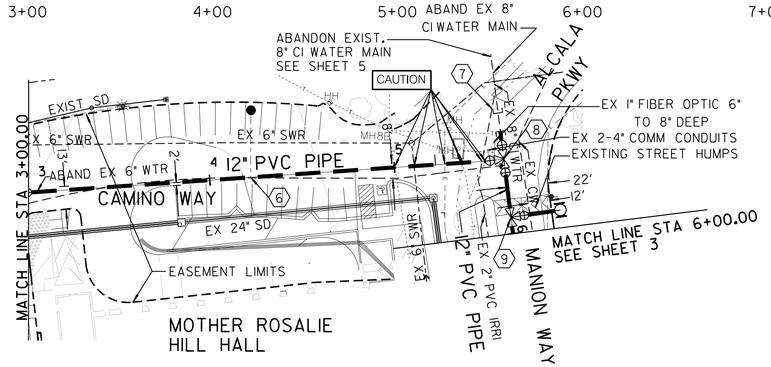


CONSTRUCTION NOTE:

1. MIN. COVER FROM TOP OF PIPE TO FINISH GRADE SHALL BE 4'.
2. CONTRACTOR SHALL PROTECT EXISTING CHAINLINK FENCE AND STREET HUMPS. THE COST OF DISASSEMBLING, ASSEMBLING, AND REPLACEMENT OF CHAINLINK AND STREET HUMPS TO ACCOMMODATE THE WATER MAIN INSTALLATION SHALL BE INCLUDED IN THE WATER MAIN INSTALLATION BID ITEM.
3. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES ARE APPROXIMATE AND BASED ON COMMENTS WHERE PROVIDED BY USD STAFF AND THEIR AFFILIATES.
4. THE CONTRACTOR SHALL COORDINATE WITH USD STAFF TO MARK OUT ALL EXISTING UTILITIES IN ADDITION TO CONTACTING UNDER GROUND SERVICE ALERT (USA).
5. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES TO DETERMINED ANY FIELD CONFLICT PRIOR TO NEW WATER MAIN INSTALLATION AND TO COORDINATE WITH THE CITY STAFF FOR ANY NEEDED DESIGN REVISION.
6. THE COST OF PARKING SPACES STRIPING SHALL BE INCLUDED IN THE BID ITEM "RUBBER MODIFIED SLURRY TYPE II AND STRIPING."

CAMINO WAY





⑦ BY CITY FORCES
AHEAD OF CONTRACTOR
STA 5+57.23
PERM. CUT AND PLUG:
EX 8" CI WTR 15'±LT

⑧ BY CONTRACTOR
FURNISH AND INSTALL
STA 5+57.23
1-12" TEE (F)
3-12" GV (F, MJ) BK, LT, RT
1-12" PIPE 5'±LT
1-12" DI END CAP (SDW-151)

⑨ BY CONTRACTOR
FURNISH AND INSTALL
STA 5+91.06
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

REFERENCE:

WATER: 6670, LATITUDE 33
SEWER: LATITUDE 33
STORM DRAIN: LATITUDE 33
GAS:
ELECTRIC:
CABLE TV:
TELEPHONE:
IMPROVEMENTS:
100' SCALE/FIELD BOOK: E17S
THOMAS BROS.: 12682G

RETIREMENTS:

6" - UNK - 293.29' - 1954
8" - CI - 446.26' - 1954
FH (2-PORT) - 2

C-1

USD WATER MAIN REPLACEMENT-PHASE I

CAMINO WAY

① BY CITY FORCES
AHD OF CONTRACTOR
STA 1+00.00
TEMP. CUT AND PLUG:
EX 6" AC WTR 15'±LT
EX 6" AC WTR 15'±RT
NEW 6" PVC WTR 10'±LT
NEW 6" PVC WTR 10'±RT
RECONNECT AFTER NEW
MAIN HAS BEEN ACCEPTED

② BY CONTRACTOR
FURNISH AND INSTALL
STA 1+00.00
1-12" TEE (F)
2-12" GV (F) LT, AHD
1-12"XII.25° VERTICAL BEND (F, MJ) AHD
2-12"X6" REDUCERS (F, MJ) LT, RT

③ BY CONTRACTOR
FURNISH AND INSTALL
STA 2+54.64
1-12"X45° BEND (MJ)

④ BY CONTRACTOR
FURNISH AND INSTALL
STA 2+91.99
1-12" TEE (MJ, MJ, F)
2-12" GV (F, MJ) RT, BK
1-12"X6" REDUCER (F, MJ) LT
1-12" GV (F) LT

⑤ BY CONTRACTOR
FURNISH AND INSTALL
STA 2+91.99
1-6"X90° BEND (MJ, MJ,) 4'± BK
1-6" FH ASSY AND MARKER

⑥ BY CONTRACTOR
FURNISH AND INSTALL
STA 4+20.28
1-2" BLOWOFF ASSY

SCALE 1"=40'

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 02 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
PRINT NAME CARL E. SPIER, P.E. — RCE# C49744

REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

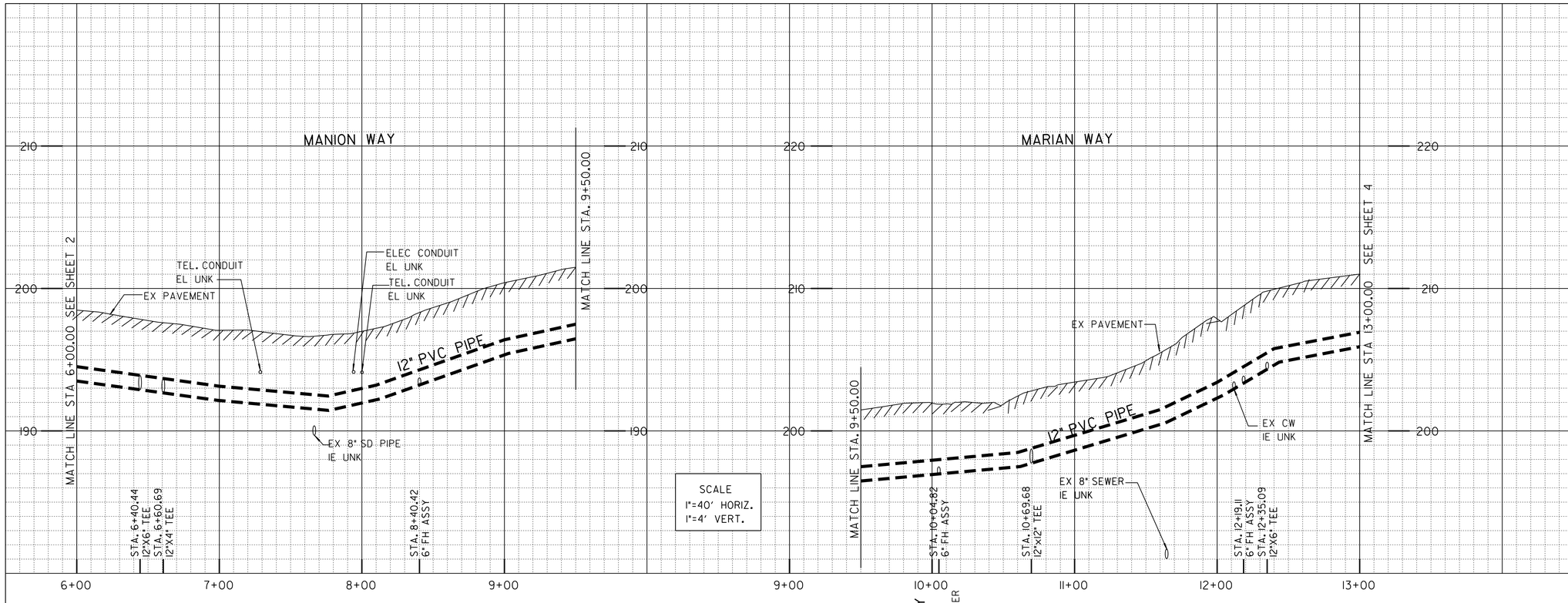
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

218-1707
CCS27 COORDINATE

1858444-6268407
CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

38090-02-D



CONSTRUCTION NOTE:

1. MIN. COVER FROM TOP OF PIPE TO FINISH GRADE SHALL BE 4'.

2. CONTRACTOR SHALL PROTECT EXISTING HAND RAILINGS, STREET MEDIAN, AND STREET HUMPS. THE COST OF DISASSEMBLING, ASSEMBLING AND REPLACING OF THE SAID ITEMS TO ACCOMMODATE THE WATER MAIN INSTALLATION SHALL BE INCLUDED IN THE WATER MAIN INSTALLATION BID ITEM.

3. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES ARE APPROXIMATE AND BASED ON COMMENTS WHERE PROVIDED BY USD STAFF AND THEIR AFFILIATES.

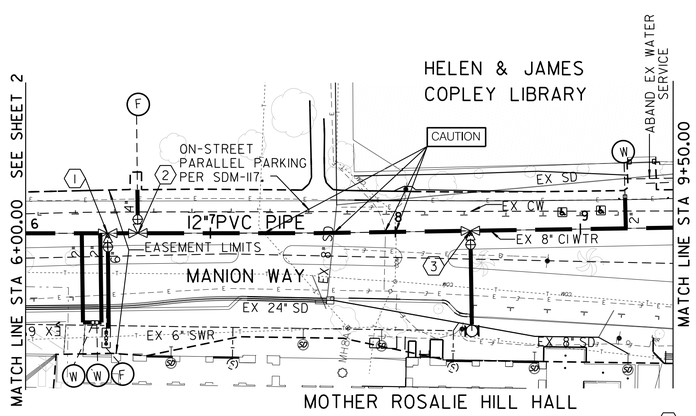
4. THE CONTRACTOR SHALL COORDINATE WITH USD STAFF TO MARK OUT ALL EXISTING UTILITIES IN ADDITION TO CONTACTING UNDER GROUND SERVICE ALERT (USA).

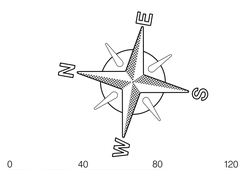
5. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES TO DETERMINED ANY FIELD CONFLICT PRIOR TO NEW WATER MAIN INSTALLATION AND TO COORDINATE WITH THE CITY STAFF FOR ANY NEEDED DESIGN REVISION.

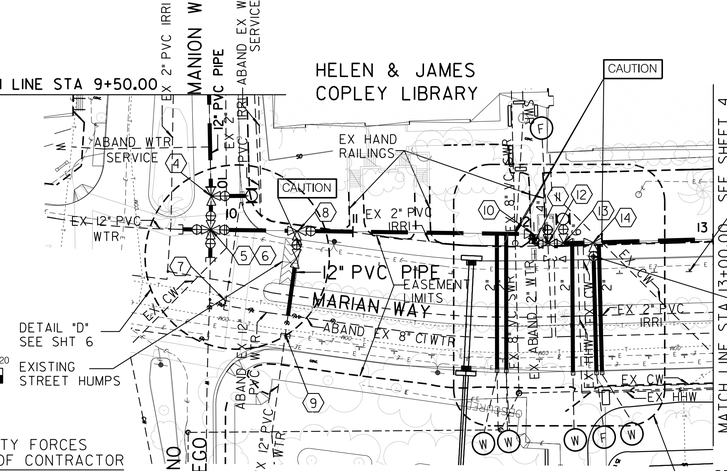
6. THE COST OF PARKING SPACES STRIPING SHALL BE INCLUDED IN THE BID ITEM "RUBBER MODIFIED SLURRY TYPE II AND STRIPING."

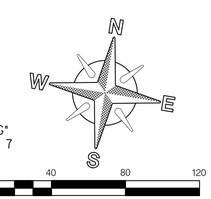
7. THE CONTRACTOR SHALL RELOCATE THE EXISTING ELECTRICAL POLE TO ACCOMMODATE THE WATER SERVICE INSTALLATION. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE CITY AND SHALL BE INCLUDED IN THE VARIOUS BID ITEMS.

MANION WAY & MARIAN WAY









REFERENCE:

WATER: 6670, 30718-3-D, 30338-4-D
SEWER: 30338-3-D
STORM DRAIN: LATITUDE 33
GAS: LATITUDE 33
ELECTRIC: LATITUDE 33
CABLE TV: LATITUDE 33
TELEPHONE: LATITUDE 33
IMPROVEMENTS:
100' SCALE/FIELD BOOK: E17S
THOMAS BROS.: 12682G

RETIREMENTS:

8" - CI - 653.6' - 1954
12" - PVC - 42.90' - 2003
FH (2-PORT) - 3
2" SERVICE - 4 - FIFO - 1954
2" SERVICE - 2 - PVC - 2007
4" SERVICE - 1 - CI - 1954
4" SERVICE - 1 - FIFO - 1954
6" SERVICE - 1 - FIFO - 1954
6" SERVICE - 1 - PVC - 2007

(1) BY CONTRACTOR
FURNISH AND INSTALL
STA 6+44.40
1-12"X6" TEE (MJ, MJ, F)
1-6" GV (F, MJ)
1-6" FIRE SERVICE CONNECTION

(2) BY CONTRACTOR
FURNISH AND INSTALL
STA 6+60.69
1-12"X4" TEE (MJ, MJ, F)
1-4" GV (F, MJ)
1-4" FIRE SERVICE CONNECTION
UP TO EDGE OF EXISTING VAULT

(3) BY CONTRACTOR
FURNISH AND INSTALL
STA 8+40.42
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

(4) BY CONTRACTOR
FURNISH AND INSTALL
STA 10+04.82
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

(5) BY CITY FORCES
AHD OF CONTRACTOR
STA 10+23.00
TEMP. CUT AND PLUG:
EX 12" PVC WTR 20'±BK
EX 12" PVC WTR 20'±RT
RECONNECT AFTER NEW
MAIN HAS BEEN ACCEPTED

(6) BY CONTRACTOR
FURNISH AND INSTALL
STA 10+23.00
1-12" CROSS (F)
4-12" GV (F, MJ) AHD, BK, LT, RT
2-12" PIPE 10'± BK, RT

(7) BY CITY FORCES
AHD OF CONTRACTOR
STA 10+23.00
PERM. CUT AND PLUG:
EX 12" PVC WTR

(8) BY CONTRACTOR
FURNISH AND INSTALL
STA 10+69.68
1-12" TEE (MJ, MJ, F)
1-12" GV (F, F) RT
1-12" GV (F, MJ) AHD
1-12"XII.25° BEND (F, MJ)
REMOVE EXIST TEES & VALVES
1-12" PVC PIPE 36'± RT

(9) BY CITY FORCES
AHD OF CONTRACTOR
STA 10+69.68
TEMP. CUT & PLUG:
EX 12" PVC WTR 20±RT
RECONNECT AFTER NEW
MAIN HAS BEEN ACCEPTED

(10) BY CONTRACTOR
FURNISH AND INSTALL
STA 11+97.57
1-12"X90° BEND (MJ)

(11) BY CONTRACTOR
FURNISH AND INSTALL
STA 12+02.96
1-12"X90° BEND (MJ)

(12) BY CONTRACTOR
FURNISH AND INSTALL
STA 12+10.61
1-12"X4" TEE (MJ, MJ, F)
1-4" GV (F, MJ)
1-4" FIRE SERVICE CONNECTION

(13) BY CONTRACTOR
FURNISH AND INSTALL
STA 12+19.11
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

(14) BY CONTRACTOR
FURNISH AND INSTALL
STA 12+35.09
1-12"X6" TEE (MJ, MJ, F)
1-6" GV (F, MJ)
1-6" FIRE SERVICE CONNECTION

C-2

USD WATER MAIN REPLACEMENT–PHASE I
MANION WAY & MARIAN WAY

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 03 OF 11 SHEETS

APPROVED: FOR CITY ENGINEER CARL E. SPIER, P.E. — DATE 12-08-14 — RCE# C49744

REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 Exp. 9-30-16 CIVIL STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

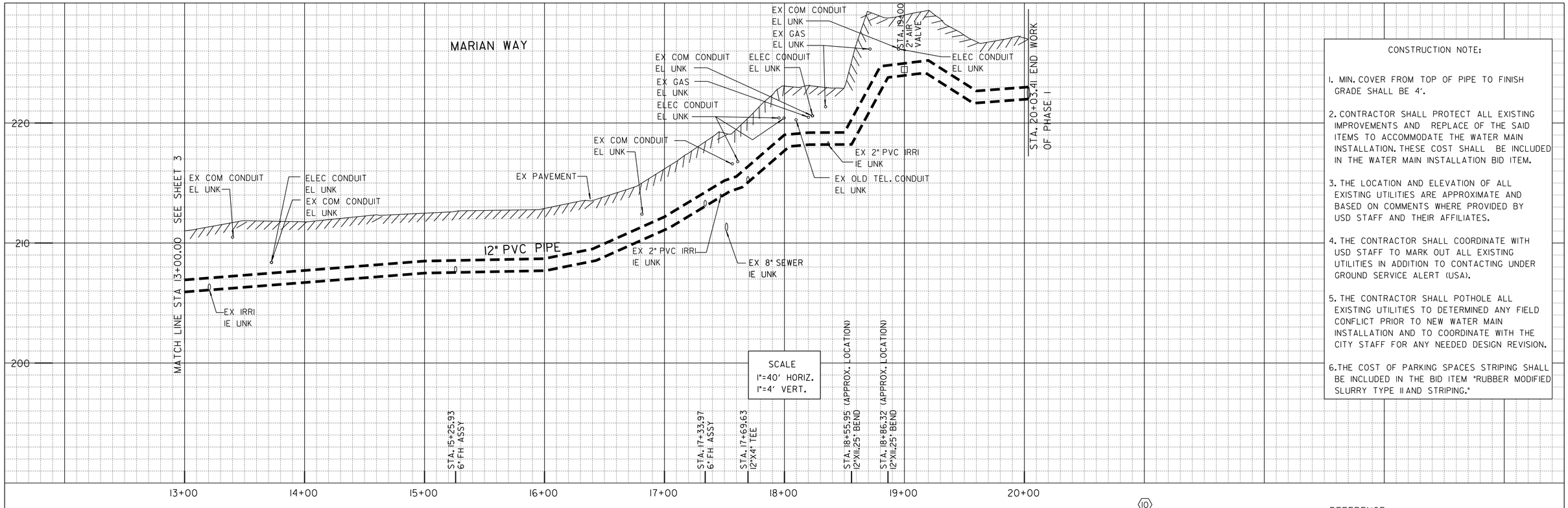
WATER WBS B14123
SEWER WBS

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

218-1707
CCS27 COORDINATE

1858444-6268407
CCS83 COORDINATE

38090-03-D



CONSTRUCTION NOTE:

1. MIN. COVER FROM TOP OF PIPE TO FINISH GRADE SHALL BE 4'.

2. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS AND REPLACE OF THE SAID ITEMS TO ACCOMMODATE THE WATER MAIN INSTALLATION. THESE COST SHALL BE INCLUDED IN THE WATER MAIN INSTALLATION BID ITEM.

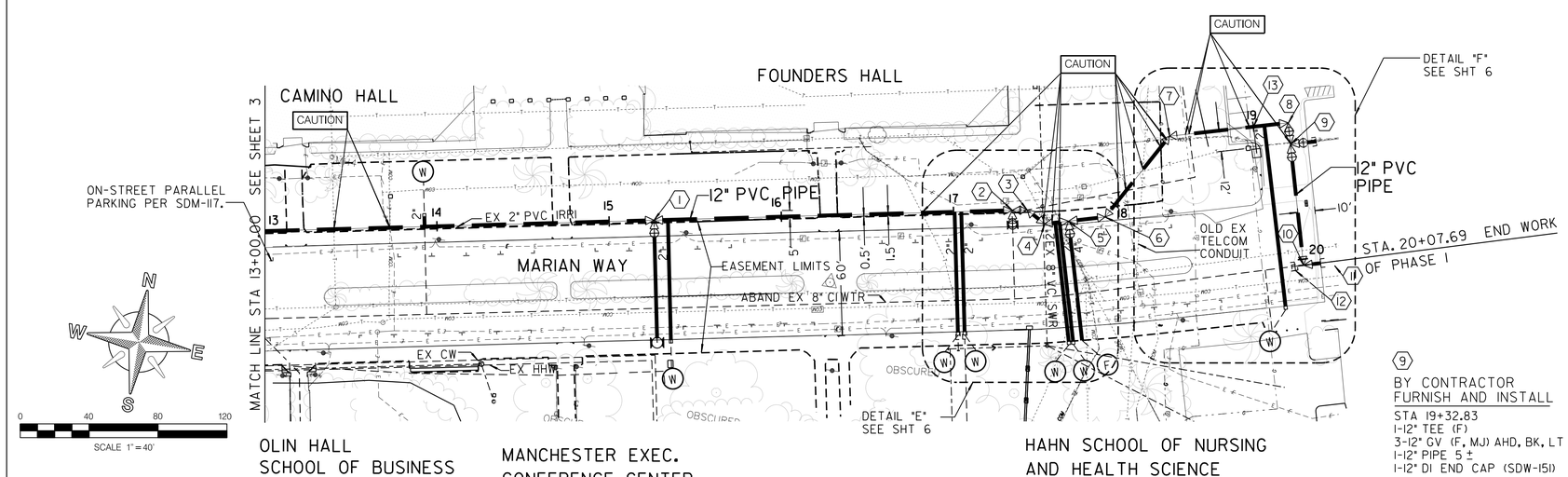
3. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES ARE APPROXIMATE AND BASED ON COMMENTS WHERE PROVIDED BY USD STAFF AND THEIR AFFILIATES.

