CONCEPTUAL SEWER CAPACITY STUDY AND FEASIBILITY

FOR

"SETTLERS POINT"

TM 5423RPL3, REZ05-004

February 2009

Prepared for:

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9/24/09

BRUCE A. ROBERTSON R.C.E. 48529 DATE
EXPIRES ON 6/30/10

REGISTERED PROFESSIONAL ENGINEER
BRUCE A. ROBERTSON
No.48529
Exp. 6/30/10
CIVIL
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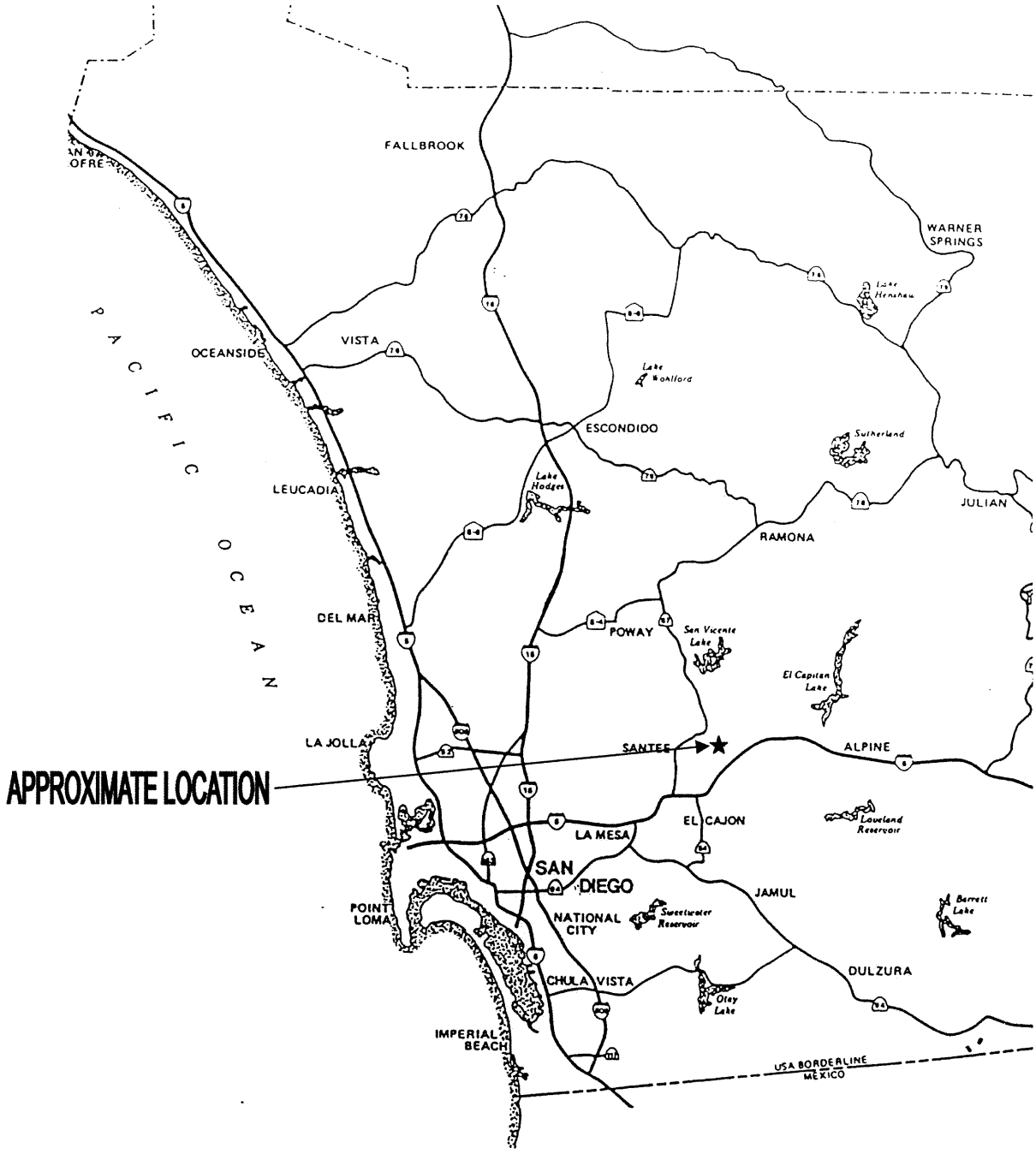
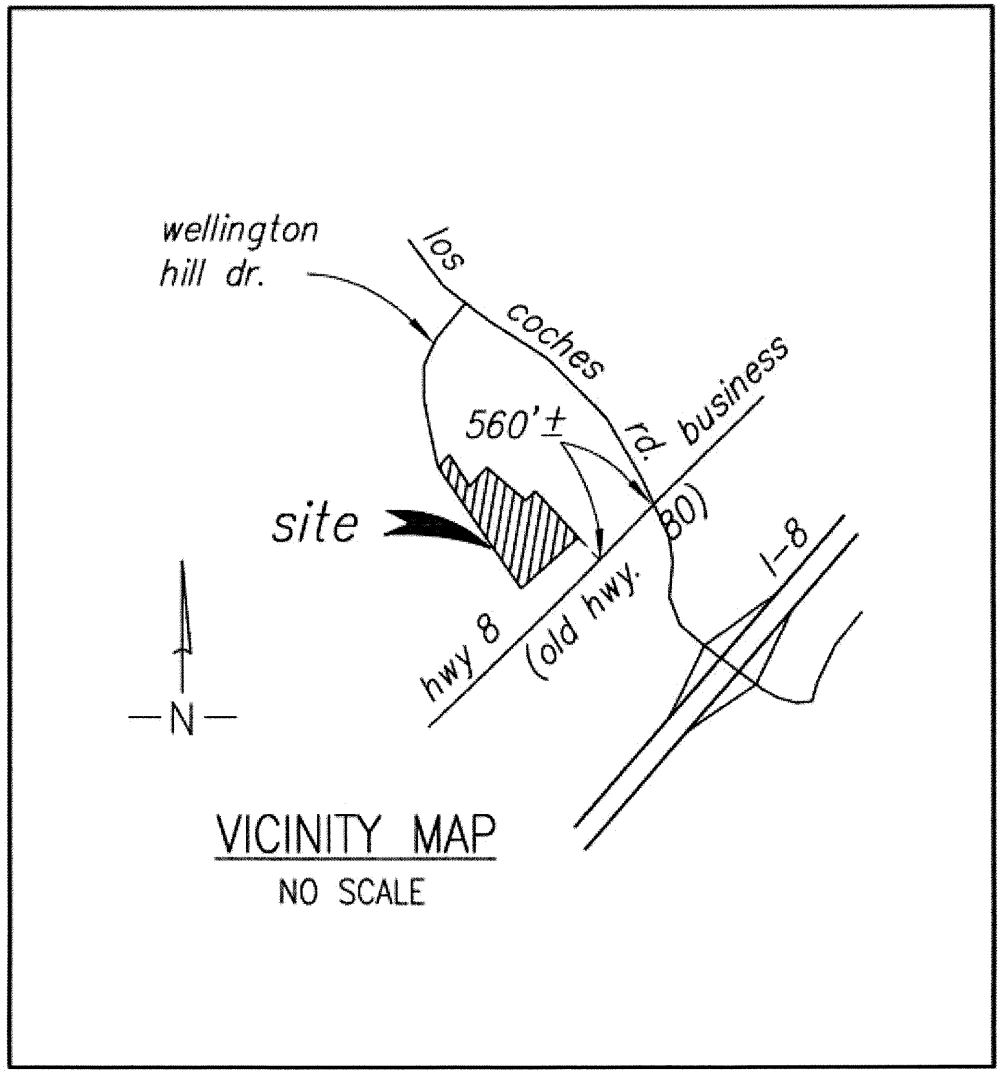
PROJECT SITE



REC Consultants, Inc.	**REGIONAL LOCATION SETTLERS POINT** NO SCALE ↑ N	Figure 1



REC
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VICINITY MAP
SETTLERS POINT
NO SCALE

N

Figure
1

PROJECT DESCRIPTION

The scope of this conceptual sewer study is to analyze and identify the deficiencies in the existing sewer system and what improvements would be needed when the proposed project would be built out. It is anticipated that the project could support up to 266 units. To some extent, this report will utilize the information provided by the August 2002 report by RBF Consulting "County of San Diego Facility Plan Study Alpine and Lakeside Sanitation Districts" to report its findings.

It should be noted that improvements to the Lakeside sewer systems including the system affected by this project are slated to be performed by the County as part of a Capital Improvement Program. The upgrade of the Woodside Interceptor is potentially five years away. The full development of the Settlers Point project may also not occur for as many years. The physical improvements to the system will be either done at the time the Woodside Interceptor is implemented or when the Project is actually developed with residential units.

In summary, this report will address proposed main line capacity and needed upgrades to the existing main line.

The project is located northwest of the intersection of Hwy. 8 Business and Los Coches Road. The site is comprised of Assessor Parcel Numbers 397-210-17, 397-212-01, 397-290-04, 397-291-01 and 397-291-03. The proposed project is located within Lakeside, California in the eastern portion of the County of San Diego (Figures 1 and 2).

Topography includes a hilltop and the majority of the site is on a southeast-facing slope. Elevation onsite ranges from approximately 600 feet above mean sea level at the southern portion of the site to approximately 700 feet above mean sea level.

The site is surrounded by residential development with a large undeveloped area to the west. Current land uses onsite included a single family home which was demolished in 2007, a driveway and undeveloped land. The site is dominated by a hill where the house was located and its associated slopes to the east and west. A proposed self storage project is located directly to the southwest of the Settlers Point project (Los Coches Self Storage S04-009), adjacent to Hwy. 8 Business. The site plan for the self storage project will likely be approved in summer of 2008. An undeveloped commercial site is located directly to the southeast of the Settlers Point project. No development applications are pending on this property at this time. All of these properties are under the same family ownership.

The proposed 21.89 acre Settlers Point project is now pursuing a Tentative Map with four lots proposed for future residential development. Of the four residential lots proposed for Settlers Point, the largest is 7.19 acres and the smallest is 3.92 acres. Grading of each of the pads is proposed to provide future residential development potential. A total of 266 residential units (condominiums and/or single family) may be possible given the current zoning and density assigned to each of the lots. Under the General Plan Amendment proposed for this project, the bulk of the project site is proposed for land use regulation of

RV 15 with a density of 14.5. The northernmost part of the project is and will remain land use regulation RS-4, with a density of 4.3.

One additional 2.09 acre lot is reserved for the 60 foot wide public street ("Street A") to access the project from Hwy. 8 Business and to provide secondary access for the Brightwater Ranch (TM 5306) residential project to the northwest of Settlers Point. Street improvements are proposed for Hwy. 8 Business including stormdrains and five feet of public street dedication.

As with the earlier project proposal, 100 percent of the site is proposed to be impacted by the development by the construction of flat pads, slopes, retaining walls, road, and stormwater and drainage improvements (earthen swales, temporary siltation basins, etc.).

SEWER SYSTEM DESCRIPTION

The proposed project falls within the Woodside Interceptor Sub-Basin 59 and all flows are ultimately conveyed by the Woodside Interceptor 1 (See attachment 3). There are existing deficiencies within the main interceptor that have been identified in the "County of San Diego Facility Plan Study Alpine and Lakeside Sanitation Districts" report. The scope of this report is to present mitigation measures for those deficiencies upon the development of the Settlers Point Project.

At this time, the Project proposes an 8" PVC sewer main line that will gather sewer flows from the high point at Street "A" down to the connection point on Hwy. 8 Business. This line will convey sewer flows from all 4 lots and will then connect to an existing 8" VCP sewer located west outside of the travel way of Hwy. 8 Business.

The existing 8" VCP sewer conveys flows about 600 feet northeast from the Project's point of connection and connects to an existing manhole at the street intersection within Los Coches Road. This manhole is part of the Woodside Interceptor 1 sewer system. All sewer flows carried by this main flow northwest into the Woodside Interceptor 2.

Findings of the report are presented in table format. **Table 1** shows flows from the proposed development. **Table 2** shows flows from the point of connection of the new development conveyed by the existing 8" VCP to the Los Coches Road point of connection. **Table 3** shows existing flows plus added flows after the new development that will be conveyed by the Woodside Interceptor 1 main and mitigation measures for deficiencies.

DESIGN CRITERIA

PROPOSED PROJECT

The number of Dwelling Units (D.U.s) used for each sub-basin is based on the maximum allowed per the specific plan.

Considering 3 people per EDU at 80 gallons/capita/day we obtain: 240 gal/day/EDU

Average dry weather flow ADWF=No EDU X 240 gal/day/EDU

Peak dry weather flow PDWF = (PFave) *ADWF

PFave=Peaking Factor average (Use City of San Diego Formula)

Sewer Peaking Factor = $6.2945\ (POP.)^{-0.1342}$

Flow calculations were analyzed using Manning Equation, with n=0.013

Sewer flows were determined based on 80 gallons per capita per day average.