4. THE CONTRACTOR SHALL COORDINATE WITH USD STAFF TO MARK OUT ALL EXISTING UTILITIES IN ADDITION TO CONTACTING UNDER GROUND SERVICE ALERT (USA).

5. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES TO DETERMINED ANY FIELD CONFLICT PRIOR TO NEW WATER MAIN INSTALLATION AND TO COORDINATE WITH THE CITY STAFF FOR ANY NEEDED DESIGN REVISION.

6. THE COST OF PARKING SPACES STRIPING SHALL BE INCLUDED IN THE BID ITEM "RUBBER MODIFIED SLURRY TYPE II AND STRIPING."

MARIAN WAY



(1) BY CONTRACTOR FURNISH AND INSTALL
STA 15+25.93
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

(2) BY CONTRACTOR FURNISH AND INSTALL
STA 17+33.97
1-12"X6" TEE (MJ, MJ, F)
1-6" FH ASSY AND MARKER

(3) BY CONTRACTOR FURNISH AND INSTALL
STA 17+42.61
1-12"X45° BEND (MJ)

(4) BY CONTRACTOR FURNISH AND INSTALL
STA 17+55.66
1-12"X45° BEND (MJ)

(5) BY CONTRACTOR FURNISH AND INSTALL
STA 17+69.63
1-12"X4" TEE (MJ, MJ, F)
1-4" GV (F, MJ)
1-4" FIRE SERVICE CONNECTION

(6) BY CONTRACTOR FURNISH AND INSTALL
STA 17+90.95
1-12"X45° BEND (MJ)

(7) BY CONTRACTOR FURNISH AND INSTALL
STA 18+50.89
1-12"X45° BEND (MJ)

(8) BY CONTRACTOR FURNISH AND INSTALL
STA 19+20.26
1-12"X90° BEND (MJ)

(9) BY CONTRACTOR FURNISH AND INSTALL
STA 19+32.83
1-12" TEE (F)
3-12" GV (F, MJ) AHD, BK, LT
1-12" PIPE 5 ±
1-12" DI END CAP (SDW-151)

(10) BY CONTRACTOR FURNISH AND INSTALL
STA 20+03.41
1-12"X90° BEND (MJ)
1-12" PIPE 10 ± LT

(11) BY CITY FORCES AHD OF CONTRACTOR
STA 20+03.41
TEMP. CUT AND PLUG:
EX 8" CI WTR 20'± LT
RECONNECT AFTER NEW MAIN HAS BEEN ACCEPTED

(12) BY CITY FORCES AHD OF CONTRACTOR
STA 20+03.41
PERM. CUT AND PLUG:
EX 8" CI WTR 20'± RT

(13) BY CONTRACTOR FURNISH AND INSTALL
STA 19+00.00
1-2" AIR VALVE ASSY

REFERENCE:

WATER: 6670, 30718-3-D, 30338-4-D
SEWER: 30338-3-D
STORM DRAIN: LATITUDE 33
GAS: LATITUDE 33
ELECTRIC: LATITUDE 33
CABLE TV: LATITUDE 33
TELEPHONE: LATITUDE 33
IMPROVEMENTS:
100' SCALE/FIELD BOOK: E175
THOMAS BROS.: 1268 2G

RETIREMENTS:

8" - CI - 604.24' - 1954
FH (2-PORT) - 2
2" SERVICE - 6 - FIFO - 1954
2" SERVICE - 1 - PVC - 2000
6" SERVICE - 1 - PVC - 2000

C-3

USD WATER MAIN REPLACEMENT–PHASE I
MARIAN WAY

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 04 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER CARL E. SPIER, P.E. DATE 12-08-14 RCE# C49744
SUBMITTED BY: MAHMOUD ORIQAT PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA PROJECT ENGINEER

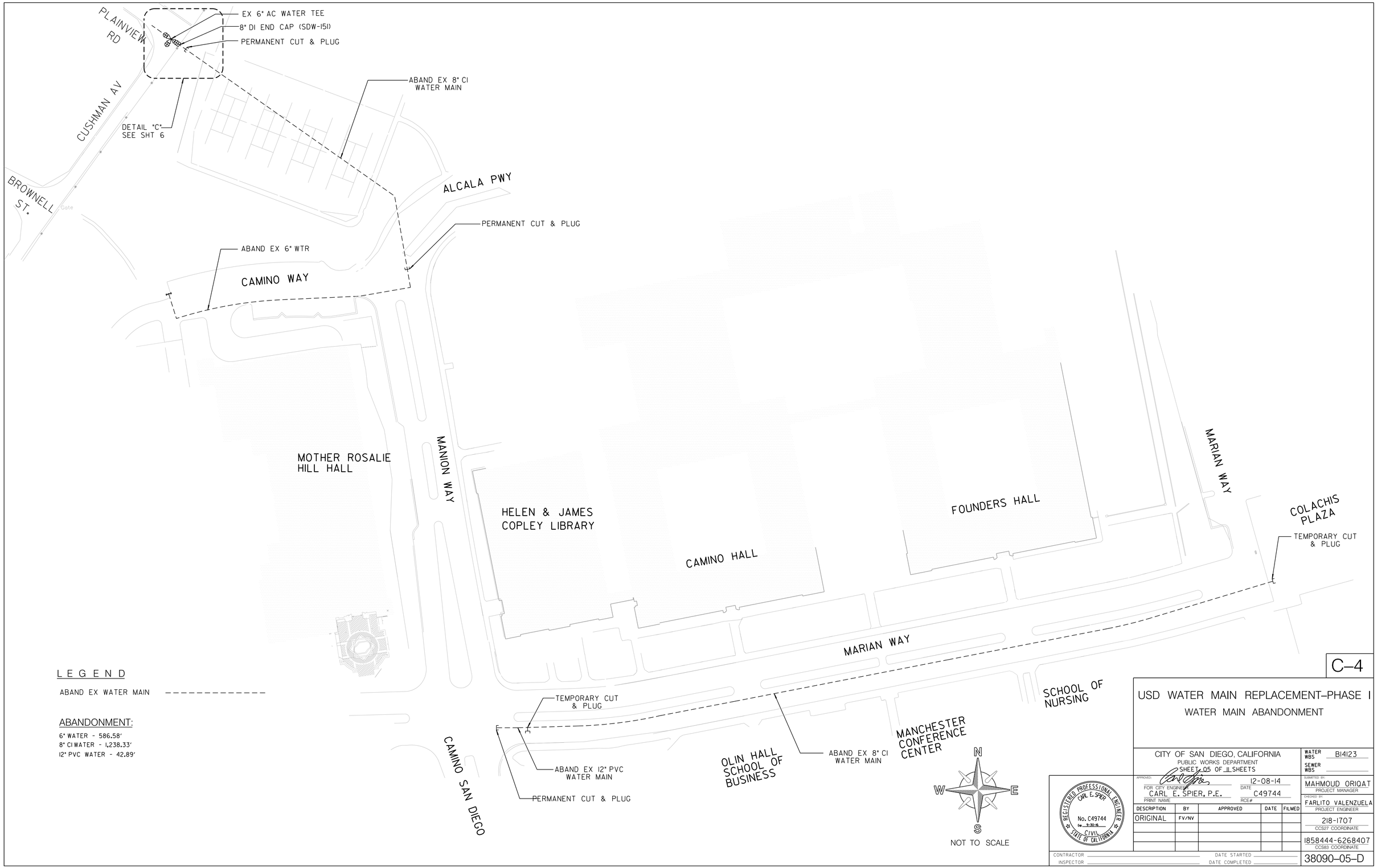
REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 12-8-14 CIVIL STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

218-1707
CCS27 COORDINATE
1858444-6268407
CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

38090-04-D



WATER MAIN ABANDONMENT

C-4

USD WATER MAIN REPLACEMENT-PHASE I

WATER MAIN ABANDONMENT

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 05 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
CARL E. SPIER, P.E. — RCE# C49744
PRINT NAME

SUBMITTED BY: MAHMOUD ORIOAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

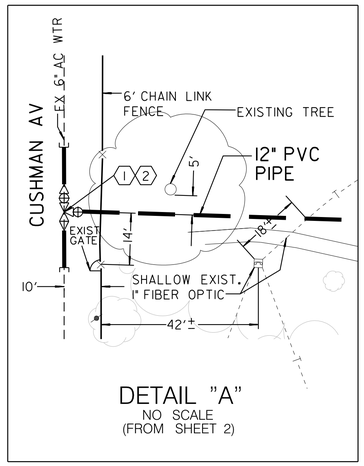
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

218-1707
CCS27 COORDINATE

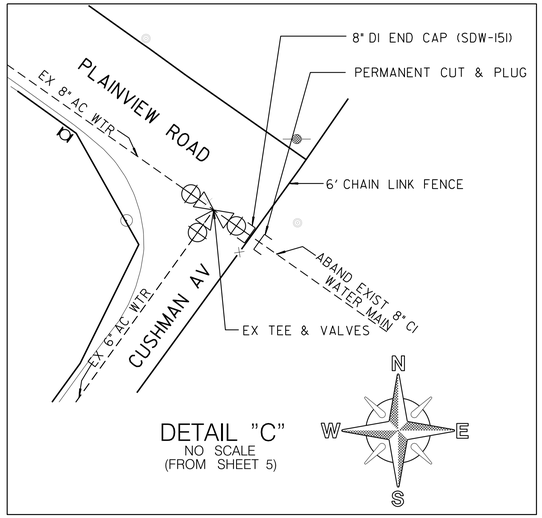
1858444-6268407
CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

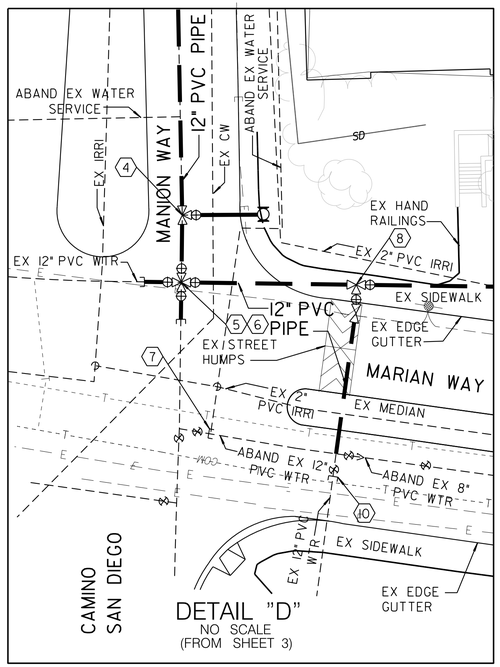
38090-05-D



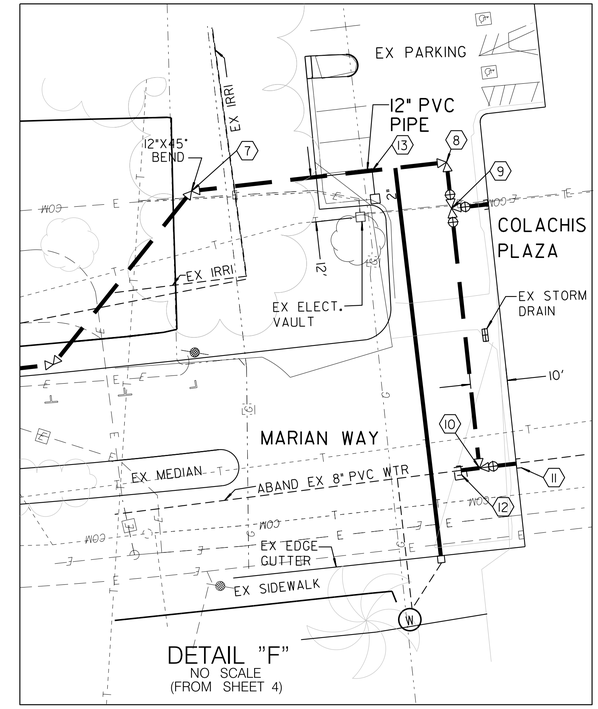
DETAIL "A"
NO SCALE
(FROM SHEET 2)



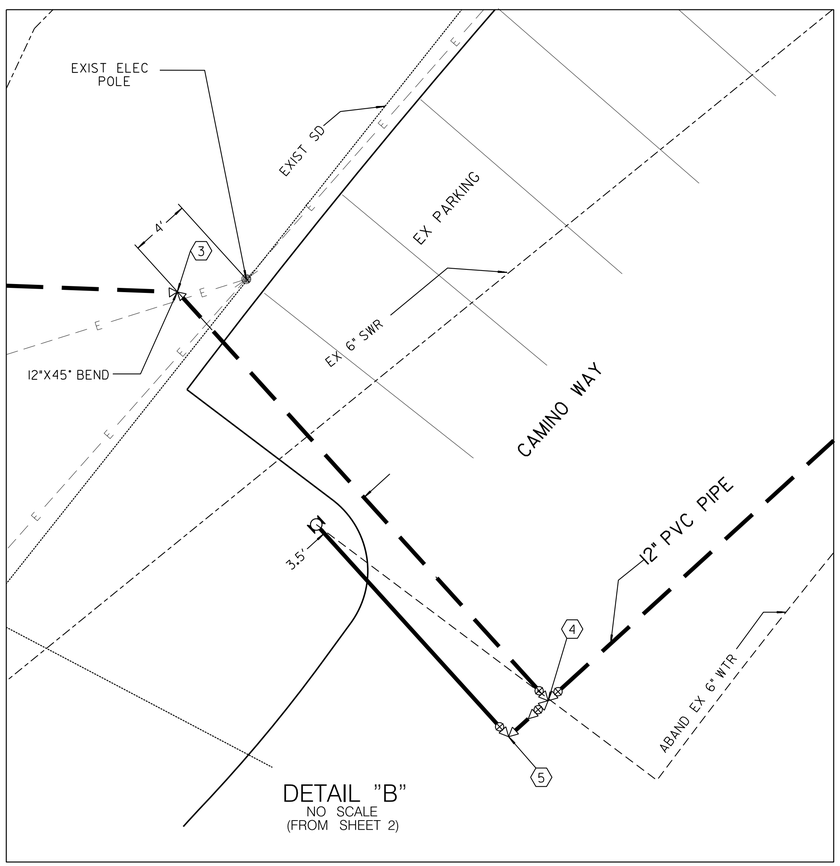
DETAIL "C"
NO SCALE
(FROM SHEET 5)



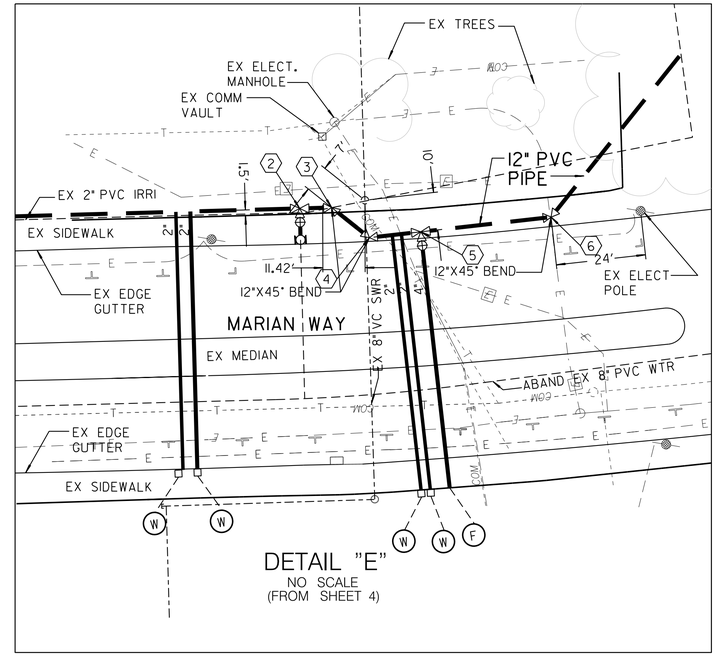
DETAIL "D"
NO SCALE
(FROM SHEET 3)



DETAIL "F"
NO SCALE
(FROM SHEET 4)



DETAIL "B"
NO SCALE
(FROM SHEET 2)



DETAIL "E"
NO SCALE
(FROM SHEET 4)

DETAILS

C-5

USD WATER MAIN REPLACEMENT-PHASE I
DETAILS

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 06 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
CARL E. SPIER, P.E. — RCE# C49744
PRINT NAME

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

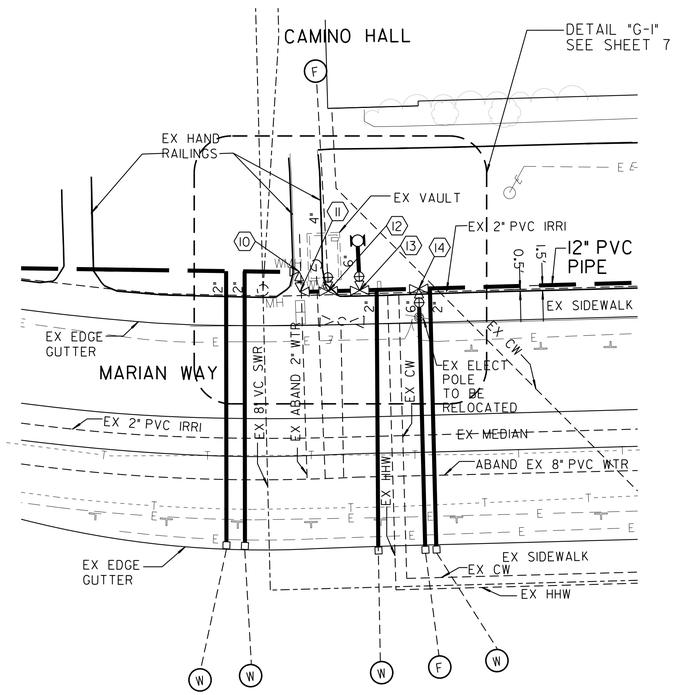
REGISTERED PROFESSIONAL ENGINEER — CARL E. SPIER — No. C49744 — exp. 9-30-16 — CIVIL — STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

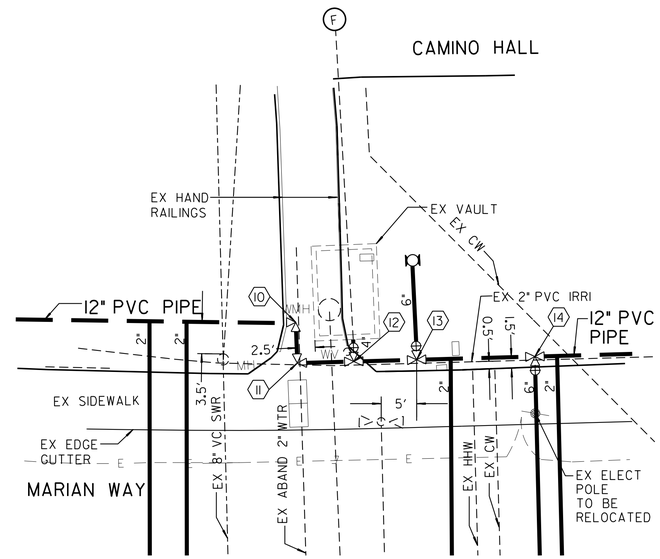
218-1707 CCS27 COORDINATE
1858444-6268407 CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38090-06-D



DETAIL "G"
NO SCALE
(FROM SHEET 3)



DETAIL "G-1"
NO SCALE
(FROM SHEET 7)

DETAILS

C-6

USD WATER MAIN REPLACEMENT-PHASE I

DETAILS

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 07 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
PRINT NAME CARL E. SPIER, P.E. — RCE# C49744

REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 Exp. 3-30-16 CIVIL STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER
218-1707 CCS27 COORDINATE
1858444-6268407 CCS83 COORDINATE