HWY. 8 BUSINESS

The line sizes and grade for existing lines within Hwy. 8 Business are based on available as-built plans obtained from the County.

WOODSIDE INTERCEPTOR 1

The line sizes, grades, flows for "Woodside Interceptor 1" main sewer are based on the "County of San Diego Facility Plan Study Alpine and Lakeside Sanitation Districts" by RBF dated August 2002.

CITY OF SAN DIEGO
METROPOLITAN WASTEWATER DEPARTMENT

Peaking Factor for Sewer Flows
(Dry Weather)

Ratio of Peak to Average Flow*
Versus Tributary Population

Population	Ratio of Peak to Average Flow	Population	Ratio of Peak to Average Flow
200	4.00	4,800	2.01
500	3.00	5,000	2.00
800	2.75	5,200	1.99
900	2.60	5,500	1.97
1,000	2.50	6,000	1.95
1,100	2.47	6,200	1.94
1,200	2.45	6,400	1.93
1,300	2.43	6,900	1.91
1,400	2.40	7,300	1.90
1,500	2.38	7,500	1.89
1,600	2.36	8,100	1.87
1,700	2.34	8,400	1.86
1,750	2.33	9,100	1.84
1,800	2.32	9,600	1.83
1,850	2.31	10,000	1.82
1,900	2.30	11,500	1.80
2,000	2.29	13,000	1.78
2,150	2.27	14,500	1.76
2,225	2.25	15,000	1.75
2,300	2.24	16,000	1.74
2,375	2.23	16,700	1.73
2,425	2.22	17,400	1.72
2,500	2.21	18,000	1.71
2,600	2.20	18,900	1.70
2,625	2.19	19,800	1.69
2,675	2.18	21,500	1.68
2,775	2.17	22,600	1.67
2,850	2.16	25,000	1.65
3,000	2.14	26,500	1.64
3,100	2.13	28,000	1.63
3,200	2.12	32,000	1.61
3,500	2.10	36,000	1.59
3,600	2.09	38,000	1.58
3,700	2.08	42,000	1.57
3,800	2.07	49,000	1.55
3,900	2.06	54,000	1.54
4,000	2.05	60,000	1.53
4,200	2.04	70,000	1.52
4,400	2.03	90,000	1.51
4,600	2.02	100,000+	1.50

*Based on formula: Peak Factor = $6.2945 \times (pop)^{-0.1342}$
(*Holmes & Narver, 1960*)

FIGURE 1-1

SEWER STUDY CALCULATION
TABLE 1
TABLE 2
TABLE 3

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DATE
2/10/08

JOB No.: 689

TABLE 1

LINE	FROM	TO	POPULATION PER DU	IN LINE E.D.U.s	POPULATION SERVED IN-LINE	POPULATION SERVED TOTAL	(AVERAGE DRY WEATHER FLOW) 240 gal/day/EDU	FLOW RATE M.G.D	PEAK AVERAGE RATIO	PEAK DESIGN FLOW M.G.D.	PEAK DESIGN FLOW CFS	LINE SIZE PVC (inches)	DESIGN SLOPE	dn (feet)	dn/D %	VELOCITY (fps)
A-1	MH-1	MH-2	3	86	258	258	20640.00000	0.02064	2.99	0.062	0.095	8	5.0%	0.09	13.5	3.6
A-2	MH-2	MH-3	3	56	168	426	34080.00000	0.03408	2.79	0.095	0.095	8	12.0%	0.07	10.5	4.9
A-3	MH-3	MH-4	3	56	168	594	47520.00000	0.04752	2.67	0.127	0.196	8	10.6%	0.10	15.0	5.9
A-4	MH-4	MH-5	3	68	204	798	63840.00000	0.06384	2.57	0.164	0.254	8	7.1%	0.13	19.5	5.5
A-5	MH-5	MH-6	3	0	0	798	63840.00000	0.06384	2.57	0.164	0.254	8	3.8%	0.15	22.5	4.4

TOTAL EDU 266

***NOTES:**

A. PEAK AVERAGE RATIO PER CITY OF SAN DIEGO EQUATION (SEE CITY OF SAN DIEGO SEWER DESIGN GUIDE PAGE 1-12)

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DATE
2/10/08

JOB No.: 689

TABLE 2

			PEAK DESIGN FLOW		EX. LINE SIZE	EXISTING	dn	dn/D	VELOCITY
LINE	FROM	TO	M.G.D.	CFS	VCP(inches)	SLOPE	(feet)	%	(fps)
B-1	MH-6	(MH-1)	0.280	0.433	8	4.8%	0.18	27.0	5.6
B-2	(MH-1)	(MH-35)	0.280	0.433	8	4.8%	0.18	27.0	5.6
B-3	(MH-35)	(MH-34)	0.280	0.433	8	2.9%	0.21	31.5	4.7
B-4	(MH-34)	(MH-33)	0.280	0.433	8	2.6%	0.21	31.5	4.5
B-5	(MH-33)	(DMH-5)	0.280	0.433	8	2.6%	0.21	31.5	4.5

***NOTES:**

A. EXISTING SEWER MAIN FLOWS BEFORE DEVELOPMENT: 0.116 MGD PER RBF'S PLAN STUDY
B. SEWER FLOWS AT LINE B-1 AFTER DEVELOPMENT: 0.116 + 0.164 = 0.280 MGD
C. MH-1 EXISTING MANHOLE PER TPM 19528R
D. MH-35 THROUGH DMH 5 PER WORK ORDER 76-3407

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DATE
2/10/08

JOB No.: 689

TABLE 3

			EXISTING CONDITIONS												ULTIMATE CONDITIONS					
			PEAK DESIGN FLOW		EX. LINE SIZE	EXISTING	dn	dn/D	VELOCITY	CAPACITY	NEW LINE SIZE	dn	dn/D	VELOCITY	PEAK DESIGN FLOW		NEW LINE SIZE	dn	dn/D	VELOCITY
EX. LINE	FROM	TO	M.G.D.	CFS	VCP(inches)	SLOPE	(feet)	%	(fps)	NOTE	VCP(inches)	(feet)	%	(fps)	M.G.D.	CFS	VCP(inches)	(feet)	%	(fps)
P-294	(MH-296)	(MH-297)	0.777	1.202	8	0.900%	0.58	87.0	3.7	>50% FULL	12	0.410	41.0	3.9	0.899	1.391	12	0.450	45.0	4.1
P-295	(MH-297)	(MH-298)	0.782	1.210	8	1.300%	0.48	72.0	4.5	>50% FULL	12	0.370	37.0	4.5	0.904	1.399	12	0.400	40.0	4.7
P-296	(MH-298)	(MH-299)	0.788	1.219	8	2.560%	0.38	57.0	5.9	>50% FULL	12	0.310	31.0	5.8	0.918	1.420	12	0.340	34.0	6.0
P-297	(MH-299)	(MH-300)	0.794	1.228	8	0.930%	0.59	88.5	3.8	>50% FULL	12	0.410	41.0	4.0	0.925	1.431	12	0.450	45.0	4.2
P-298	(MH-300)	(MH-301)	0.806	1.247	8	2.620%	0.39	58.5	5.9	>50% FULL	12	0.310	31.0	5.9	0.953	1.475	12	0.340	34.0	6.1
P-299	(MH-301)	(MH-302)	0.815	1.261	8	2.830%	0.38	57.0	6.1	>50% FULL	12	0.310	31.0	6.0	0.964	1.492	12	0.340	34.0	6.3
P-300	(MH-302)	(MH-303)	0.820	1.269	8	4.320%	0.34	51.0	7.2	>50% FULL	12	0.280	28.0	7.0	0.970	1.501	12	0.300	30.0	7.4
P-301	(MH-303)	(MH-304)	0.820	1.269	8	5.250%	0.32	48.0	7.8	---	12	0.270	27.0	7.6	0.970	1.501	12	0.290	29.0	7.9
P-302	(MH-304)	(MH-305)	0.872	1.349	8	4.590%	0.34	51.0	7.5	>50% FULL	12	0.280	28.0	7.3	1.027	1.589	12	0.310	31.0	7.7
P-303	(MH-305)	(MH-306)	0.872	1.349	8	5.450%	0.32	48.0	8.0	---	12	0.270	27.0	7.8	1.027	1.589	12	0.300	30.0	8.2
P-304	(MH-306)	(MH-307)	0.872	1.349	8	3.850%	0.36	54.0	7.0	>50% FULL	12	0.300	30.0	6.9	1.027	1.589	12	0.320	32.0	7.2
P-305	(MH-307)	(MH-278)	0.872	1.349	10	0.530%	0.59	70.8	3.3	>50% FULL	15	0.430	34.4	3.3	1.027	1.589	15	0.460	36.8	3.4
P-465	(MH-278)	(MH-460)	1.352	2.092	15	1.150%	0.44	35.2	4.9	---	OK	---	---	---	1.894	2.930	OK	---	---	---