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38090-07-D

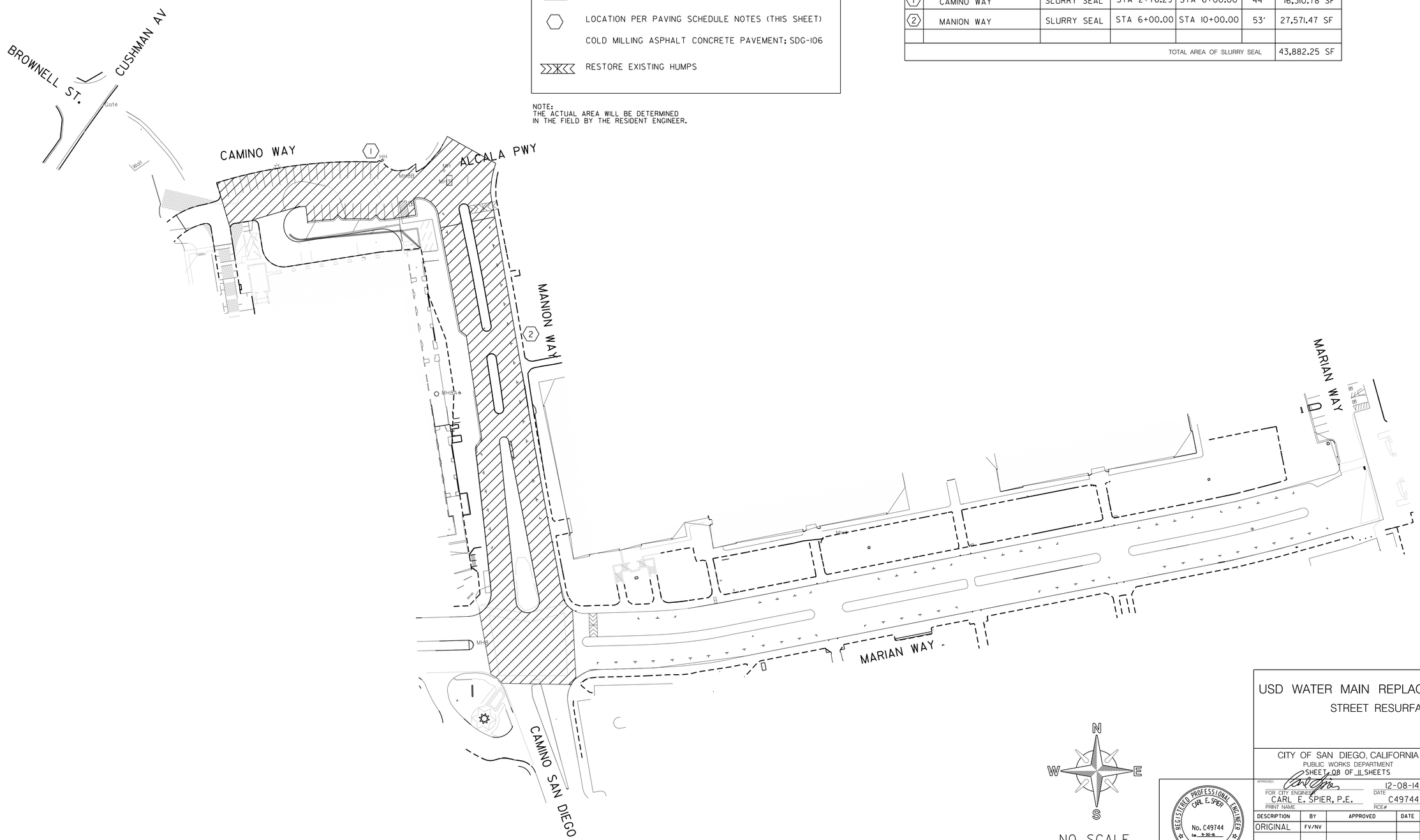
RESURFACING LIMITS OF LEGENDS

	APPROXIMATE OF SLURRY SEAL
	LOCATION PER PAVING SCHEDULE NOTES (THIS SHEET)
	COLD MILLING ASPHALT CONCRETE PAVEMENT; SDG-106
	RESTORE EXISTING HUMPS

NOTE:
THE ACTUAL AREA WILL BE DETERMINED
IN THE FIELD BY THE RESIDENT ENGINEER.

PAVING SCHEDULE NOTES

NO.	LOCATION	RESTORATION REQUIRED	STATION	STATION	WIDTH	APPROX. AREA
1	CAMINO WAY	SLURRY SEAL	STA 2+76.29	STA 6+00.00	44'	16,310.78 SF
2	MANION WAY	SLURRY SEAL	STA 6+00.00	STA 10+00.00	53'	27,571.47 SF
				TOTAL AREA OF SLURRY SEAL		43,882.25 SF



NO SCALE

STREET RESURFACING

C-7

USD WATER MAIN REPLACEMENT-PHASE I
STREET RESURFACING

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 08 OF 11 SHEETS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
PRINT NAME: CARL E. SPIER, P.E. — RCE# C49744

REGISTERED PROFESSIONAL ENGINEER — CARL E. SPIER — No. C49744 — Exp. 9-30-16 — CIVIL — STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

WATER WBS B14123
SEWER WBS

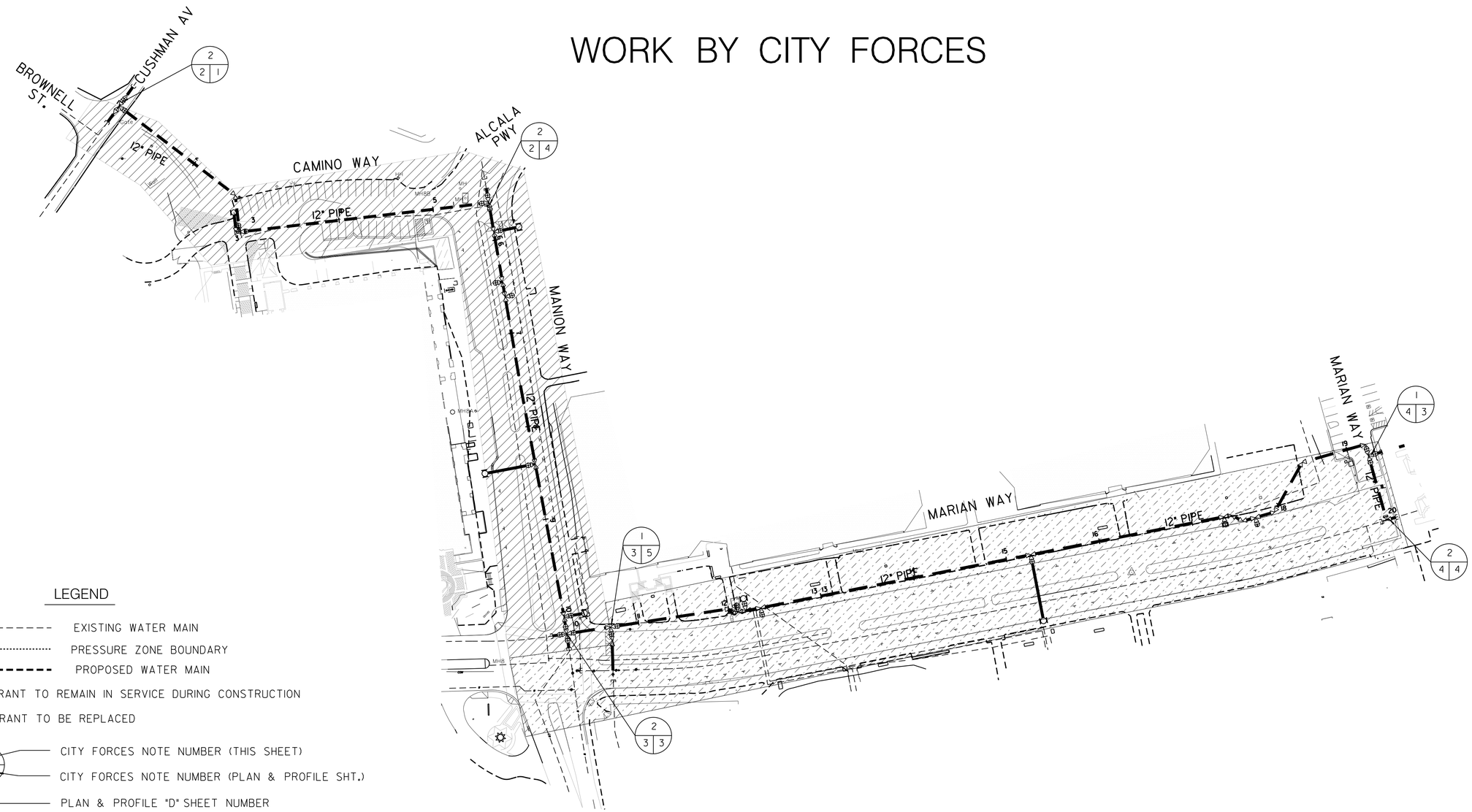
SUBMITTED BY: MAHMOUD ORIOAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

218-1707
CCS27 COORDINATE

1858444-6268407
CCS83 COORDINATE

38090-08-D

WORK BY CITY FORCES



WORK BY CITY FORCES

LEGEND

- EXISTING WATER MAIN
- PRESSURE ZONE BOUNDARY
- PROPOSED WATER MAIN
- FIRE HYDRANT TO REMAIN IN SERVICE DURING CONSTRUCTION
- FIRE HYDRANT TO BE REPLACED

3 — CITY FORCES NOTE NUMBER (THIS SHEET)

24|6 — CITY FORCES NOTE NUMBER (PLAN & PROFILE SHT.)

PLAN & PROFILE "D" SHEET NUMBER

BC --- BEFORE CONTRACTOR

AC --- AFTER CONTRACTOR

WORK BY CITY FORCES

1 — BC - TEE/CROSS CUT-IN, OPEN/CLOSE VALVE(S)
AC - RECONNECT. OPEN VALVE(S)

2 — BC - CUT & PLUG
AC - RECONNECT

3 — BC - PERMANENT CUT AND PLUG

AREA TO BE HIGHLINED IN PHASES

PHASE I - 12"

PHASE II - 12"

N W E S

NO SCALE

C-8

USD WATER MAIN REPLACEMENT-PHASE I

WORK BY CITY FORCES

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 09 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
PRINT NAME CARL E. SPIER, P.E. — RCE# C49744

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			
ADDENDUM				
AS-BUILT				

218-1707 CCS27 COORDINATE

1858444-6268407 CCS83 COORDINATE

REGISTERED PROFESSIONAL ENGINEER CARL E. SPIER No. C49744 Exp. 9-30-15 CIVIL STATE OF CALIFORNIA

CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

38090-09-D

Project:USD WATER MAIN REPLACEMENT PHASE II
Horizontal Alignment Name:CAMINO WAY, MANION WAY, & MARIAN WAY
Description:12 PVC" WATER MAIN ALIGNMENT

	Station	Northing	Easting
Element: Linear			
POB ( )	1+00.00	1862212.09	6271123.90
PI ( )	1+09.91	1862206.29	6271131.95
Tangential Direction: S 54° 13'27" E			
Tangential Length: 9.91			
Element: Linear			
PI ( )	1+09.91	1862206.29	6271131.95
PI ( )	2+54.64	1862118.27	6271246.83
Tangential Direction: S 52° 32'32" E			
Tangential Length: 144.73			
Element: Linear			
PI ( )	2+54.64	1862118.27	6271246.83
PI ( )	2+93.99	1862079.17	6271251.32
Tangential Direction: S 6° 32'38" E			
Tangential Length: 39.35			
Element: Linear			
PI ( )	2+93.99	1862079.17	6271251.32
PI ( )	4+22.05	1862094.10	6271378.50
Tangential Direction: N 83° 18'20" E			
Tangential Length: 128.06			
Element: Linear			
PI ( )	4+22.05	1862094.10	6271378.50
PI ( )	5+49.34	1862108.94	6271504.93
Tangential Direction: N 83° 18'20" E			
Tangential Length: 127.29			
Element: Linear			
PI ( )	5+49.34	1862108.94	6271504.93
PI ( )	5+59.34	1862110.65	6271514.78
Tangential Direction: N 80° 10'56" E			
Tangential Length: 10.00			
Element: Linear			
PI ( )	5+59.34	1862110.65	6271514.78
PI ( )	5+91.17	1862079.29	6271520.21
Tangential Direction: S 9° 49'37" E			
Tangential Length: 31.83			
Element: Linear			
PI ( )	5+91.17	1862079.29	6271520.21
PI ( )	6+44.51	1862026.73	6271529.32
Tangential Direction: S 9° 49'37" E			
Tangential Length: 53.34			
Element: Linear			
PI ( )	6+44.51	1862026.73	6271529.32
PI ( )	6+60.81	1862010.67	6271532.10
Tangential Direction: S 9° 49'37" E			
Tangential Length: 16.30			
Element: Linear			
PI ( )	6+60.81	1862010.67	6271532.10
PI ( )	7+77.78	1861895.47	6271552.36
Tangential Direction: S 9° 58'35" E			
Tangential Length: 116.97			
Element: Linear			
PI ( )	7+77.78	1861895.47	6271552.36
PI ( )	8+40.53	1861833.80	6271563.99
Tangential Direction: S 10° 40'33" E			
Tangential Length: 62.76			
Element: Linear			
PI ( )	8+40.53	1861833.80	6271563.99
PI ( )	9+24.59	1861751.20	6271579.56
Tangential Direction: S 10° 40'33" E			
Tangential Length: 84.06			
Element: Linear			
PI ( )	9+24.59	1861751.20	6271579.56
PI ( )	9+78.33	1861698.38	6271589.52
Tangential Direction: S 10° 40'33" E			
Tangential Length: 53.74			
Element: Linear			
PI ( )	9+78.33	1861698.38	6271589.52
PI ( )	10+04.93	1861672.24	6271594.44
Tangential Direction: S 10° 40'33" E			
Tangential Length: 26.60			

	Station	Northing	Easting
Element: Linear			
PI ( )	10+04.93	1861672.24	6271594.44
PI ( )	10+23.11	1861654.28	6271597.22
Tangential Direction: S 8° 47'12" E			
Tangential Length: 18.18			
Element: Linear			
PI ( )	10+23.11	1861654.28	6271597.22
PI ( )	10+69.79	1861661.38	6271643.36
Tangential Direction: N 81° 15'06" E			
Tangential Length: 46.68			
Element: Linear			
PI ( )	10+69.79	1861661.38	6271643.36
PI ( )	11+97.68	1861680.83	6271769.76
Tangential Direction: N 81° 15'06" E			
Tangential Length: 127.89			
Element: Linear			
PI ( )	11+97.68	1861680.83	6271769.76
PI ( )	12+03.07	1861675.54	6271770.79
Tangential Direction: S 10° 57'13" E			
Tangential Length: 5.39			
Element: Linear			
PI ( )	12+03.07	1861675.54	6271770.79
PI ( )	12+10.72	1861677.02	6271778.29
Tangential Direction: N 78° 52'52" E			
Tangential Length: 7.65			
Element: Linear			
PI ( )	12+10.72	1861677.02	6271778.29
PI ( )	12+19.22	1861678.66	6271786.64
Tangential Direction: N 78° 52'51" E			
Tangential Length: 8.50			
Element: Linear			
PI ( )	12+19.22	1861678.66	6271786.64
PI ( )	12+35.20	1861681.74	6271802.31
Tangential Direction: N 78° 52'51" E			
Tangential Length: 15.98			
Element: Linear			
PI ( )	12+35.20	1861681.74	6271802.31
PI ( )	15+26.04	1861737.87	6272087.68
Tangential Direction: N 78° 52'18" E			
Tangential Length: 290.84			
Element: Linear			
PI ( )	15+26.04	1861737.87	6272087.68
PI ( )	17+34.08	1861778.03	6272291.81
Tangential Direction: N 78° 52'12" E			
Tangential Length: 208.04			
Element: Linear			
PI ( )	17+34.08	1861778.03	6272291.81
PI ( )	17+42.72	1861779.70	6272300.29
Tangential Direction: N 78° 52'12" E			
Tangential Length: 8.64			
Element: Linear			
PI ( )	17+42.72	1861779.70	6272300.29
PI ( )	17+55.78	1861773.37	6272311.70
Tangential Direction: S 60° 59'12" E			
Tangential Length: 13.05			
Element: Linear			
PI ( )	17+55.78	1861773.37	6272311.70
PI ( )	17+69.74	1861777.22	6272325.13
Tangential Direction: N 74° 00'48" E			
Tangential Length: 13.96			
Element: Linear			
PI ( )	17+69.74	1861777.22	6272325.13
PI ( )	17+91.06	1861783.09	6272345.63
Tangential Direction: N 74° 00'48" E			
Tangential Length: 21.32			
Element: Linear			
PI ( )	17+91.06	1861783.09	6272345.63
PI ( )	18+51.01	1861835.51	6272374.70
Tangential Direction: N 29° 00'48" E			
Tangential Length: 59.94			
Element: Linear			
PI ( )	18+51.01	1861835.51	6272374.70
PI ( )	19+00.14	1861849.04	6272421.94
Tangential Direction: N 74° 00'48" E			
Tangential Length: 49.14			

	Station	Northing	Easting
Element: Linear			
PI ( )	19+00.14	1861849.04	6272421.94
PI ( )	19+20.37	1861854.62	6272441.38
Tangential Direction: N 73° 59'15" E			
Tangential Length: 20.23			
Element: Linear			
PI ( )	19+20.37	1861854.62	6272441.38
PI ( )	19+32.95	1861842.52	6272444.78
Tangential Direction: S 15° 41'03" E			
Tangential Length: 12.57			
Element: Linear			
PI ( )	19+32.95	1861842.52	6272444.78
POE ( )	20+03.52	1861774.57	6272463.86
Tangential Direction: S 15° 41'07" E			
Tangential Length: 70.58			

HORIZONTAL ALIGNMENT COORDINATE INDEX REPORT

C-9

USD WATER MAIN REPLACEMENT-PHASE I
HORIZONTAL ALIGNMENT COORDINATE
INDEX REPORT

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 10 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
CARL E. SPIER, P.E. — RCE# C49744
PRINT NAME

SUBMITTED BY: MAHMOUD ORIOAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

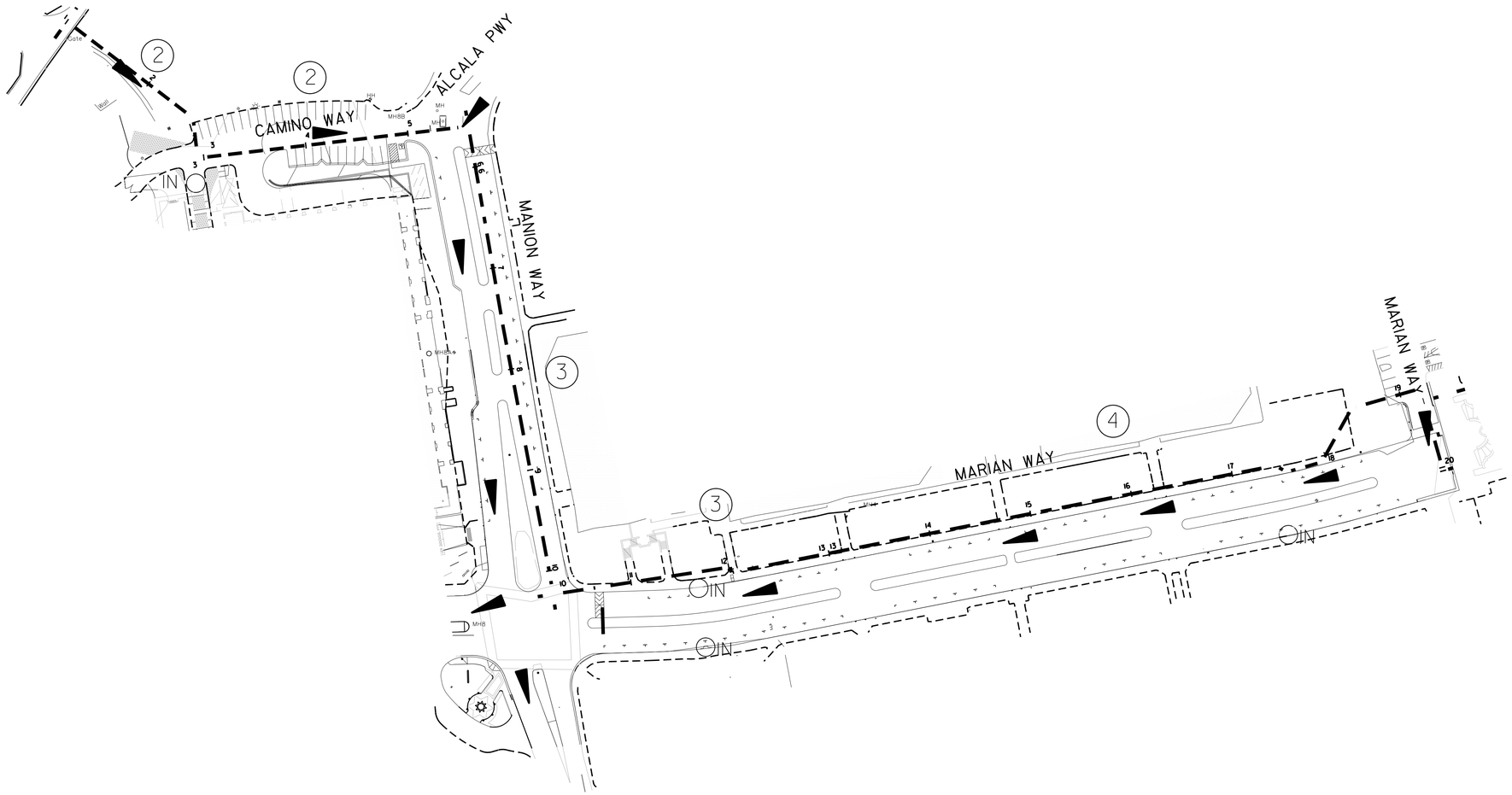
REGISTERED PROFESSIONAL ENGINEER — CARL E. SPIER — No. C49744 — Exp. 9-30-16 — CIVIL — STATE OF CALIFORNIA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

SEE SHEETS — CCS27 COORDINATE
SEE SHEETS — CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

38090-10-D



LEGEND

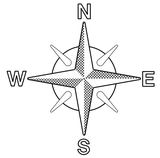
SURFACE FLOW TO STORM DRAIN ARROWS	►
STORM DRAINS AFFECTED BY CONSTRUCTION	IN ○
NEW WATER MAIN	— —
SHEET NO's	(5)
PAPER STREET	------

ADDITIONAL NOTES SUPPLIED BY CONTRACTOR

STAGING/STOCKPILE AREA	X

NOTES:

1. THE INFORMATION ON THIS SITE PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTOR TO INSTALL WATER POLLUTION CONTROL DEVICES AT GENERAL LOCATIONS THROUGHOUT THE PROJECT SITE, THIS SITE PALN IS TO BE USED IN CONJUNCTION WITH THE NARRATIVE SECTION OF THE WATER POLLUTION CONTROL PLAN (WPCP) AND WATER POLLUTION CONTROL SPECIFICATIONS.
2. INLET PROTECTION REQUIRED AT ALL STORM DRAINS RECEIVING RUNOFF FROM DISTURBED SOIL AREAS.
3. THE INFORMATION ON THE SITE PLAN IS ACCURATE FOR WATER POLLUTION CONTROL PURPOSES ONLY.



KEY MAP
NO SCALE

C–10

WATER POLLUTION CONTROL SITE PLAN

USD WATER MAIN REPLACEMENT–PHASE I

WATER POLLUTION CONTROL PLAN

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 11 OF 11 SHEETS

WATER WBS B14123
SEWER WBS

APPROVED: FOR CITY ENGINEER — DATE 12-08-14
PRINT NAME CARL E. SPIER, P.E. — RCE# C49744

SUBMITTED BY: MAHMOUD ORIQAT, PROJECT MANAGER
CHECKED BY: FARLITO VALENZUELA, PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/NV			

218-1707
CCS27 COORDINATE

1858444-6268407
CCS83 COORDINATE

REGISTERED PROFESSIONAL ENGINEER — CARL E. SPIER — No. C49744 — Exp. 3-30-15 — CIVIL — STATE OF CALIFORNIA

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

38090–11–D

2014000423

THE CITY OF SAN DIEGO

MEMORANDUM

DATE: August 31, 2016

TO: Lindsey H. Sebastian, Associate Planner, Planning Division

FROM: Shelby Gilmartin, Junior Engineer - Civil, Long-Range Planning & Water Resources Division Shelby Gilmartin

SUBJECT: Water Supply Assessment for the University of San Diego Master Plan Update Project (Project No. 417090 / SAP No. 24005737)

In response to your request, please find attached a Water Supply Assessment (WSA) for the University of San Diego Master Plan Update Project (Project) approved by the Director of Public Utilities Department.

The Public Utilities Department (Department) prepared this WSA to assess whether sufficient water supplied are, or will be, available to meet the projected water demands of the Project. The findings verify that there is sufficient water supply to serve the existing water demands, projected water demands, and future water demands of the Project within the Department's water service area, in normal and dry year forecasts during a 20-year projection.

Per California Water Code Section 10910 the formation adoption of the WSA is required by the San Diego City Council. To comply, the Department will be working with the City Council docketing office to schedule a public hearing to be determined for City Council adoption.

If you have any questions please call me at (619) 533-5454.

SG/kw

Attachment: Water Supply Assessment Report, August 2016

cc: Ray Palmucci, Deputy City Attorney, Office of the City Attorney
Lan C. Wiborg, Deputy Director, Long-Range Planning & Water Resources Division
George Adrian, P.E., Program Manager, Long-Range Planning & Water Resources Division
Seevani Bista, P.E., Associate Engineer, Long-Range Planning & Water Resources Division
John Fisher, Development Project Manager

RMU 6.8.4

WATER SUPPLY ASSESSMENT REPORT

University of San Diego Master Plan Update Project

Prepared by:

City of San Diego Public Utilities Department

Reviewed by:

Halla Razak 8/29/16

Halla Razak, Director **Date**
Public Utilities Department

Prepared: August 2016

City of San Diego Public Utilities Department
Water Supply Assessment Report

University of San Diego Master Plan Update Project

Table of Contents

Section 1 - Purpose 1

Section 2 - Project Description 2

Section 3 - Findings 4

Section 4 - City of San Diego Public Utilities Department 7

- 4.1 Overview of Potable System Facilities 7
- 4.2 Overview of Recycled System Facilities 8

Section 5 - Existing and Projected Supplies 10

- 5.1 Metropolitan Water District of Southern California 11
- 5.2 San Diego County Water Authority 14
- 5.3 2009 Comprehensive Water Package 18
- 5.4 Public Utilities Department 18
  - 5.4.1 Demonstrating the Availability of Sufficient Supplies 19
  - 5.4.2 Plans for Acquiring Additional Supplies 24

Section 6 - Projected Demands 29

- 6.1 Water Sales to Other Agencies 32
- 6.2 Projected Single-dry Year Water Supply and Demand 34
- 6.3 Projected Multiple-dry Year Water Supply and Demand 34

Section 7 - Conclusion - Availability of Sufficient Supplies 36

Source Documents 39

Section 1 - Purpose

On January 1, 2002, Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) took effect. The intent of SB 610 and SB 221 was to improve the link between information on water supply availability and certain land-use decisions made by cities and counties. Under SB 610 (codified in the Water Code beginning at Section 10910), a water supply assessment (WSA) must be furnished to cities and counties for inclusion in any environmental documentation of projects (defined in the Water Code) that propose to construct 500 or more residential units, or that will use an amount of water equivalent to what would be used by 500 residential units, and are subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply or water supply verification (WSV).

Not every project that is subject to the requirements of SB 610 is also subject to the mandatory water verification of SB 221 (e.g., if subdivision map approval is not required). Conversely, not every project that is subject to the requirements of SB 221 must also obtain a SB 610 water supply assessment.

A foundational document for compliance for both SB 610 and SB 221 is the Urban Water Management Plan (UWMP) of the relevant water agency. Both of these statutes repeatedly identify the UWMP as a planning document that can be used by a water supplier to meet the standards set forth in both statutes. Thorough and complete UWMPs will allow water suppliers to use UWMPs as a foundation to fulfill the specific requirements of the two statutes. Cities, counties, water districts, property owners and developers utilize this document when planning for and proposing new projects. It is crucial that cities, counties and water suppliers work closely when developing and updating these planning documents. The City of San Diego's 2015 UWMP, which is used as the basis for this Report (WSA), was adopted by the San Diego City Council in June 2016.

The City of San Diego Development Services Department (DSD) requested that the City of San Diego Public Utilities Department (Department) prepare this WSA as part of the environmental review for the University of San Diego (USD) Master Plan Update (Project). A more detailed description of the Project is provided in Section 2 of this WSA. This WSA evaluates water supplies that are or will be available during normal, single-dry year, and multiple-dry water years during a 20-year projection to meet the projected demands of the Project, in addition to existing and planned future water demands of the Department. This WSA provides an assessment of the availability of sufficient water supplies for the Project only, and does not constitute approval of the Project.

This WSA also includes identification of existing water supply entitlements, water rights, water service contracts, or agreements relevant to the identified water supply for the Project and quantities of water received in prior years pursuant to those entitlements, rights, contracts and agreements.

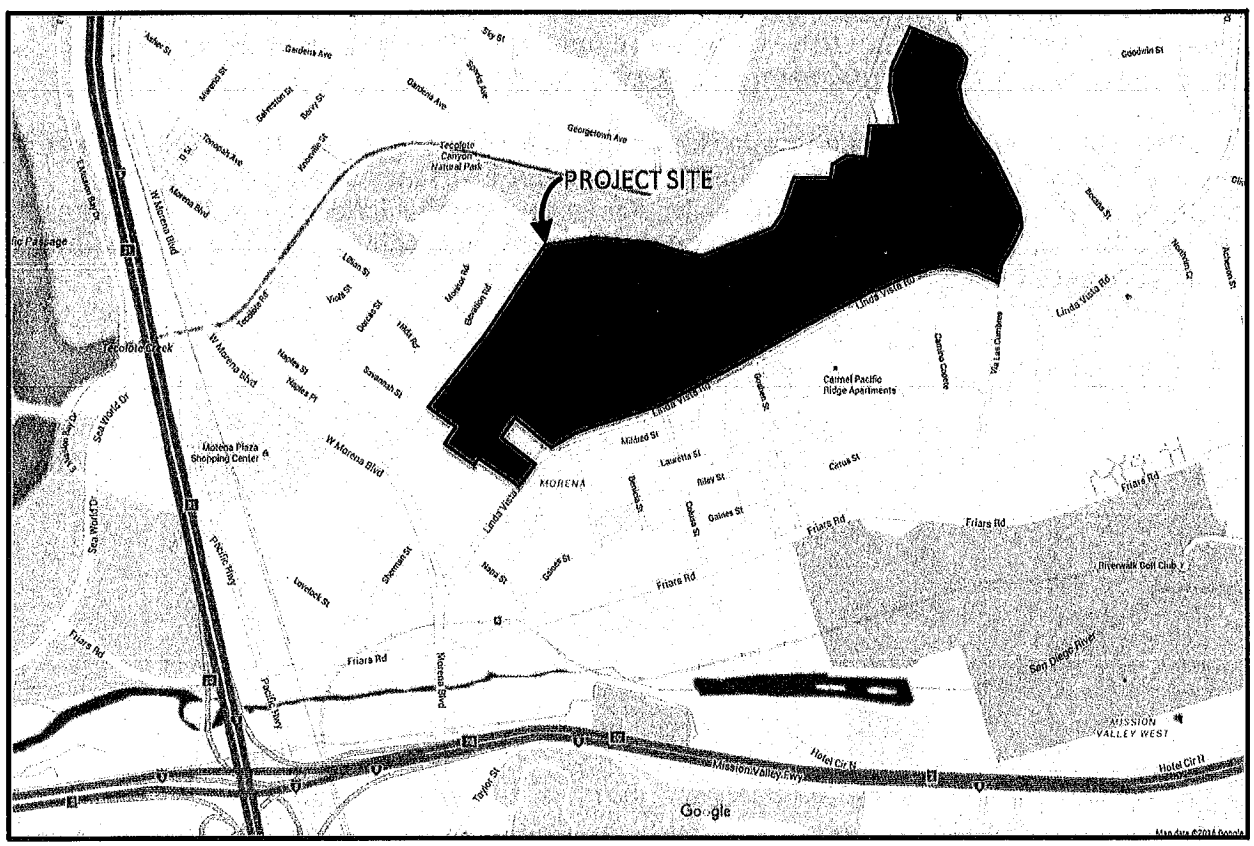
This Report has been prepared in compliance with the requirements under SB 610 by the Department in consultation with DSD, the San Diego County Water Authority (Water Authority) and the Metropolitan Water District of Southern California (MWD).

Section 2 - Project Description

The project site is located at 5998 Alcala Park, San Diego, CA 92110, which is located 4 miles north of downtown San Diego, an estimated 0.5 mile east of Interstate 5 (I-5), and 0.5 mile north of Interstate 8 (I-8). The site is bordered by the Tecolote Canyon Natural Park to the north, Morena Boulevard to the west, Via Las Cumbres to the east, and Linda Vista Road to the south. The surrounding land uses include commercial/industrial development and residential housing west of campus, student and non-student multi-family housing immediately to the south, and various types of residential development to the east.

The Project site map is shown in Figure 2-1.

Figure 2-1
Vicinity Map of Project



The USD Master Plan Update revises the 1996 Master Plan and Design Guidelines in addition to expanding campus infrastructure to accommodate increasing enrollment from 7,000 full-time equivalent (FTE) to 10,000 FTE students in the next 20+ years. This project will develop academic core districts, student service and support uses, athletics and recreation uses, and additional student housing. Expansions of parking supply is also included as part of the Master Plan Update. The Master Plan Update outlines 14 proposed construction sites in addition to 16 approved projects identified in the 1996 Master Plan Environmental Impact Report (EIR) that were approved by the City but are still unbuilt. The 14 proposed projects include construction of academic/administrative buildings, student housing, student service

use buildings, athletics/athletic support/administrative buildings, parking, pedestrian circulation as well as landscape improvements not included in the 1996 Master Plan.

The housing units are summarized in Table 2-1.

Table 2-1 Housing Unit Summary

Housing Type	Number of Units
2-bed Apartments	175
4-bed Dorms	318
Total	**493**

The landscape water use for the Project was estimated using the City's Landscape Watering Calculator (http://apps.sandiego.gov/landcalc/). The total landscaped area for the Project is approximately 407,317 square-feet. Using these numbers the landscape water use for the Project calculates out to approximately 20,040 gallons per day.

This Project will comply with California Green Building Code and is targeting a LEED Silver (or equivalent) certification. To achieve points in the Water Efficiency section in the LEED Certification checklist, this Project will be implementing specific landscape design features and installing water-efficient irrigation systems, all new and renovated buildings installing water-efficient plumbing fixtures.

Section 3 - Findings

Water Assessment

Project: This Report identifies that the proposed water demand projections for the Project are included in the regional water resource planning documents of the City, Water Authority and MWD. Current and future water supplies, as well as actions necessary to develop the future water supplies, have been identified. This Report demonstrates that there will be sufficient water supplies available during normal, single-dry year, and multiple-dry water years over a 20-year projection to meet the unanticipated demands of the Project.

The Water Authority's 2015 UWMP provides for a comprehensive planning analysis at a regional level, and includes water use associated with accelerated forecasted residential development as part of its municipal and industrial sector demand projections. These housing units were identified by the San Diego Association of Government (SANDAG) land use plan in the course of its regional housing needs assessment, but are not yet included in existing general land use plans of local jurisdictions. The demand associated with accelerated forecasted residential development is intended to account for SANDAG's land-use development currently projected to occur between 2040 and 2050, but has the likely potential to occur on an accelerated schedule. SANDAG estimates that this accelerated forecasted residential development could occur within the planning horizon (2015 to 2040) of the 2015 UWMP. These units are not yet included in local jurisdictions' general plans, so their projected demands are incorporated at a regional level. When necessary, this additional demand increment, termed Accelerated Forecasted Growth, can be used by member agencies to meet the demands of development projects not identified in the general land use plans.

As demonstrated in Table 3-1 of this Report, prepared by the Department in compliance with the requirements of SB 610, using the City's and Water Authority's 2015 UWMP based upon San Diego Association of Governments (SANDAG) Series 13 Forecast land use, there is sufficient water planned to supply the Project's estimated annual average usage. The projected water demands of the Project are 281,900 gallons per day (gpd) or 315.8 acre feet per year (AFY). In the City's 2015 UWMP, the planned water demands of this project site are 75,180 gpd or 84 AFY in 2040. As such, the remaining portion of the estimated 206,720 gpd or 231.8 AFY is accounted for through the Accelerated Forecasted Growth demand increment of the Water Authority's 2015 UWMP (refer to Appendix A at the end of the report). As documented in the Water Authority's 2015 UWMP, the Water Authority is planning to meet future and existing demands which include the demand increment associated with the accelerated forecasted growth. The Water Authority will also assist its member agencies in tracking the certified Environmental Impact Reports (EIRs) provided by the agencies which include water supply assessments that utilize the accelerated forecasted growth demand increment, to demonstrate adequate supplies for the development (refer to Appendix B at the end of the report). In addition, the next update of the demand forecast for the Water Authority's 2015 UWMP will be based on SANDAG's most recently updated forecast, which will include the Project.

Existing and Future Developments Planned to occur by 2040: The City's 2015 UWMP demonstrates there will be sufficient water supplies available to meet demands for existing and planned future developments that are projected to occur by 2040. Based on a normal water supply year, the estimated water supply projected in five-year increments for a 20-year projection

will meet the City's projected water demand of 200,984 acre-feet[A] (AF) in 2020 to 273,408 AF in 2040 (**Table 6-6**) for these developments. Similarly, based on a single-dry year forecast (**Table 6-7**), the estimated water supply will meet the projected water demand of 290,292 AF (2040). Based on a multiple-dry year, third year supply (**Table 6-8**), the estimated water supply will meet the projected demands of; 208,665 AF (2020); 251,402 AF (2025); 275,139 AF (2030); 284,412 AF (2035); and 284,058 AF (2040).

TABLE 3-1
WATER DEMAND ANALYSIS

Planned Water Demands for the Project Site per the 2015 UWMP				
Category	Area (sq. ft)	Quantity (Units/ employees)	Estimated Potable Water Use	
			Gallons per Day	AFY
Dwelling Unit[1]		240	42,240	47.3
Employees[4]		549	32,940	36.8
		Total	75,180	84
Projected Water Demands for USD Master Plan Update Project				
Existing	**Area (sq. ft)**		**Gallons per Day**	**AFY**
			46,921	52.6
Proposed				
Residential	**Area (sq. ft)**	**Quantity (units)**	**Gallons per Day**	**AFY**
Multi-Family Units[1] (Apartments & Dorms)	432,450	493	86,768	97.2
Non-Residential	**Area (sq. ft)**	**Quantity (students/athletes/employees)**	**Gallons per Day**	**AFY**
Athletics [2,3]	9,950	36	1,205	1.4
Administrative [4,5]	286,817	1,043	62,578	70.1
Academic [6,7]	192,617	5,350	96,309	107.9
Landscaping[8]	407,317	n/a	20,040	22.4
Physical Plant[9]	75,750	n/a	15,000	16.8
Total			**281,900**	**315.8**
Net Water Demands				

[A] An acre-foot of water equals 325,851 gallons, which is enough water for two average families of four for one year.

Projected		281,900	315.8
City of San Diego 2015 UWMP - Planned		75,180	84
Planned from Water Authority's Accelerated Forecasted Growth		206,720	231.8
Net Unanticipated Demands		0	0

Table 3-1 Notes:

1. Eighty (80) gpcd is the City's acceptable standard for multi-family consumption (includes landscaping water demands). The City's acceptable standard for multi-family housing is 2.2 persons per unit.
2. Thirty-three and three tenths (33.3) gallons per person day is the City's acceptable standard for athlete water use, based on YMCA data from AWWA Research Foundation Data.
3. One (1) athlete per 275 square feet is the City's acceptable standard for estimating the number of athletes, based on data provided for the University of San Diego Master Plan Update WSA, prepared by Dexter Wilson Engineering, Inc.
4. The utilization of sixty (60) gallons per person day is the City's acceptable standard for employment water use (includes nominal landscaping water demand).
5. One (1) administrative employee per 275 square feet is the City's acceptable standard for estimating the number of employees, based on data provided for the University of San Diego Master Plan WSA, prepared by Dexter Wilson Engineering, Inc.
6. Eighteen (18) gallons per person day is the City's acceptable standard for student water use, based on data from the Los Angeles Department of Water & Power (LADWP) at Loyola Marymount University.
7. One (1) student per 36 square feet is the City's acceptable standard for estimating the number of students, based on data provided for the University of San Diego Master Plan Update WSA, prepared by Dexter Wilson Engineering, Inc.
8. Landscaping demands were based on the City's Landscape Calculator: http://apps/sandiego.gov/landcalc/
9. Information provided by the applicant.

Conclusion

In summary, these findings substantiate that there is sufficient water supply planned to serve this Project's future water demands within the Department service area in normal, single-dry year, and multiple-dry water year forecasts.

Therefore, this Report concludes that the projected level of water use for this Project is within the regional water resource planning documents of the City, the Water Authority and MWD. Current and future water supplies, as well as the actions necessary to develop these supplies, have been identified in the water resources planning documents of the Department, the Water Authority, and MWD to serve the projected demands of the Project, in addition to existing and planned future water demands of the Department.