***NOTES:**

A. EXISTING SEWER MAIN FLOWS AT LINE P-294 BEFORE DEVELOPMENT: 0.613 MGD PER RBF'S PLAN STUDY
B. SEWER FLOWS AT LINE P-294 AFTER DEVELOPMENT: 0.613 + 0.164 = 0.777 MGD **(FOR EXISTING CONDITIONS)**
C. ULTIMATE SEWER MAIN FLOWS AT LINE P-294 BEFORE DEVELOPMENT: 0.735 MGD PER RBF'S PLAN STUDY
D. SEWER FLOWS AT LINE P-294 AFTER DEVELOPMENT: 0.735 + 0.164 = 0.899 MGD **(FOR ULTIMATE CONDITIONS)**
E. SEWER FLOWS DEPICT PEAK DRY WEATHER CONDITIONS

ATTACHMENT 1

SEWER PLAN

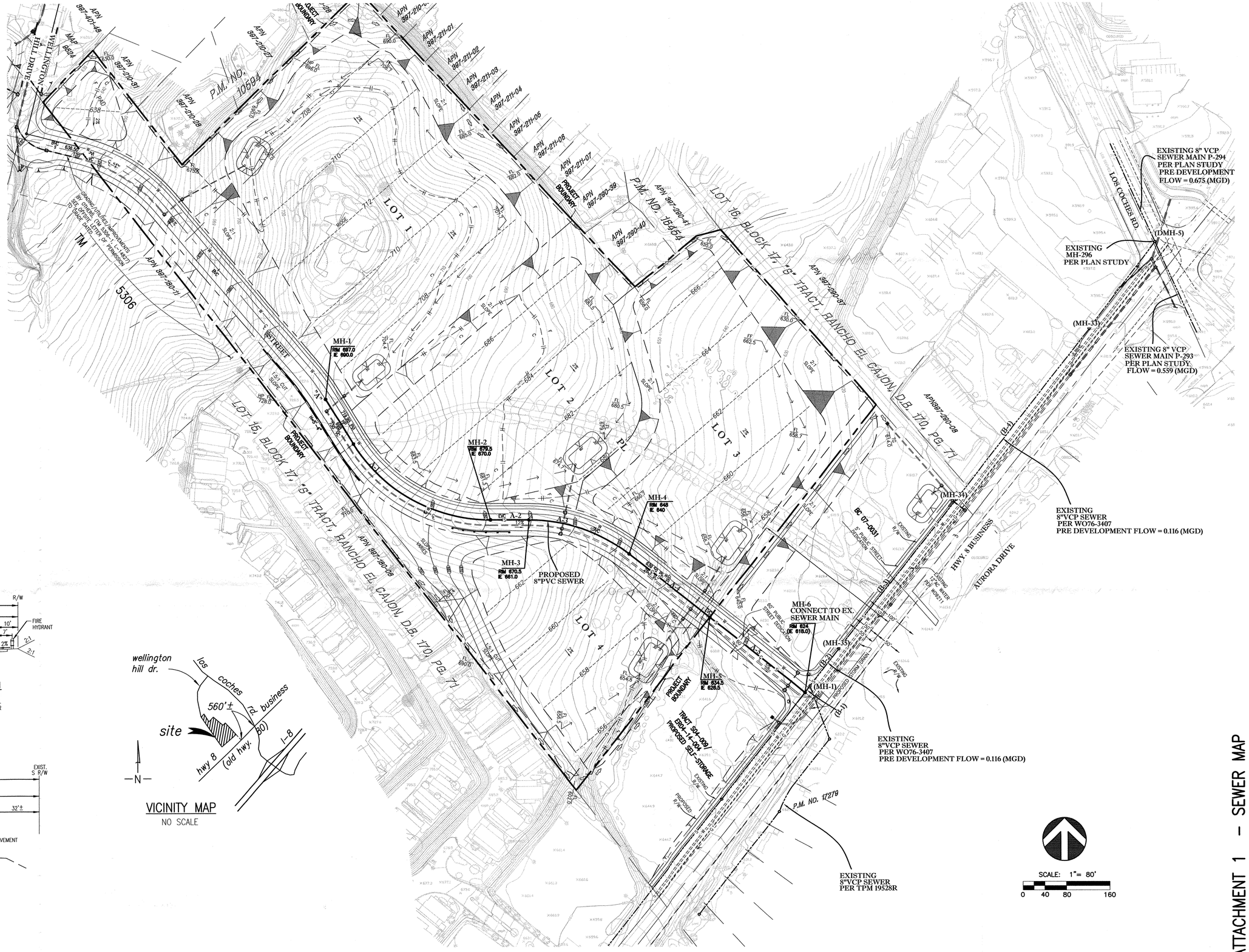
LEGEND

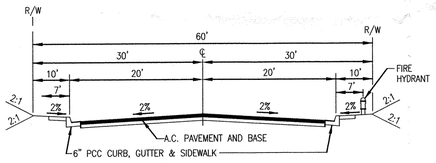
PROPOSED

- PARCEL LINE
- PROJECT BOUNDARY
- EASEMENTS
- W — WATER
- S — SEWER
- RETAINING WALL
- FILL 2:1 / CUT 1.5:1/2:1 — FILL/CUT SLOPE
- PCC CURB, GUTTER & SIDEWALK
- STORM DRAIN
- PCC BROW DITCH (2% MIN.)
- EARTHEN SWALE (1% MIN.)
- 2% — GRADE
- C/F — DAYLIGHT
- 710 — FINISH PAD CONTOURS
- 700 — FINISH CONTOURS
- SEDIMENT CONTROL DESILTING AND RETENTION BASIN

EXISTING

- 420 — CONTOUR
- W — WATER
- S — SEWER
- G — GAS
- POWER POLE
- STORM DRAIN

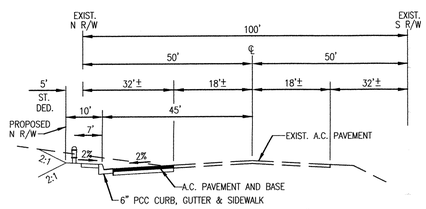




STREET "A" PUBLIC STREET – TYPICAL SECTION