Section 4 - City of San Diego Public Utilities Department

The City purchased its initial water system in 1901, from the privately owned San Diego Water & Telephone Company. Since then, continual expansion of the water system has been required to meet the demands of the growing population of the City. To meet the demand, the Department purchased a number of reservoirs between 1913 and 1935 to supplement local water supplies. Despite low annual precipitation in the area (approximately 10 inches per year), these reservoirs supplied the City's growing demands until 1940.

The need to import water emerged with the increased demand generated by the presence of the United States Navy prior to and during World War II, and the ensuing population growth. As a result, the Department and other local retail water distributors formed the Water Authority in 1944 for the purpose of purchasing Colorado River water from MWD. The Department and other local retail water distributors began receiving imported water from the Colorado River in 1947.

Today, the Department treats and delivers more than 224,000 AFY of water to more than 1.38 million residents. The water system extends over 404 square miles, including 342 square miles in the City. The Department potable water system serves the City and certain surrounding areas, including both retail and wholesale customers. The Project is located within the Department service area.

In addition to delivering potable water, the City has a recycled water program. Its objectives are to optimize the use of local water supplies, lessen reliance on imported water and free up capacity in the potable system. Recycled water provides the City a dependable, year-round, locally produced and controlled water resource.

4.1 Overview of Potable System Facilities

The water system consists of nine raw water storage facilities with over 569,021 AF of storage capacity, three water treatment plants, 32 treated water storage facilities, and more than 3,293 miles of transmission and distribution lines.

The Department maintains and operates nine local surface raw water storage facilities, which are connected directly or indirectly to the City's water treatment operations. The Lower Otay, Barrett and Morena Reservoirs (135,349 AF total capacity) service the Otay Water Treatment Plant in south San Diego; the El Capitan, San Vicente, Sutherland, and Lake Murray Reservoirs (396,347 AF total capacity) service the Alvarado Water Treatment Plant in central San Diego; and the Miramar Reservoir (6,682 AF total capacity) services the Miramar Water Treatment Plant in north San Diego. Lake Hodges Reservoir has a total capacity of 30,633 AF and is connected to Olivenhain Reservoir, which is owned by Water Authority. Olivenhain Reservoir is connected to the Water Authority's second aqueduct. Through this connection, Hodges water can be delivered to all City treatment plants. The City has the ability to access 50 percent of the local water available in Hodges Reservoir via the Water Authority's delivery system.

The Department maintains and operates three water treatment plants with a combined total rated capacity 423,862 AFY (378.4 million gallons per day MGD). The Miramar Water Treatment Plant (Miramar WTP), originally constructed in 1962, has a rated capacity of 161,300 AFY, (144 MGD), with the ability to increase to 240,830 AFY (215 MGD) after the replacement of the two old clear wells in 2016. The Miramar WTP generally serves the City's

geographical area north of the San Diego River (north San Diego). The Alvarado Water Treatment Plant (Alvarado WTP), operational since 1951, had an initial capacity rating of 134,417 AFY (120 MGD). Several hydraulic improvements and upgrades were completed in 2011 which increased the capacity of the plant to 224,028 AFY (200 MGD). The California Department of Public Health (CDPH) has approved this rating for the Alvarado WTP. The Alvarado WTP generally serves the geographical area from National City to the San Diego River (central San Diego). The Otay Water Treatment Plant (Otay WTP) was constructed in 1940, and has a current rated capacity of 38,533 AFY (34.4 MGD), which meets current and short-term forecasted demands. The Otay WTP has hydraulic capacity to increase to 44,806 AFY (40 MGD) in the future. In order to do so, approval from CDPH is required, based upon a future high filtration rate study. The Otay WTP generally serves the geographical area bordering Mexico (south San Diego) and parts of the southeastern portion of central San Diego. All upgrade work was completed in 2012 including the construction of a third flocculation and sedimentation basin, filter piping and media improvements.

The Department maintains and operates thirty two (32) treated water storage facilities including steel tanks, standpipes, concrete tanks and rectangular concrete reservoirs, with capacities varying from less than one to 35 million gallons.

The water system consists of more than 3,293 miles of pipelines, including transmission lines up to 84 inches in diameter and distribution lines as small as four inches in diameter. Transmission lines are pipelines 16 inches and larger in diameter that convey raw water to the water treatment plants and convey treated water from the water treatment plants to the treated water storage facilities. Distribution lines are pipelines 16 inches and smaller in diameter that directly services the retail users connected to a meter. In addition, the Department maintains and operates 50 water pump stations that deliver treated water from the water treatment plants to approximately 280,890 metered service connections in 128 individual pressure zones in the City's retail service area. The Department also maintains several emergency connections to and from neighboring water agencies, including the Santa Fe Irrigation District (Miramar WTP), the City of Poway (Miramar WTP), Olivenhain Municipal Water District (Miramar WTP), the Cal-American Water Company (Alvarado and Otay WTP), Sweetwater Authority (Otay WTP), and the Otay Water District (Otay WTP).

4.2 Overview of Recycled System Facilities

The City's recycled water system consists primarily of two water reclamation plants with a combined total wastewater treatment capacity of 50,406 AFY (45 MGD), three recycled water storage facilities with over 12 million gallons (12 MG) of storage capacity, and more than 97 miles of transmission and distribution lines.

Located in the Miramar area, the North City Water Reclamation Plant (NCWRP) treats an average of 18,094 AFY (16.78 MGD) of wastewater, although the plant has an ultimate treatment capability of 34,000 AFY (30 MGD). In Calendar Year (CY) 2015, 7,141 AFY (6.38 MGD) was beneficially reused. The Department maintains and operates the Northern Service Area distribution system which consists of approximately 94 miles of recycled water pipeline, two reservoirs, and two pump stations. The City is completed Phase II of the Recycled Water Master Plan. This portion extends recycled water distribution along the Highway 56 corridor to the Carmel Valley area. By the end of CY 2015, 673 meters were served by the recycled water distribution system. In addition, plans are in the works to extend the recycled water distribution system through the Sorrento Mesa area, east of Highway 5 and north of Mira Mesa Boulevard. Public Utilities staff continues to work with potential "in-fill" customers,

sites located in close proximity to the existing recycled water distribution system who are looking to use the water for irrigation and/or industrial purposes.

Located at the end of Dairymart Road, near the International Border with Mexico, the South Bay Water Reclamation Plant (SBWRP) treats an average of 8,962 AFY (7.8 MGD) of wastewater, although the Plant has a treatment capability of 17,000 AFY (15 MGD). In CY 2015, an average of 3,774 AFY (3.40 MGD) was beneficially reused. The Department maintains and operates the Southern Service Area distribution system which consists of three miles recycled water pipeline, one storage tank, one pump station and service to seven meters. Due the limited size of the distribution system, the majority of the recycled water is sold to the Otay Water District.

Section 5 - Existing and Projected Supplies

The Department relies on imported water as its major water supply source, and is a Water Authority member agency. The Water Authority is a member agency of MWD. The statutory relationships between the Water Authority, MWD and its member agencies, respectively, establish the scope of the Department's entitlements to water from these two agencies. Due to the Department's reliance on these two agencies, this Report relies and includes information on the existing and projected supplies, supply programs, and related projects of the Water Authority and MWD.

The City relies on the long-term water resources planning documents of the Water Authority and MWD to support the work on this Report. Please note that agencies must update their Urban Water Management Plans every five years. The 2015 UWMPs are completed and are available at the following websites and contacts:

San Diego County Water Authority – Contact:
Ms. Dana Friehauf, Water Resources Manager (858) 522-6749

http://www.sdcwa.org/sites/default/files/files/water-management/water_resources/2015%20UWMP%20Final%2006222016.pdf

http://www.sdcwa.org/uwmp

Metropolitan Water District of Southern California – Contact:
Ms. Grace Chan, Resource Planning & Development Manager (213) 217-6798
http://mwdh2o.com/PDF_About_Your_Water/2.4.2_Regional_Urban_Water_Management_Plan.pdf

www.mwdh2o.com/AboutYourWater/Planning/Planning-Documents

Until the 1990s, the Water Authority was 95% dependent on imported water supplies from MWD to meet demands in the San Diego region. In 1991, the Water Authority faced a potential 50% cutback in supplies from MWD that was abated by the "March Miracle" rains. Immediately following, the Water Authority embarked upon an aggressive water supply diversification strategy coupled with an aggressive water storage program that has resulted in much greater water supply reliability for the region. Additionally, MWD has increased its regional storage ten-fold and has provided financial incentives towards local water supply development by its member agencies. A brief overview of MWD and the Water Authority, including the Department relationship to these agencies, is included below.

A description of local surface and local recycled water supplies available to the Department can be found in Section 5.4 of this Report.

This information is current at the time this document was prepared.

5.1 Metropolitan Water District of Southern California

Metropolitan Water District was created in 1928, under the authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended) (the "MWD Act"). MWD's primary purpose is to provide a supplemental supply of wholesale water for domestic and municipal uses to its constituent agencies. When Metropolitan began delivering water, its service area consisted of approximately 625 square miles. Its service area has increased by 4,575 square miles since that time. The expansion is primarily the result of annexation of the service areas of member agencies.

Today, MWD's service area comprises approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. There are 26 member agencies of MWD, consisting of 14 cities, 11 municipal water districts and the San Diego County Water Authority (Water Authority). The Water Authority is MWD's largest customer, purchasing or exchanging 28.3% of all water flowing through MWD's system[B].

A Board of Directors, currently numbering 37 members, governs MWD. Each constituent agency has at least one representative on the MWD Board. Representation and voting rights are based upon the assessed valuation of property within each constituent agency. The Water Authority has four members represented on the MWD Board with 17.44 percent of the weighted vote. The total population of the MWD service area is currently estimated at more than 19 million.

MWD's existing water supplies have been historically sufficient to meet demands within its service area during years of normal precipitation. Although MWD plans and manages reserve supplies to account for normal occurrences of drought conditions, regulatory actions, including, but not limited to, restrictions under the Federal and California Endangered Species Acts, have at times placed limitations on MWD's ability to provide water to its member agencies.

In the future, population growth, regulatory restrictions, and other factors such as climate change could impact MWD's ability to supply its member agencies even in normal years. However, it is important to note that the cost of MWD's water supplies is approaching a point at which the development of local water supplies is increasingly cost-competitive. As such, major initiatives are underway by retail water agencies to develop local water supplies and reduce MWD deliveries. This suggests that a new scenario may be emerging in which MWD will have surplus water supplies on a more regular basis as its member retail water agencies increasingly roll off imported water supplies in favor of available more reliable local water supplies.

MWD Water Supply

The Water Authority has preferential rights to 18.42 percent of MWD's water supplies, which currently include water from its two sources the Colorado River and the State Water Project (SWP).

Colorado River Water: The Colorado River was MWD's original source of water after its establishment in 1928. MWD owns and operates the 242 mile-long Colorado River Aqueduct,

[B] http://www.mwdh2o.com/PDF_Who_We_Are/2015-MWD-Annual-Report-web.pdf, page 139

which starts at Lake Havasu in Arizona and terminates at Diamond Valley Lake in Riverside County.

Under numerous compacts, federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River" that govern the use of water from the Colorado River, California is entitled to 4.4 million acre-feet of Colorado River water annually. Additionally, California is entitled to one-half of any surplus water that may be available for shared use with Arizona and Nevada as determined on an annual basis by the United States Secretary of the Interior. Under the priority system that governs the distribution of Colorado River water made available to California, MWD holds the fourth priority right of 550,000 acre-feet per year and a fifth priority right of 662,000 acre-feet per year. MWD's fourth priority right is within California's basic annual apportionment of 4.4 million acre-feet; however, the fifth priority right is outside of this entitlement and is not considered a firm supply of water. MWD also retains a "call" on 100,000 acre-feet per year on water transferred to the Coachella Valley Water District and the Desert Water Agency, if needed, so long as they pay for the financial obligations associated with the water during the call period.

Several fish and other wildlife species either directly or indirectly have the potential to affect Colorado River operations, thus changing the amount of water deliveries to the Colorado River Aqueduct. A number of species that are on either "endangered" or "threatened" lists under the federal and/or California endangered species acts (ESAs) are present in the area of the Lower Colorado River. MWD and other stakeholder agencies have developed a multi-species conservation program that allows MWD to obtain federal and state permits for any incidental take of protected species, resulting from current and future water and power operations of its Colorado River facilities and to minimize any uncertainty from additional listings of endangered species.

In order to maximize the potential for Colorado River supplies, Metropolitan has established partnering opportunities with the Imperial Irrigation District to fund and implement a joint agricultural conservation program. This program provided 105,000 acre-feet additional water supplies in FY 2015 during drought conditions[C]. Additionally, MWD has partnered with the Palo Verde Irrigation District in a voluntary Land Management and Crop Rotation Program that provided an additional 65,000 acre-feet of Colorado River supplies in FY 2015.

State Water Project: The State Water Projects is owned by the State of California and operated by the State Department of Water Resources (DWR). The SWP's source waters originate in Northern California with water captured from the Feather River Watershed behind Lake Oroville Dam. The Oroville Dam releases water into the Feather River which is tributary to the Sacramento River, where it combines with other drainages from the western Sierras in the Sacramento-San Joaquin River Delta east of the San Francisco Bay Estuary. MWD receives water pumped from the Harvey O. Banks Pumping Plant in the southern portion of the Sacramento-San Joaquin River Delta, via the 444 mile-long California Aqueduct, to four delivery points near the northern and eastern boundaries of MWD. MWD is one of 29 agencies that have long-term contracts for water service from DWR, and is the largest agency in terms of the number of population served, the share of SWP water to which it is entitled, and the total amount of annual payments made to DWR. MWD's contract with DWR provides for the

[C] http://www.mwdh2o.com/PDF_Who_We_Are/2015-MWD-Annual-Report-web.pdf. Page 27

ultimate delivery of up to 1,911,400 acre-feet per year (46 percent of the total SWP entitlement). The SWP was originally intended to meet demands of 4.2 million acre-feet per year. Initial SWP facilities were completed in the early 1970s, and it was envisioned that additional facilities would be constructed as contractor demands increased. Several factors, including public opposition, increased costs, and increased non-SWP demands for limited water supplies, combined to delay the construction of additional facilities.

The quantity of SWP water available for delivery each year is controlled by hydrology, environmental and operational considerations. In addition to its importance to urban and agricultural water users, the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta) is of critical ecological importance. The Bay-Delta is the largest estuary on the west coast of the United States and provides habitat for more than 750 plant and animal species. One-hundred-fifty years of human activity have contributed to the destruction of habitat, the decline of several estuarine and anadromous fish species, and the deterioration of water quality. These activities include increasing water demands from urban and agricultural uses, the dredging and filling of tidal marshes, the construction of levees, urban runoff, agricultural drainage, runoff from abandoned mines, and the introduction of non-native species, thus affecting the supply and reliability of this source.

DWR has altered the operations of the SWP to accommodate species of fish listed under the ESAs. These changes in project operations have reduced SWP deliveries. The impact on total SWP operations attributable to the ESA listed Delta smelt and salmon species biological opinions combined is estimated to be one million acre-feet in an average year, reducing SWP deliveries from approximately 3.3 million acre-feet to approximately 2.3 million acre-feet for the year under average hydrology. The reduction in SWP deliveries attributable to these biological opinions can vary greatly depending on the level of precipitation and are estimated to range from 0.3 million acre-feet during critically dry years to 1.3 million acre-feet in above normal water years. SWP deliveries to contractors for calendar years 2008 through 2012 were reduced by a total of approximately 2.3 million acre-feet as a result of pumping restrictions.

The year 2016 proved to be an extremely difficult water year for California as it endured a fifth year of drought and record high temperatures. The MWD Board of Directors established a 15 percent restriction of supply deliveries on its member agencies while Governor Edmund G. Grown Jr. issued Executive Order B-29-15 that directed the State Water Resources Control Board

California Water Fix

The California Department of Water Resources (DWR) is in the process of introducing a plan known as the *California Water Fix* that would construct 35 miles of twin tunnels capable of transferring 9,000 cubic feet per second of freshwater from three intake facilities north of the Delta to the expanded Clifton Court Forebay located south of the Delta, where two pumping plants would be constructed to maintain optimal water levels in the forebay for the existing State Water Project (SWP) and Central Valley Project (CVP) pumping facilities to better facilitate water exports during times of large rain events.

The proposed project is expected to provide additional water supply reliability for water importers, although the benefits will still be weather dependent.

CALIFORNIA WATER FIX

(State Water Board) impose restrictions on urban water suppliers statewide to achieve a statewide 25 percent reduction in potable urban usage through February 2016.

The Governor's actions were unprecedented and placed a requirement on the City of San Diego to reduce its demands by 16 percent as compared to 2013 water demands. Other retail water agencies within the San Diego region had conservation standards of between 8 and 36 percent, depending on the amount of conservation already achieved by each agency. A weighted average of the conservation standards placed on all retail water agencies within the Water Authority's service territory equated to a 20 percent reduction in demands region-wide. The State Water Board estimated that a 25 percent statewide reduction in demands would result in a reduction in demands of 1.2 million acre-feet during the 270 days of the emergency order.

A mandated 16 percent reduction in San Diego's demands translated to a reduction in sales of approximately 35,000 acre-feet per year, which San Diego was able to accomplish. On November 13, 2015, Governor Brown issued Executive Order B-36-15 calling for an extension of urban water use restrictions until October 31, 2016, should drought conditions persist through January 2016. The State Water Board modified the restrictions at its February 2, 2016 meeting to allow credit to a water agency's conservation standard for growth, climate and the development of local drought-resilient supplies, with a cap of 8 percent total credit. As of this writing, the City of San Diego received a full credit of 8 percent to its conservation standard as a result of the newly developed seawater desalination project at Carlsbad providing regional water supply benefits. As a result, San Diego's mandatory reduction in sales is reduced to approximately 17,500 acre-feet.

5.2 San Diego County Water Authority

The Water Authority service area lies within the foothill and coastal areas of the westerly third of San Diego County, encompassing 952,208 acres (1,488 square miles). When the Water Authority was established in 1944, its service area consisted of 94,707 acres. Of the total population of San Diego County, 97 percent live within the Water Authority's service area. Growth has primarily resulted from the addition and annexation of service areas by member agencies. The City, with a population of 1.38 million served and a service area of 210,726 acres, is by far the Water Authority's largest member agency and customer.

The Water Authority's service area is a semi-arid region where the natural occurrence of water from rainfall and groundwater provides a firm water supply for only a small portion of the water demands of the current population. Since 1990, the Water Authority has provided an average of 85 to 91 percent of the water supply within its service area. As a wholesaling entity, the Water Authority has no retail customers, and only water delivery, storage and treatment services to its member agencies.

The Water Authority's mission is to provide its member agencies with a safe and reliable water supply. Historically, the principal source of supply for the Water Authority's service area has been water purchased from MWD for sale to the Water Authority's member agencies. However, drought conditions and population growth in the Water Authority's service area have highlighted the need for diversification of the region's water supplies. Consistent with its mission statement, the Water Authority has actively pursued a strategy of supply diversification that includes the acquisition and importation of additional water supplies, the development of additional local water supply projects and augmentation of its water supply via local and regional water storage capacity.

Water supplies utilized within the Water Authority service area originate from two sources: (1) water imported by the Water Authority and (2) local supplies (such as local runoff, groundwater, recycled water and seawater desalination). Since 1990, local supplies have grown to constitute 15 percent of the Water Authority's water supply, and the Water Authority has implemented programs and supported new technologies in order to assist its member agencies in increasing this percentage. Although MWD remains the Water Authority's largest source of imported water, recent years have also seen the diversification of sources of imported water through core and spot water transfers with other agencies.

The Quantification Settlement Agreement (QSA) for the Colorado River was completed in October 2003. This historic agreement was enacted to help settle disputes regarding the persistent over-drafting of the state's 4.4 million acre-foot basic annual apportionment of Colorado River water. The agreement includes a long-term transfer of conserved water from the Imperial Irrigation District to the Water Authority. The QSA also commits the state to a restoration path for the environmentally sensitive Salton Sea and provides full mitigation for these water supply programs. Specific programs under the QSA that directly benefit the Water Authority include the San Diego County Water Authority-Imperial Irrigation District water transfer agreement, which currently transfers 100,000 acre-feet of high priority Colorado River water to the Water Authority and will provide up to 200,000 acre-feet of water a year through water conservation measures in Imperial Valley in 2021. The QSA also allows for the transfer of water from the Imperial Irrigation District (IID), for water conserved through the implementation of the Water Authority performed projects to install concrete linings on portions of the previously earthen All-American and Coachella Canals. The canal lining projects reduced the losses of water that historically occurred through seepage. MWD assigned to the Water Authority its right to develop approximately 77,700 acre-feet of conserved Colorado River water annually.

The QSA ensures that the San Diego region receives a minimum of 75 years of stable Colorado River water supplies. On November 5, 2003, the IID filed a validation action in Imperial County Superior Court, seeking a judicial determination that 13 agreements associated with the San Diego County Water Authority-Imperial Irrigation District water transfer and the QSA are valid, legal and binding. Other lawsuits also were filed contemporaneously challenging the execution, approval and implementation of the QSA on various grounds. All of the QSA cases were coordinated in the Sacramento Superior Court. A final judgment invalidating 11 of the 13 agreements in Phase 1 of the trial was entered on February 11, 2010, and subsequently appealed. On December 7, 2011 the Court of Appeal issued its opinion reversing the judgment and remanding to the trial court for further proceedings. The appellate Court decision resolved many issues in the case, including the validity and constitutionality of the QSA. Trial on compliance with the California Environmental Quality Act was held in November 2012. On June 4, 2013, the court validated the 2003 QSA and related 12 agreements regarding transfers and exchanges of Colorado River water between southern California water agencies. The IID, Coachella Valley Water District, MWD, and Water Authority all sought validation of the agreements from the court under California Water Code section 22762 and California Code of Civil Procedure section 860 et seq., quantifying the amount of Colorado River water each agency may divert and subsequently transfer. The court found the agreements to be valid and adopted in compliance with the requirements of the Brown Act and the California Environmental Quality Act (CEQA). The ruling represents the latest chapter in the longstanding dispute regarding the diversion and use of California's apportionment of the Colorado River under state and federal law.

In late November 2012, the Water Authority's Board of Directors approved a 30-year Water Purchase Agreement with Poseidon Resources, a private investor-owned company, to

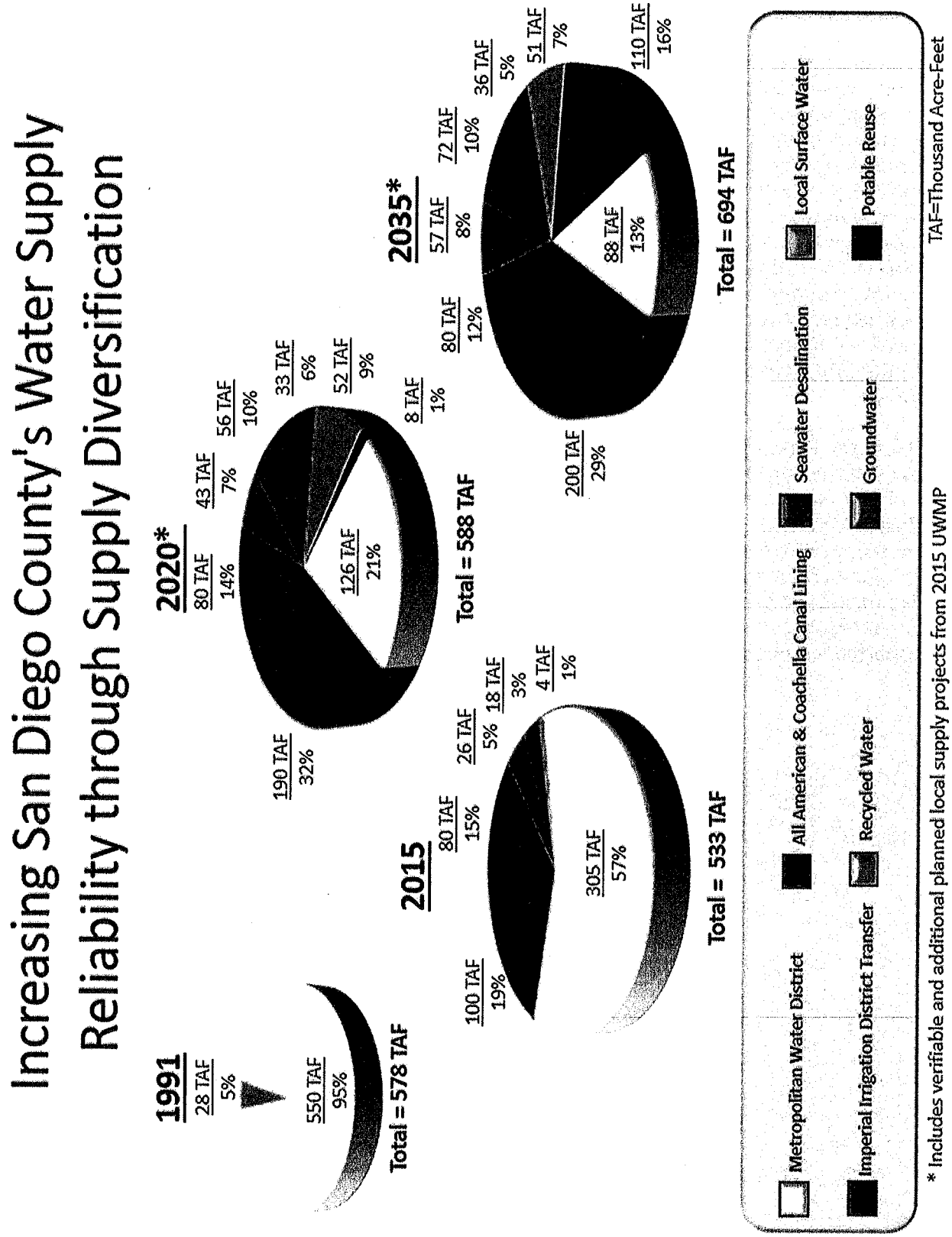
purchase water from the proposed Carlsbad Desalination Plant, which is a fully-permitted ocean desalination plant and conveyance pipeline. The plant began producing 50 million gallons a day in December 2015 and is now generating enough water to meet between seven and ten percent of the region's current demands[D].

In addition to developing its own regional supplies of water, the Water Authority has also encouraged the development of additional local water supply projects such as water recycling and groundwater projects, through the award of Local Water Supply Development (LWSD) incentives of up to $200 per acre-foot for recycled water and groundwater produced and beneficially reused within the Water Authority's service area. The purpose of the Water Authority's LWSD program is to promote the development of cost-effective water recycling and groundwater projects that prevent or reduce a demand for imported water and improve regional water supply reliability. The LWSD Program reimburses member agencies for all, or a portion of the difference between the actual per acre-foot cost of producing recycled water, and the revenue generated by the LWSD participant through the sale of that acre-foot of recycled water (not to exceed $200 per acre-foot). In February 2008, the program was expanded to include funding for local brackish and seawater desalination projects. However, funding for new LWSD program projects is no longer appropriated in the Water Authority's budget.

Please see Figure 5-1 below that demonstrates the supply diversification achievements and goals of the San Diego County Water Authority and its member agencies. In addition to the region's investments in new supplies, the Water Authority has also undertaken a multi-phased Emergency Storage Program that built one new dam (Olivenhain, 2003) and raised another (San Vicente, 2015) to increase emergency and carryover storage in the region by 176,000 acre-feet. The Water Authority began filling San Vicente in 2015. The additional in-region storage capacity will allow the Water Authority and its member agencies to be prepared for emergency conditions and also to buffer against dry year reductions in deliveries from imported supplies.

[D] http://carlsbaddesal.sdcwa.org/

FIGURE 5-1
SAN DIEGO COUNTY WATER AUTHORITY'S WATER SUPPLY DIVERSIFICATION



5.3 2009 Comprehensive Water Package

On November 4, 2009, the California State Legislature passed a comprehensive package of water legislation (the "2009 State Water Legislation") that included five bills (four of which were subsequently signed by Governor Schwarzenegger) addressing California's statewide water situation, with particular emphasis on the San Francisco Bay/Sacramento-San Joaquin-Delta (Bay-Delta). The 2009 State Water Legislation included an urban water conservation mandate of 20 percent for most localities in the State by 2020 (also known as the "20x2020 requirement"), and new regulations establishing strategic monitoring of groundwater levels around the state. The 2009 State Water Legislation also created two new governmental agencies – the Delta Stewardship Council and the Sacramento-San Joaquin Delta Conservancy. The Delta Stewardship Council is charged with developing and implementing a Delta Plan, which would include the Bay Delta Conservation Plan, upon meeting certain conditions. The Sacramento-San Joaquin Delta Conservancy will implement ecosystem restoration activities in the Bay-Delta. In addition, the 2009 State Water Legislation included legislation addressing unauthorized Bay-Delta water diversions. At this time, it is not known what effect the 2009 State Water Legislation will have on future water supplies.

Additionally, the 2009 Legislation package included an $11.1 billion State general obligation bond measure. The water bond measure was originally certified to be on the State's 2010 ballot, but was subsequently pulled due to unfavorable public polling. That same bond measure was subsequently delayed twice. During the previous 2013-2014 legislative session, several bills were introduced with the intent of reducing and reconfiguring the dedicated expenditures in the original water bond measure. In late 2014, the legislature introduced the "Water Quality, Supply, and Infrastructure Improvement Act of 2014" which proposed a trimmed down version of the 2009 bond measure for a total of $7.5 billion and was subsequently placed on the November 4, 2014 statewide ballot as Proposition 1 and approved by voters. Proposition 1 is a general obligation bond measure to fund a variety of state water supply infrastructure projects, such as public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration. The bond funds will be distributed through a competitive grant process overseen by various state agencies, including the Department of Water Resources, the State Water Resources Control Board, and the California Water Commission. The State is in the process of developing and adopting guidelines for the various funding programs contained in Proposition 1. Some have been completed (such as the Water Recycling Funding Program/WRFP), and others are still in development (such as the Water Storage Investment Program/SWIP).

5.4 Public Utilities Department

The Department currently purchases approximately 85 to 90 percent of its water from the Water Authority, which supplies the water (raw and treated) through two aqueducts consisting of five pipelines. While the Department imports a majority of its water, it uses four local supply sources to meet or offset potable demands: local surface water, groundwater, conservation, and recycled water (see Figure 5-1: San Diego County Water Authority's Water Supply Diversification).

The availability of sufficient imported and regional water supplies to serve existing and planned uses within the Department service area is demonstrated in the prior discussion on

the water supply reliability of MWD and the Water Authority. The City has been receiving water from the Water Authority since 1947, and during the last 20 years purchased between 139,000 and 235,500 AFY. For CY 2015 water purchases totaled approximately 173,888 AF. Depending upon demands, growth and the success of local water supply initiatives, this could remain somewhat constant or increase up to a projected maximum of 295,998 AFY in 2035 during normal years. For the purpose of this analysis the maximum is used.

5.4.1 Demonstrating the Availability of Sufficient Supplies

Imported Supplies

Section 5, Subdivision 11, of the County Water Authority Act, states that the Water Authority "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs." Depending on local weather and supply conditions, the Water Authority provides between 75 to 95 percent of the total supplies used by its 24-member agencies. As mentioned in Section 4, the Public Utilities Department and other local retail water distributors formed the Water Authority in 1944 for the purpose of purchasing Colorado River water from the MWD.

Local Surface Water Supplies

The Department maintains and operates nine local surface raw water storage reservoirs which are connected directly or indirectly to water treatment operations. In the San Diego region, approximately 13 percent of local precipitation produces surface run-off to streams that supply Department reservoirs. Approximately half of this run-off is used for the municipal water supply, while the remainder evaporates during reservoir storage. In very wet years, the run-off remainder may spill over the reservoir dams and return to the Pacific Ocean. Average rainfall produces less than half of the average run-off in San Diego. The local climate requires about average rainfall to saturate the soils sufficiently for significant surface run-off to occur. Therefore, most of the run-off to reservoirs is produced in years with much greater than average rainfall. Some flooding may occur even during average or below average rainfall years if the annual rainfall is concentrated in a few intense storms.

The use of local water is affected by availability and water resource management policies. The Department's policy is to use local water first to reduce imported water purchases and costs. The Department also operates emergency and seasonal storage programs in conjunction with its policy. The purpose of emergency storage is to increase the reliability of the imported water aqueduct system. This is accomplished by maintaining an accessible amount of stored water that could provide an uninterrupted supply of water to the City's water treatment facilities, should an interruption to the supply of imported water occur. The management of reservoirs is guided by Council Policy 400-04, which outlines the City's Emergency Water Storage Program. The policy mandates that the Department store sufficient water in active, available storage to meet six-tenths of the normal annual (7.2 months) City water demand requirements (conservation is not included). Active, available storage is that portion of the water that is above the lowest usable outlet of each reservoir.

The monthly emergency storage requirement changes from month-to-month, and is based on the upcoming seven months water demand. This results in a seasonally fluctuating emergency storage requirement, generally peaking in April and reaching its minimum in October. This seasonally fluctuating requirement makes a portion of the required emergency storage capacity available for impounding or seasonal storage.

The purpose of seasonal storage is to increase imported water supply. This is done by storing surplus imported water in the wet winter season for use during the dry summer season. This may also be accomplished by increased use of imported water in lieu of local water in the winter when local water may be saved in reservoirs or groundwater basins for summer use. In addition to increased water yield, this type of seasonal operation also reduces summer peaking on the imported water delivery system.

Drought Management

On January 17, 2014, California Governor Jerry Brown declared a drought in California. This prompted water agencies to enact drought response measures. The City of San Diego implemented Drought Response Level 1 on July 1, 2014, and then Level 2 on November 1, 2014 to help meet the Governor's call to conserve water. On April 1, 2015 Governor Brown issued Executive Order B-29-15 mandating water reductions across the State of California. In response, the State Water Resources Control Board issued water use restrictions for immediate implementation, resulting in a 16% reduction target for the City of San Diego, compared to 2013 usage, effective June 1, 2015 through February 28, 2016. The City of San Diego implemented stricter irrigation schedules and pursued aggressive enforcement of drought related water use restrictions, and has been achieving on average 20% reduction from 2013 usage. Such stricter schedules include:

- Water before 10 am or after 6 pm, on two assigned days per week only, and for only 5 minutes per station when using a standard irrigation system.
- Turn off irrigation during, and for at least 48 hours following, rain.
- Stop operating ornamental fountains except for maintenance.
- Potted plants, non-commercial vegetable gardens and fruit trees may be irrigated on any day, but only before 10 am and after 6 pm.

In February 2016, California's State Water Resources Control Board (SWRCB) revised the City's conservation target down to 8 percent, reflecting actual population growth and implementation of alternative water supplies. The SWRCB's new target for the City until October 31, 2016, is a reduction of 8 percent of its 2013 water use. The SWRCB is anticipated to issue revises rules based on the Governor's mandate that would apply through January 2017.

Conservation

The Department's Water Conservation Program is effective in promoting permanent water savings. Established by the City Council in 1985, the Water Conservation Program accounts for more than 13,793 acre-feet of potable water savings in FY 2015. This savings has been achieved by creating a water conservation ethic, adopting programs, policies and ordinances designed to promote water conservation practices, and implementing comprehensive public information and education campaigns.

The City offers a broad range of conservation methods to help meet the needs of our residential and commercial water customers. These include, but are not limited to, the following:

- Rebate programs for high efficiency toilets, washing machines and residential and commercial water saving devices
- Rebates for replacing grass with water wise landscapes, micro-irrigation systems and weather based irrigation controllers
- Rain barrel rebates

- Indoor commercial water use surveys
- Residential interior/exterior and commercial landscape survey programs
- Public education and outreach

Research conducted by the City, the Water Authority, and the Water Research Foundation has shown that prior to the current drought, more than half of residential water-use is outdoors. Therefore, the City-added outdoor conservation programs to focus on water efficient landscaping and irrigation management, which provide the best opportunity to achieve significant water savings.

Tools and services available for customers include:

Commercial and Residential Water-Use Survey Programs — this service includes an account for all water-use on the property. The surveyor also checks if the irrigation system is functioning proper and for uniform coverage. On average, residential surveys result in a savings in water of 15 percent, while commercial surveys, depending on type of facility, can achieve 15 percent to 25 percent water savings.

WaterSmart software — another tool used to create water budgets and manage irrigation using aerial photographs, GIS maps, weather data, etc. This service has generated significant water savings in City parks, freeway landscapes, schools, and homeowner associations. New programs in place include incentives to install water efficient irrigation equipment and weather based irrigation controllers (smart irrigation clocks that use weather data to set watering schedules); as well as incentives to replace grass with sustainable landscapes and upgrade to micro irrigation from overhead sprinklers.

The Water Conservation Section teamed up with the Transportation & Storm Water Department to include rain barrels as an item that can receive a rebate through the "Outdoor Water Conservation Rebate Program." Rain barrels are used to collect rainwater from hard surfaces such as household rooftops. When citizens install a rain barrel at their home, they are helping to maintain a healthy urban watershed by reducing the demand on the potable water system, while also reducing the amount of wet weather runoff that is collected and sent into the public storm water system.

'San Diego Municipal Code (SDMC) 67.06 Water Submeters' was adopted in April 2010, to encourage water conservation in multi-family residential and mixed-use buildings by requiring the use of water submeters for each individual residential unit. Billing individual residential units based on the actual amount of water consumed in the unit creates a financial incentive for residents of multi-family residential units to conserve water.

Planning efforts to increase water conservation is an ongoing process. The aforementioned water conservation programs undergo periodic reevaluation to ensure the realization of forecasted savings. Additionally, changes in water conservation technologies may require reassessment of long-range plans. The Department continues to work with proven water conservation programs, while including irrigation management programs to maximize water savings; regularly examines new technologies and annually checks progress towards conservation goals; and, continues to work collaboratively with MWD and the Water Authority to formulate new conservation initiatives. The City's water conservation report, prepared annually, is available at http://www.sandiego.gov/water/pdf/purewater/2014/fy14annualwater140101.pdf. The report provides an ongoing assessment and status update, redirecting or enhancing efforts as

needed. The programs outlined in the document undergo periodic reevaluation to ensure the realization of forecasted savings.

Recycled Water Supplies

In CY 2015, the beneficial reuse of the recycled water was 13,650AF: 12,500 AF from the NCWRP and 1,150 AF from the SBWRP. Although landscape irrigation continues to be the leading use of the recycled water, the customer base has become more varied over the years with an increase in the number of industrial and dual plumbed meter connections.

Proactive marketing activities targeting existing irrigation customers, to encourage them to convert their cooling systems to recycled water, coupled with outreach efforts to connect new customers have been successful, as recycled water meter connections have increased over 60 percent since 2007. By December 31, 2015, the City provides recycled water service to 675 retail meters and 5 wholesale meter connections, including the City of Poway, Olivenhain Municipal Water District (3 connections) and Otay Water District. The 2015 top ten retail customers included the City of San Diego Park & Recreation Department, Santaluz Golf Course, Miramar Marine Corps Air Station Miramar, Black Mountain Ranch and Del Sur Community HOA, UCSD, El Camino Memorial Park, The Irvine Company, Caltrans, UCSD, Village Nurseries Wholesale and Qualcomm

In CY 2015, financial incentives from the sale of recycled water resulted in over $2.3 million in savings towards imported water purchases. The financial incentives are a result of local water resources development agreements with Metropolitan Water District and the San Diego County Water Authority.

The Department, in cooperation with the Park & Recreation Department, has aggressively pursued the retrofitting of City parkland, street landscaping and open space to use recycled water for irrigation; sites fronting recycled water distribution pipelines were targeted. In 2007 only 23 recycled water meters were serving City sites; as of December 2015, that number has grown to 113 meter connections.

Public Utilities Department's Capital Improvement Program

The Department reevaluates the Water projects contained in the Capital Improvements Program (CIP) and the timing thereof periodically. Changes to the CIP are made to reflect changing priorities within the water system and occur as a result of project scope changes, date revisions, project sequencing, and operational considerations. The Department expended approximately $777 million from July 1, 2005, through June 30, 2015 on CIP projects. Improvements included projects to upgrade and expand water treatment plants, rehabilitate raw and treated water storage facilities, construct major transmission pipelines, replace and/or upgrade existing pump stations, replace cast iron water mains citywide, expand the recycled water system, and other new supply initiatives. In November 2015, the City Council adopted water rate increases of 9.8 percent beginning on January 1, 2016 and 6.4 percent beginning on July 1, 2016. These rate increases will provide needed revenue to fund the upgrade and expansion of the water system in order to ensure a reliable water supply for all City residents and meet Department of Public Health mandates.

The Department has recently updated the water facilities master plan to identify long-term facility needs. The master plan, identifies over 90 projects through the master planning effort for CIP implementation from fiscal years 2016-2035. Project scopes were developed from

facility condition assessments and system evaluations. The prioritization of CIP projects are based on the adopted City Council Policy 800-14 (CP 800-14).

Summary of Supplies

Historic imported water deliveries from the Water Authority to the Public Utilities Department and local surface water, groundwater, conservation savings and recycled water deliveries are shown in **Table 5-1.**

Table 5-1
Historic Imported, Local and Recycled Water Demands*
Public Utilities Department

Fiscal Year	Imported Water (acre-feet)	Local Surface Water (acre-feet)	Conservation[1] (acre-feet)	Recycled Water (acre-feet)	Groundwater (acre-feet)	Total[2] (acre-feet)
1990	233,158	22,500	-	-	-	255,658
1995	162,404	59,024	8,914	-	-	230,342
2000	207,874	39,098	17,410	3,250	-	267,632
2005	204,144	26,584	29,410	4,294	-	264,432
2010	188,337	13,117	34,317	12,173	500	248,444

Table 5-1 Notes:
[1]Conserved water results in savings and is not a direct supply.
[2]Total includes water supplied and conserved.
*Includes retail and wholesale demands

5.4.2 Plans for Acquiring Additional Supplies

Future Supplies

The Department completed the City Council approved 2012 Long-Range Water Resources Plan (2012 LRWRP) on December 10, 2013. The 2012 LRWRP is a high level strategy document that evaluates water supply and demand-side objectives against multiple planning objectives. The 2012 LRWRP was an open participatory – stakeholder driven process that evaluated over 20 water supply options such as water conservation, recycled water, groundwater storage, brackish groundwater desalination, rainwater harvesting, graywater and potable reuse. The plan takes a long-range viewpoint through the year 2035 in addressing risk and the uncertainty of future water supply conditions. It is a plan that sets the tone or direction of where the City places its efforts in developing local water supplies.

Conservation and water recycling programs have been implemented and are under investigation for ways to be expanded or increased. The Department is also investigating the development of groundwater and potable reuse.

Conservation

Like many agencies in California, the City is committed to reducing its per capita water consumption by at least 20 percent by the year 2020. Aside from the existing programs listed in Section 5.4.1 of this report, the City is also implementing the following programs to help reduce overall water consumption:

Conservation-oriented rate structures – A new rate structure, which took effect in January 2014, adds a fourth new tier for single-family residential customers that recognizes water conservation efforts, and increases the rates for higher tiers to discourage high volume usage. The City Council recently voted to maintain this four tier residential rate structure through FY 2019.

Advanced Metering Infrastructure (AMI) – The Department has completed the installation of a citywide AMI fixed network. Endpoints of the AMI have been installed at approximately 10,000 monthly billed meters and 1,000 bi-monthly billed meters. Data from the AMI system/endpoint will be available for customers and begin billing the 4th quarter of FY 2016.

Recycled Water

Recycled Water Study:

The Recycled Water Study was presented and unanimously accepted by the City Council on July 17, 2012, following a three-year effort that included extensive stakeholder involvement. The Study can be located at the following link:
http://www.sandiego.gov/water/pdf/waterreuse/2012/recycledfinaldraft120510.pdf.

During the 2008 to 2010 Point Loma Wastewater Treatment Plant (Point Loma WTP) permit modification process, San Diego Coastkeeper and the San Diego Chapter of the Surfrider Foundation entered into a Cooperative agreement with the City to conduct the Recycled Water Study (Study). In accordance with the agreement, the San Diego Coastkeeper and the San Diego Chapter of the Surfrider Foundation did not oppose the United States Environmental Protection Agency's (USEPA) decision to grant the permit modification. The City Council authorized the execution of the Cooperative Agreement on February 18, 2009. The modified

Permit allows Point Loma WTP to continue operating as a chemically enhanced primary treatment facility (CEPT) for five years until the permit expired on July 31, 2015. The permit must be renewed rather than upgrading the treatment system to meet secondary standards as required in the federal Clean Water Act. The interim regulators administratively continue the present permit until final action on the renewal is taken. The Study concluded meeting all terms of the Agreement with Coastkeeper and Surfrider. The Recycled Water Study identified five Reuse Alternatives. Non-Potable Reuse, Indirect Potable Reuse, and wastewater off-load to the Point Loma WTP are the common components of each of the five alternatives. All reuse alternatives presented in the study achieve the study goals, provide a bold vision for the future water reuse in the Metro Service Area, and provides potential savings to ratepayers. For additional details on the Reuse Alternatives, please see the Recycled Water Study Report Dated July 2012, in the above link.

Potable Reuse:

Potable Reuse is an approach the City is considering for maximizing the use of recycled water. Recycled water that is used for non-drinking uses like irrigation and industrial processes, would undergo advanced water purification (AWP) to render it safe for reuse as a drinking water supply. The AWP process uses multiple treatment barriers to remove contaminants from the water and prevent them from re-entering the water supply. It begins with membrane filtration, followed by reverse osmosis, and ends with advanced oxidation. The result is purified water that meets all drinking water standards and is similar in quality to distilled water. There are two major types: Indirect Potable Reuse (IPR) and Direct Potable Reuse (DPR). With IPR, the purified water is sent to an environmental buffer; for the City's IPR concept, San Vicente Reservoir would be the environmental buffer. The water in San Vicente is treated at a drinking water treatment plant before it is distributed for drinking purposes. Direct potable reuse differs in that there is no environmental buffer. The California Department of Public health is mandated to determine the feasibility of establishing DPR regulations. Industry experts expect that DPR regulatory criteria to include the use of additional treatment or engineered storage barriers to compensate for the absence of an environmental buffer. The City monitoring the development of DPR regulations and how they might influence the viability of potable reuse implementation.

Water Purification Demonstration Project:

In order to assess the feasibility of indirect potable reuse with reservoir augmentation (IPR/RA), the City initiated a Water Purification Demonstration Project (Demonstration Project). The Demonstration Project evaluated the feasibility of using advanced water purification (AWP) technology to produce water that can be sent to San Vicente Reservoir, subsequently treated, and later be distributed as potable water As part of the Demonstration Project, the City tested and operated a one-million gallon per day demonstration-scale AWP Facility from June 2011 to August 2012. The purified water was routinely tested to determine the effectiveness of the treatment equipment, and operating data was gathered to develop a cost estimate for full-scale facilities. A study of San Vicente Reservoir was also conducted to establish residence time and short circuiting conditions of the purified water in the reservoir. An extensive public outreach and education program was implemented to educate the public about the potential benefits and implications of an IPR/RA project. The City also coordinated with the State's regulatory agencies to help define the requirements for an IPR/RA project.

The Final Project reports have been completed and are available at the following link: www.purewatersd.org/projectreports . The Demonstration Project reports were presented to full City Council on April 23, 2013. The City Council adopted the Demonstration Project Reports and directed staff to determine a preferred implementation plan and schedule that considers potable reuse options for maximizing local water supply and reduced flows to the Point Loma Wastewater Treatment Plant. This follow on effort, now known as the Pure Water San Diego Program, is described in more detail below.

Pure Water San Diego Program:

The Department's Pure Water San Diego Program (Program) is a multi-year program ending in the year 2035. The program will create a safe and reliable local water supply through potable reuse, while reducing the Point Loma Wastewater Treatment Plant's ocean discharges and accomplishing secondary equivalency.

Potable reuse is an approach that would allow the City to maximize the use of recycled water. Recycled water that is used for non-drinking uses like irrigation and industrial processes, would undergo advanced water purification (AWP) to render it safe for use as raw water supply. The AWP process uses multiple treatment barriers to remove contaminants from the water and prevent them from re-entering the water supply. It begins with ozone/BAC, membrane filtration, followed by reverse osmosis, and ends with advanced oxidation. The result is purified water that meets all drinking water standards and is similar in quality to distilled water.

Pure Water will be implemented in two or three phases. The first phase which consists of 30 MGD advanced water purification facility will be located in the northern part of the City. The other two phases may be located either all in the central area, or may be split between central and southern area. Decision on the location for phase two will be made once evaluations of benefits and challenges associated with each location is determined. Under all scenarios the water will be treated again at a drinking water plant before being distributed for consumption.

Other ongoing Pure Water work includes validating overall program costs and schedule, designing the treatment and conveyance facilities, finalizing the method for water-wastewater cost allocation, continued outreach and education, and working closely with regulatory and other key stakeholders.

The City's application for a National Pollution Discharge Elimination Permit (modified permit) was received by the United States Environmental Protection Agency and the Regional Water Quality Control Board in January 2015. The current permit expired on July 31, 2015, and in the interim regulators administratively continue the present permit until final action on the renewal is taken. Pure Water is integral to both the application to renew Point Loma's Permit and the proposed permanent solution for future permits to be considered secondary equivalent.

This comprehensive effort will provide a secure and reliable long-term local water supply for San Diego while resolving the decade's long issues associated with Point Loma WTP.

Groundwater

There are several groundwater basins in the San Diego region that the City has rights, concerns, jurisdiction and an interest in developing for municipal supply or other beneficial use. These basins are:

- San Pasqual Basin
- Mission Valley Basin
- Santee/El Monte
- Tijuana Basin
- San Diego Formation (includes both the Sweetwater Valley and Otay Valley Basins)

The City of San Diego is committed to protecting its groundwater resources and preserving its established Pueblo water rights. This right attaches to it, the use of all surface waters and groundwater of the streams that flowed through the original pueblo, including their tributaries, from their source to their mouth. The City's Pueblo right protects its ability to extract water from the basin to the extent of the needs of its inhabitants. The native waters are accessible to others until the City needs the water.

The City is presently assessing the development of all of its groundwater resources. Its intent is to develop any and all available groundwater needed for its inhabitants. The location of groundwater wells throughout the basins can be viewed as evidence of the City's intent, ability and preliminary efforts to develop basin groundwater resources.

The groundwater quality from these basins is predominantly brackish. Improved technologies provide consideration of affordable water sources, such as brackish groundwater, that were not available a few decades ago. Groundwater is a viable alternative and is part of the City's planning efforts. Local water supply projects, particularly groundwater exploration, benefit City rate payers, offer drought protection, and are locally controlled.

The City is the Monitoring Entity for the San Pasqual Basin and for the Santee El Monte Basin as approved by the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Working cooperatively with the California Department of Water Resources (DWR), the City established a network of monitoring wells for CASGEM to regularly and systematically track seasonal and long-term trends in groundwater elevations for the two alluvial groundwater basins. Included in the monitoring network plan for the San Pasqual Basin are three multi-level monitoring wells installed by the United States Geological Survey (USGS) under a cooperative agreement with the City. Participation in the statewide CASGEM program allows basin groundwater data to be maintained and readily available through DWR's public data base.

In addition, additional work with DWR on Sustainable Groundwater Management Act (SGMA) of 2014 provides a framework for sustainable management of groundwater supplies by local authorities. Local agencies involved in the implementation must form local groundwater sustainability agencies within two years. For agencies in basins deemed high or medium priority, groundwater sustainability plans must be adopted within five to seven years. By 2040, groundwater agencies in critically overdrafted basins should achieve sustainable groundwater management to avoid undesirable results, such as chronic depletion of groundwater, reduction of groundwater storage, degradation of water quality, depletion of surface water, or subsidence. In general, the groundwater basins as discussed in the San

Diego area are characterized by stable groundwater levels. Groundwater quality is often brackish, with total dissolved solids (TDS), chloride, and sodium impairing its use as a potable supply.

The City has been investigating the Mission Valley Aquifer (an aquifer holds water that's stored beneath the Earth's surface in the pores of soil and the cracks of rock). Mission Valley is a narrow, east-west trending valley carved out by the San Diego River as it drains westward from Mission Gorge to the Pacific Ocean. The most conducive portion of the aquifer lies within the extent of an historical well field where the City has retained ownership of the property and where a substantial portion is overlain by Qualcomm Stadium and its parking lot.

In 1963 a fuel tank farm was built in Mission Valley at the mouth of Murphy Canyon, known as Mission Valley Terminal (MVT). Underground fuel contamination was suspected to have happened in 1986. From 1986 to 1991, approximately 200,000 gallons of gasoline was released underground from the MTV located upstream of Qualcomm Stadium and contaminated the aquifer. The contamination extended from the tank farm, beneath Qualcomm property, to approximately where Interstate 805 crosses the San Diego River. Although remediation of the Mission Valley Aquifer has been ongoing for a period of time, the City is waiting for remediation to be complete before resuming its plans for development of the aquifer for municipal supply.

The City has been producing groundwater from the Santee/El Monte Basin, which is located in the upper reach of the San Diego River. The City is evaluating the expansion of its groundwater production facilities in this basin. The City's existing wells produce approximately 500 AFY. The well conveys groundwater directly to the City's existing raw water line from the reservoir, and ultimately, to the City's Alvarado Treatment Plant.

The San Diego Formation is a coastal plain, groundwater basin covering much of National City and the City of Chula Vista in the southern portion of San Diego County. The San Diego Formation is a confined aquifer that underlies a portion of both the Otay Valley and Sweetwater Valley groundwater basins as identified by DWR in Bulletin 118. The City desires to use the San Diego Formation for groundwater municipal supply, and seeks to manage the safe yield of the groundwater system in a prudent and efficient manner.

The City has been investigating the San Diego Formation for many years to gain a better understanding of the Basin and its possibilities. The City has been better able to characterize the water quality and quantity in the San Diego Formation through aquifer testing and monitoring well installations that have occurred since 2007. In addition, the City has been working with the USGS to develop an integrated and comprehensive understanding of the geology and hydrology of the San Diego Formation, and to use this understanding to evaluate a sustainable, long-term environmental sound use of the formation for municipal supply.

In 2013, Sweetwater Authority reached an agreement with the City to share potable water from the Richard A. Reynolds Desalination Facility, after its expansion, and jointly fund the project. This project proposes to increase the capacity of the brackish groundwater desalination facility from 3,600 AFY to 8,800 AFY. Under the terms of this agreement, the City will receive 50 percent of any water produced over 3,600 AFY at the facility. Beginning in 2020, the projected volume will be approximately 2,600 AFY. Even with the projected supply reaching 2,600 AFY, the City is assumed to average 1,900 AFY. Sweetwater Authority will be responsible for owning, constructing, and operating the brackish groundwater desalination facility.

Section 6 - Projected Demands

Approximately every three years the Public Utilities Department (Department) calculates projected water demands within its service area for planning purposes. A computer model is used (IWR-MAIN) to break down water-use by major water-use sectors: Commercial, Industrial, Residential and Public uses. Using past water-use data from the Department and demographic data provided by SANDAG land use, the model is able to correlate the data to determine sector water demands. Using this correlated data, future demographic data is used to project water demands. The model also accounts for water conservation, weather and water rate changes.

In addition to the Department, the Water Authority and MWD use regional growth forecasts to calculate projected water demands within their respective service areas. This provides for consistency between the retail and wholesale agencies projected water demands, thereby ensuring that adequate supplies are being planned for the Department's existing and future water users. The SANDAG forecasts are based on adopted community plan land use, but not citywide zoning. SANDAG forecasts the number of residents, dwelling units, and employees in an area, but not square footage, hotel rooms, or visitors (non-residents or non-employees). For urban areas the smallest forecast geography is typically at the block level, but for suburban and less developed areas the forecast geography can be larger. SANDAG typically updates the regional growth forecast every three to four years. The Department water demand projections, based on the SANDAG Series 13 Forecast land use, are incorporated in the City's 2015 UWMP. These projections are then forwarded to the Water Authority for use in the preparation of their UWMP, which is further incorporated into MWD's UWMP to calculate the ultimate water demands of the region (see **Figure 6-1**).

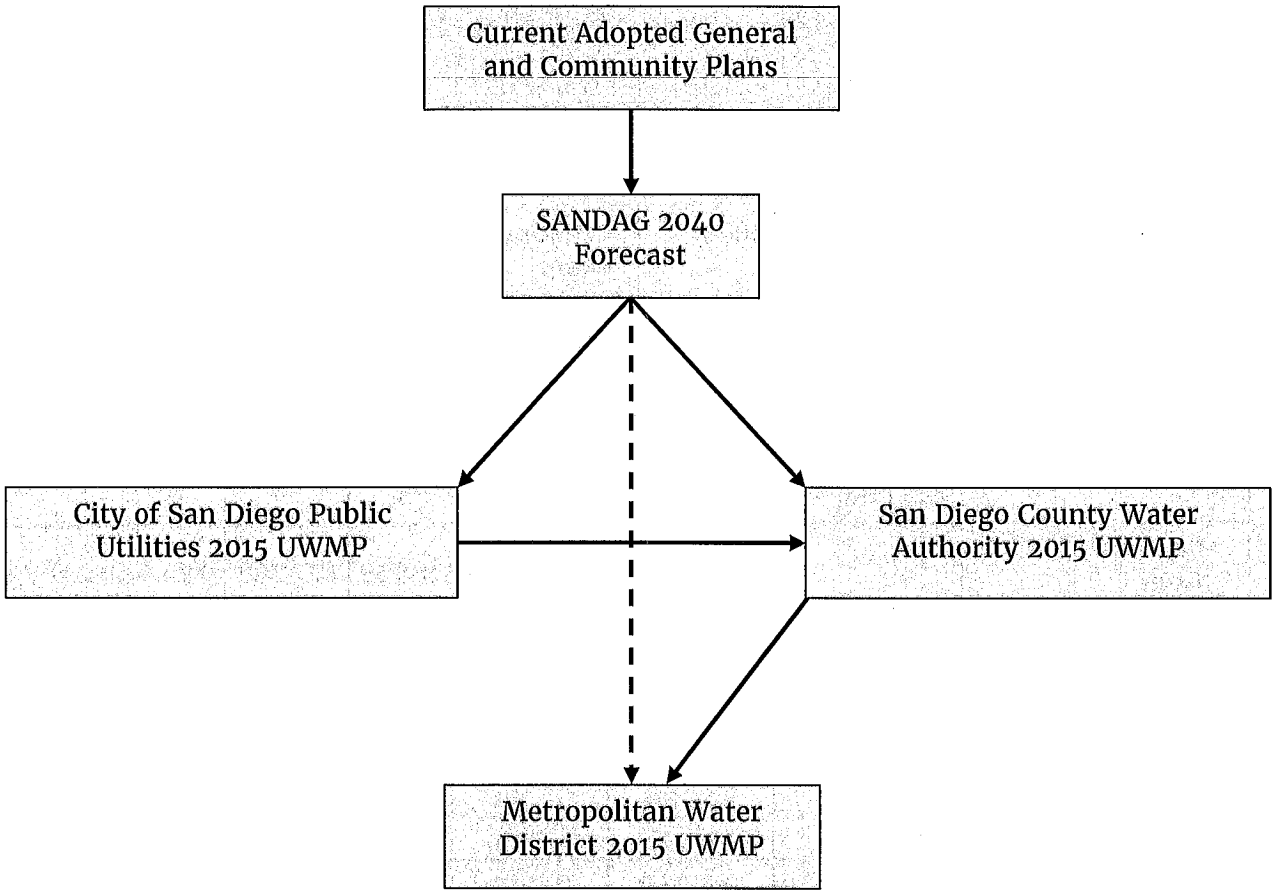
Recently, water demands for the City have been greatly suppressed due to mandatory water use restrictions and public education that were put in place by the City as a result of the current statewide mandate for conservation in response to emergency drought conditions. Because of these suppressed demands, the City had to develop near-term water use projections for its Cost of Service Study (developed in 2015). These short-term water use projections are used for setting water rates to the year 2020, and were much lower than the new long-term water demand forecast.

Thus, a method was developed to bridge the gap between the short-term water use projections and long-term water demand forecast. This method assumes that once mandatory water use restrictions are lifted, water demands would return to pre-drought (2008) levels within 15 years. In past droughts, it only took 5 to 7 years for water demands to return to pre-drought levels; but because of the severity of this drought it was assumed to take longer for the bounce back in water demands to occur.

The Department updates its UWMP every five years. The 2015 UWMP, was completed and adopted in June 2016. The time extension granted for the completion of the 2015 UWMP marks a continued focus on water use reduction strategies.

The Governor signed Assembly Bill (AB) 2067 which amended the water code extending the deadline for submitting 2015 UWMP. The bill requires each urban water supplier to submit its 2015 UWMP to the Department of Water Resources by July 1, 2016.

FIGURE 6-1
WATER DEMAND PROJECTIONS



The demands from the 2015 UWMP are used throughout this Report. The historical and projected water demands for a normal year are shown in **Table 6-1**.

As part of the requirements for complying with SB 610, **Table 6-7** and **Table 6-8,** show the single-dry year and consecutive multiple-dry year demands. All tables in this section are based on data from the 2015 UWMP.

TABLE 6-1
PAST, CURRENT, AND PROJECTED WATER DELIVERIES

			Water Use (AFY)			
			2010		2015	
Sector	Type of Use	Treatment Level	Meters	Use	Meters	Use
Single-Family Residential	Indoor and outdoor uses	Drinking Water	219,555	67,267	224,162	60,573
Multifamily Residential	Indoor and outdoor uses	Drinking Water	28,992	40,124	30,471	37,799
CII	Indoor and outdoor uses	Drinking Water	15,539	46,350	17,064	46,072
Irrigation	Landscape irrigation	Drinking Water	7,359	23,537	7,679	22,668
Other	Dust mitigation, cleaning	Drinking Water	214	89	464	0
Subtotal of Retail Area			**271,659**	**177,367**	**279,840**	**167,112**

Sector	Water Use (AFY)				
	2020	2025	2030	2035	2040
Single-family Residential	62,638	80,762	86,340	87,932	87,180
Multifamily Residential	56,766	73,191	90,080	95,841	95,786
CII	48,936	48,238	47,542	47,755	48,014
Sub-Total (Retail Area)	**168,340**	**202,191**	**223,962**	**231,528**	**230,980**

Note: The billing categories shown in the 2020 to 2040 water deliveries do not include the irrigation category that was shown in the 2010 and 2015 water deliveries as that water use was distributed among the multifamily (to account for irrigation of common association property) and CII sectors.

Source: 2020 to 2030 is extrapolation from 2015 Cost of Service Study; 2030 and after is from City's Update of Long-Term Water Demand Forecast, July 2015

Table 6-2 Summarizes the current and planned water sources the City is relying on to meet future demands.

TABLE 6-2
PLANNED WATER SUPPLY SOURCES

Basin	Average Year Water Supply (AFY)					
	2015*	2020	2025	2030	2035	2040
Verifiable Supply (Existing and Planned)						
Surface Water	6,279	22,900	22,800	22,700	22,600	22,500
Groundwater	500	3,100	3,100	3,100	3,100	3,100
Recycled Water (non-potable)	8,195	13,650	13,650	13,650	13,650	13,650
Total Verifiable Local Water Supplies	**14,974**	**39,650**	**39,550**	**39,450**	**39,350**	**39,250**
SDCWA Water Purchases with Verifiable Regional Water Supplies	**173,754**	**161,334**	**202,488**	**225,390**	**234,398**	**234,158**
Total Verifiable Water Supplies	**198,957**	**200,984**	**242,038**	**264,840**	**273,748**	**273,408**

*2015 represents actual supplies under very dry hydrologic conditions – resulting in very low surface water supplies.

6.1 Water Sales to Other Agencies

Potable Water

The City, through past agreements, sells treated water to the California American Water Company (Cal-Am), which provides water service to the cities of Coronado and Imperial Beach, and Naval Air Station North Island. The population of Naval Station North Island is located within the City of Coronado, whereas the other military bases that the City serves are within the City. The City also sells untreated water to Santa Fe Irrigation District and San Dieguito Water District. **Table 6-3** presents the water sales to other agencies.

Per the agreement between the City and Cal-Am, only local surface water is sold to Cal-Am to provide water to supply Cal-Am customers. A portion of City residents in the South Bay area are also served by Cal-Am and can be served by imported water as well. Per the agreement between the City and the City of Del Mar, the City takes deliveries of water, which the City of Del Mar purchases from the Water Authority, through the Second Aqueduct Connection at Miramar. This water is then treated at the City's Miramar WTP and transported to the City of Del Mar through several interconnections.

The City has agreements to provide surplus treated water to Otay Water District, and untreated exchange water to Ramona Municipal Water District. These water deliveries occur infrequently and for short periods of time, and are therefore not shown in **Table 6-3**.

TABLE 6-3
SALES TO OTHER AGENCIES-POTABLE

Sector	Water Use (AFY)					
	2015	2020	2025	2030	2035	2040
Wholesale Water Sales	10,229	12,200	14,106	15,453	15,759	15,821

Source: 2020 to 2030 is extrapolation from 2015 Cost of Service Study; 2030 and after is from City's Update of Long- Term Water Demand Forecast, July 2015

Recycled and Non-Revenue Water

The City has three separate agreements to sell recycled water. Olivenhain Municipal Water District and the City of Poway are provided recycled water from the City's North City Water Reclamation Plant, while Otay Water District receives recycled water from the City's South Bay Water Reclamation Plant.

Non-Revenue Water (NRW) is the difference between the potable water supplied to the system (also known as potable water production), and the potable water sold to customers (also known as metered water deliveries). NRW typically includes legitimate uses that are not metered, such as street cleaning, line flushing and fire suppression, as well as unaccounted for water. Unaccounted for water can be attributed to unauthorized consumption, meter inaccuracies, data errors, leakage on mains, leakage and overflow at storage, and leakage at service connections. Typically, NRW is presented as a percentage of total potable water production. Historically, the City reported 4.3 percent of NRW in the 2005 UWMP, and 9.0 percent of NRW in the 2010 UWMP. Non-Revenue Water for 2015 was determined to be 7.4 percent (estimated at 13,421 AFY), based on the American Water Works Association's Water Audit Software, as required by the 2015 UWMP.

TABLE 6-4
ADDITIONAL WATER USES AND LOSSES

Use	Water Use (AFY)						
	2010	2015	2020	2025	2030	2035	2040
Non-Revenue Water	12,593	13,421	15,700	18,809	18,020	18,613	18,576
Recycled Water[1]	7,951	8,195	13,650	13,650	13,650	13,650	13,650

1. Excludes wholesale recycled water that City provides outside of its service area.

Table 6-5 is a summary of and displays City's past water use from 2010 and 2015 with projected water use shown for 2020 thru 2040.

TABLE 6-5
TOTAL WATER-USE

Use	Water Demand (AFY)						
	2010	2015	2020	2025	2030	2035	2040
Retail Potable Water Sales	177,368	167,112	168,340	202,191	223,962	231,528	230,980
Wholesale Potable Water Sales	11,493	10,229	12,200	14,106	15,453	15,759	15,821
Non-Revenue Water	12,593	13,421	15,700	18,809	18,020	18,613	18,576
Sub-Total (Potable)	**201,454**	**190,762**	**196,240**	**235,106**	**257,435**	**265,900**	**265,377**
Recycled Water (Non-Potable)	7,951	8,195	13,650	13,650	13,650	13,650	13,650
Total Demand	**209,405**	**198,957**	**209,890**	**248,756**	**271,085**	**279,550**	**279,027**

The analysis in **Table 6-6** below compares the projected normal water supply and customer demands from 2010 to 2040, in five-year increments.

TABLE 6-6
PROJECTED NORMAL SUPPLY AND DEMAND COMPARISON

Normal Year Demands/Supplies	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**200,984**	**242,038**	**264,840**	**273,748**	**273,408**
Local Water Supplies					
Recycled Water (City service area	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	22,900	22,800	22,700	22,600	22,500
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**39,650**	**39,550**	**39,450**	**39,350**	**39,250**
Water Supply from SDCWA (purchased water)	161,334	202,488	225,390	234,398	234,158
Total City Water Supplies	**200,984**	**242,038**	**264,840**	**273,748**	**273,408**
Estimated Water Shortages	0	0	0	0	0

6.2 Projected Single-dry Year Water Supply and Demand

Table 6-7 provides a comparison of a single-dry year water supply with projected total water use over the next 25 years, in five-year increments. The City's demands in single-dry years are projected to be higher similar in proportion to the increase in regional water demands projected in the Water Authority's 2015 UWMP. An increase in use for landscape irrigation accounts for most of the increase in demands. It is assumed that recycled water demands would not increase in single-dry years. The wholesale water supplies from the Water Authority are assumed to increase to meet the difference between the City's increased water demands and reduced local water supplies.

TABLE 6-7
PROJECTED SINGLE-DRY YEAR SUPPLY AND DEMAND COMPARISON

Single-Dry Year (1990) Demands/Supplies	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,657	16,584	16,512	16,439	16,366
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**33,407**	**33,334**	**33,262**	**33,189**	**33,116**
Water Supply from SDCWA	179,754	223,549	247,906	257,466	257,176
Total City Water Supplies	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Estimated Water Shortages	0	0	0	0	0

6.3 Projected Multiple-dry Year Water Supply and Demand

Table 6-8 compares the total water supply available in multiple-dry water years with projected total water use over the next 25 years. The City's demands in multiple-dry years are projected to be higher, similar in proportion to the increase in regional water demands projected in Water Authority's 2015 UWMP. It is presumed that recycled water demands would not increase in multiple-dry years. The wholesale water supplies from Water Authority are assumed to increase to meet the difference between the City's increased water demands and reduced local water supplies. Multiple-dry year scenarios represent hot, dry weather periods which may generate urban water demands that are greater than normal.

No extraordinary conservation measures are reflected in the demand projections. The recycled water supplies are assumed to experience no reduction in a dry year.

TABLE 6-8
PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2040

Dry Year 1 (1990) Demands/Supplies	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,657	16,584	16,512	16,439	16,366
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**33,407**	**33,334**	**33,262**	**33,189**	**33,116**
Water Supply from SDCWA (purchased water)	179,754	223,549	247,906	257,466	257,176
Total City Water Supplies	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Estimated Water Shortages	0	0	0	0	0
Dry Year 2 (1991) Demands/Supplies	**Demand and Supplies (AFY)**				
	2020	**2025**	**2030**	**2035**	**2040**
Water Demand (with wholesale and conservation)	**200,610**	**241,581**	**264,338**	**273,228**	**272,888**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,233	16,162	16,091	16,020	15,949
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**32,983**	**32,912**	**32,841**	**32,770**	**32,699**
Water Supply from SDCWA (purchased water)	167,627	208,669	231,469	240,457	240,189
Total City Water Supplies	**200,610**	**241,581**	**264,338**	**273,228**	**272,888**
Estimated Water Shortages	0	0	0	0	0
Dry Year 3 (1992) Demands/Supplies	**Demand and Supplies (AFY)**				
	2020	**2025**	**2030**	**2035**	**2040**
Water Demand (with wholesale and conservation)	**208,665**	**251,402**	**275,139**	**284,412**	**284,058**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	18,962	18,879	18,796	18,714	18,631
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**35,712**	**35,629**	**35,546**	**35,464**	**35,381**
Water Supply from SDCWA (purchased water)	175,953	215,773	239,592	248,948	248,677
Total City Water Supplies	**208,665**	**251,402**	**275,139**	**284,412**	**284,058**
Estimated Water Shortages	0	0	0	0	0

Section 7 - Conclusion - Availability of Sufficient Supplies

The Project is consistent with water demand assumptions in the regional water resource planning documents of the City, the Water Authority and MWD. The Public Utilities Department receives the majority of its water supply from MWD through the Water Authority. In addition, MWD and the Water Authority have developed water supply plans to improve reliability and reduce dependence upon existing imported supplies. MWD's Regional Urban Water Management Plan and Integrated Resources Plan, the Water Authority's 2015 UWMP and annual water supply report include projects that meet long-term supply needs through securing water from the State Water Project, Colorado River, local water supply development and recycled water.

The forecasted normal year water demands compared with projected supplies for the Public Utilities Department are shown in **Table 7-1**. This demonstrates that with existing supplies and implementation of the projects discussed in the three agencies' planning documents there will be adequate water supplies to serve all anticipated growth (existing and future planned uses) and development.

TABLE 7-1
PROJECTED SUPPLY AND DEMAND COMPARISON – NORMAL YEAR

Normal Year Demands/Supplies	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**200,984**	**242,038**	**264,840**	**273,748**	**273,408**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	22,900	22,800	22,700	22,600	22,500
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**39,650**	**39,550**	**39,450**	**39,350**	**39,250**
Water Supply from SDCWA (purchased water)	161,334	202,488	225,390	234,398	234,158
Total City Water Supplies	**200,984**	**242,038**	**264,840**	**273,748**	**273,408**
Estimated Water Shortages	0	0	0	0	0

Table 7-2 provides a comparison of a single-dry year water supply with projected total water use over the next 25 years, in five-year increments.

TABLE 7-2
PROJECTED SINGLE-DRY YEAR SUPPLY AND DEMAND COMPARISON

Single-Dry Year (1990)	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,657	16,584	16,512	16,439	16,366
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**33,407**	**33,334**	**33,262**	**33,189**	**33,116**
Water Supply from SDCWA (purchased water)	179,754	223,549	247,906	257,466	257,176
Total City Water Supplies	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Estimated Water Shortages	0	0	0	0	0

The multiple-dry year scenarios, within a 25-year projection, are shown in **Table 7-3**. This demonstrates that supplies will be adequate to meet all anticipated growth (existing and future planned uses) and development in multiple-dry year periods.

TABLE 7-3
PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2040

Dry Year 1 (1990) Demands/Supplies	Demand and Supplies (AFY)				
	2020	2025	2030	2035	2040
Water Demand (with wholesale and conservation)	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,657	16,584	16,512	16,439	16,366
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**33,407**	**33,334**	**33,262**	**33,189**	**33,116**
Water Supply from SDCWA (purchased water)	179,754	223,549	247,906	257,466	257,176
Total City Water Supplies	**213,161**	**256,883**	**281,167**	**290,654**	**290,292**
Estimated Water Shortages	0	0	0	0	0
Dry Year 2 (1991) Demands/Supplies	**Demand and Supplies (AFY)**				
	2020	**2025**	**2030**	**2035**	**2040**
Water Demand (with wholesale and conservation)	**200,610**	**241,581**	**264,338**	**273,228**	**272,888**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	16,233	16,162	16,091	16,020	15,949
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**32,983**	**32,912**	**32,841**	**32,770**	**32,699**
Water Supply from SDCWA (purchased water)	167,627	208,669	231,469	240,457	240,189
Total City Water Supplies	**200,610**	**241,581**	**264,338**	**273,228**	**272,888**
Estimated Water Shortages	0	0	0	0	0
Dry Year 3 (1992) Demands/Supplies	**Demand and Supplies (AFY)**				
	2020	**2025**	**2030**	**2035**	**2040**
Water Demand (with wholesale and conservation)	**208,665**	**251,402**	**275,139**	**284,412**	**284,058**
Local Water Supplies					
Recycled Water (City service area only)	13,650	13,650	13,650	13,650	13,650
Local Surface Supply	18,962	18,879	18,796	18,714	18,631
Groundwater	3,100	3,100	3,100	3,100	3,100
Sub-Total Local Supplies	**35,712**	**35,629**	**35,546**	**35,464**	**35,381**
Water Supply from SDCWA (purchased water)	175,953	215,773	239,592	248,948	248,677
Total City Water Supplies	**208,665**	**251,402**	**275,139**	**284,412**	**284,058**
Estimated Water Shortages	0	0	0	0	0

This Report demonstrates that there are sufficient water supplies over a 25-year planning horizon to meet the projected demands of the Project as well as the existing and other planned development projects within the Public Utilities Department service area in normal, dry year, and multiple-dry year forecasts. This Project is proposing water demands which are included in the regional water resource planning documents of the City, the Water Authority, and MWD.

Source Documents

California Department of Water Resources (DWR), Progress on Incorporating Climate Change into Management of California's Water Resources, July 2006 Report
California Climate Change Center, 2006 Biennial Report: Our Changing Climate: Assessing the Risks to California, 2006
California Department of Water Resources Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001, March 2011
DSD Memorandum - Request for assessment and project description, February 2013
MWD 2010 Regional Urban Water Management Plan
MWD Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability, March 2003
MWD Integrated Resources Plan Update, Oct 2010
Public Utilities Department 2015 Urban Water Management Plan
Public Utilities Department Annual 2012 Water Conservation Report
Public Utilities Department Recycled Water Study July 2012
Public Utilities Department Recycled Water Master Plan August 2011
Public Utilities Department Water Purification Demonstration Project Report
Water Authority 2010 Urban Water Management Plan
Water Authority Regional Water Facilities Master Plan, 2003
Water Department Long-Range Water Resources Plan (2002-2030), December 2002
Water Department The City of San Diego Subordinated Water Revenue Bonds, Series 2002, October 2002

APPENDIX A

San Diego County Water Authority's Approval Email for the use of the Accelerated Forecasted Growth (AFG) of its 2015 UWMP

From: Friehauf, Dana [mailto:DFriehauf@sdcwa.org]
Sent: Wednesday, August 10, 2016 4:36 PM
To: Adrian, George <GAdrian@sandiego.gov>
Cc: Bista, Seevani <SBista@sandiego.gov>; Wiborg, Lan <LWiborg@sandiego.gov>; Bombardier, Tim <tbombardier@sdcwa.org>
Subject: USD master plan update project ---- AFG request

Dear George,

Thank you for your email regarding the City of San Diego's University of San Diego Master Plan Update Project (USD Project). The following is the Water Authority's response to your request to use the Accelerated Forecasted Growth (AFG) component of the Water Authority's 2015 Urban Water Management Plan to meet the unanticipated water demands associated with the USD Project.

The purpose of the AFG component of the demand forecast is to estimate, on a regional basis, additional demand associated with proposed projects not yet included in local jurisdictions' general plans and to plan for sufficient regional supplies to reliably meet the water demand of those projects. The USD Project identified in your August 3, 2016 e-mail, meets the criteria for the AFG component of the Water Authority's 2015 UWMP and we are planning to have water supplies to reliably meet the demand associated with the project. Our accounting of the remaining AFG component will be adjusted to reflect the additional demand associated with the proposed USD Project.

In order to accurately account for utilization of the AFG, we request that the City of San Diego send the Water Authority notification of when this project or any other project that utilized the AFG demand component is approved.

Please let me know if you have any questions or wish to further discuss this matter.
Regards,
Dana

Dana Friehauf
Water Resources Manager
San Diego County Water Authority
858-522-6749

From: Adrian, George [mailto:GAdrian@sandiego.gov]
Sent: Wednesday, August 3, 2016 2:44 PM
To: Friehauf, Dana
Cc: Bista, Seevani; Wiborg, Lan
Subject: USD master plan update project ---- AFG request
Importance: High

Hi Dana:

The City of San Diego is preparing a water supply assessment for the University of San Diego (USD) Master Plan Update Project, in accordance with the requirements of SB 610.

The proposed project is located in on the campus of the University of San Diego, at 5998 Alcala Park, San Diego, CA 92110. The USD Master Plan Update proposes to revise the 1996 Master Plan and Design Guideline in addition to expanding campus infrastructure to accommodate increasing enrollment from 7,000 full-time equivalent (FTE) students to 10,000 FTE students in the next 20+ year.

This project will develop academic core districts, student service and support uses, athletics and recreation uses, and additional student housing. Expansions of parking supply is also included as part of the Master Plan Update. The Master Plan Update outlines 14 proposed construction sites in addition to 16 approved projects identified in the 1996 Master Plan Environmental Impact Report (EIR) that were approved by the City but are still unbuilt. The 14 proposed projects include construction of academic/administrative buildings, student housing, student service use buildings, athletics/athletic support/administrative buildings, parking, pedestrian circulation as well as landscape improvements not included in the 1996 Master Plan.

As some of the proposed development for this project was not accounted for in the SANDAG Series 13 forecast, the water demand associated with the unaccounted growth was also not included in the City's 2015 Urban Water Management Plan. However, the water usage of the existing development at the site is 84 AFY. So the City is giving credit to the existing usage and estimated the unaccounted water demand with this project as **231.8 acre-feet per year** as seen in the table below:

University of San Diego Master Plan Update Project Not Accounted for in the SANDAG's Series 13 Forecast			
	Water Demands (Acre-Feet per Year)		
Project	**Existing**	**Projected**	**Delta**
USD Master Plan Update	84	315.8	-231.8
Total			**-231.8**

The City is requesting the use of the Accelerated Forecasted Growth (AFG) component of the Water Authority's 2015 Urban Water Management Plan to meet demands associated with this project, similar to other projects requested. Attached please find a table showing the total AFG that the City has requested to date based on the 2015 UWMP.

Your prompt assistance with this request is greatly appreciated.

Thank you,

George

George Adrian PE
Program Manager
City of San Diego
Public Utilities Department

T: 619-533-4680
sandiego.gov

CONFIDENTIAL COMMUNICATION
This electronic mail message and any attachments are intended only for the use of the addressee(s) named above and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you are not an intended recipient, or the employee or agent responsible for delivering this e-mail to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you received this e-mail message in error, please immediately notify the sender by replying to this message or by telephone. Thank you.

APPENDIX B

San Diego County Water Authority's Accelerated Forecasted Growth (AFG) Demand Track

2015 UWMP Accelerated Forecast Growth

Response Date	Agency	Project	Estimated (AF)	Running Total (AF)	Date Certified EIR Received
Value carried forward from Total AFG Demand Increment Needed based on Series 12			**2,583.5**	2,583.3	
Projects based on Series 12 - 2010 UWMP (2015 UWMP not yet adopted)					
4/7/2016	City of San Diego	7th and Market	**115.5**	2,699.0	
4/7/2016	City of San Diego	Town & Country	**192.3**	2,891.3	
Projects based on Series 13 – 2015 UWMP					
7/26/2016	City of San Diego	Broadway Block Amendment	**69.5**	2,960.8	
8/3/2016	City of San Diego	University of San Diego Master Plan Update	**231.8**	3,192.6	
			Running Total	**3,323.6**	
		Total City Usage	**3,323.6**		