NO SCALE

DESIGN SPEED = 30 MPH
VERTICAL DESIGN=RESIDENTIAL
DESIGN WIDTH=RESIDENTIAL COLLECTOR



EXISTING "HWY. 8 BUSINESS" TYPICAL SECTION

NO SCALE

VICINITY MAP

NO SCALE

ATTACHMENT 1 – SEWER MAP

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ATTACHMENT 2

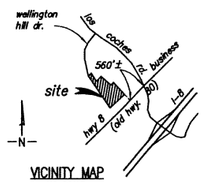
SITE/GRADING PLAN

PRELIMINARY GRADING PLAN FOR: SETTLERS POINT
COUNTY OF SAN DIEGO TRACT NO. TM 5423 RPL3

SEE SHEET 2

LEGEND

PROPOSED		EXISTING	
	PARCEL LINE		CONTOUR
	PROJECT BOUNDARY	W	WATER
	EASEMENTS	S	SEWER
W	WATER	G	GAS
S	SEWER		POWER POLE
	RETAINING WALL		STORM DRAIN
FILL 2:1 / CUT 1.5:1/2:1	FILL/CUT SLOPE		
	PCC CURB, GUTTER & SIDEWALK		
	STORM DRAIN		
	PCC BROW DITCH (2% MIN.)		
	TEMPORARY BLADED SWALE (1% MIN.)		
2%	GRADE		
C / F	DAYLIGHT		
710	FINISH PAD CONTOURS		
700	FINISH CONTOURS		
	SEDIMENT CONTROL DESILTING AND RETENTION BASIN		



VICINITY MAP
NO SCALE

SCALE: 1"= 60'
0 30 60 120

SLOPE ANALYSIS		
SLOPE RANGE	PERCENT OF SITE	AREA
0–15%	50.7%	11.10 AC.
15–25%	39.7%	8.69 AC.
25–50%	8.7%	1.90 AC.
50–100%	0.9%	0.20 AC.
TOTAL=	100%	21.89 AC.

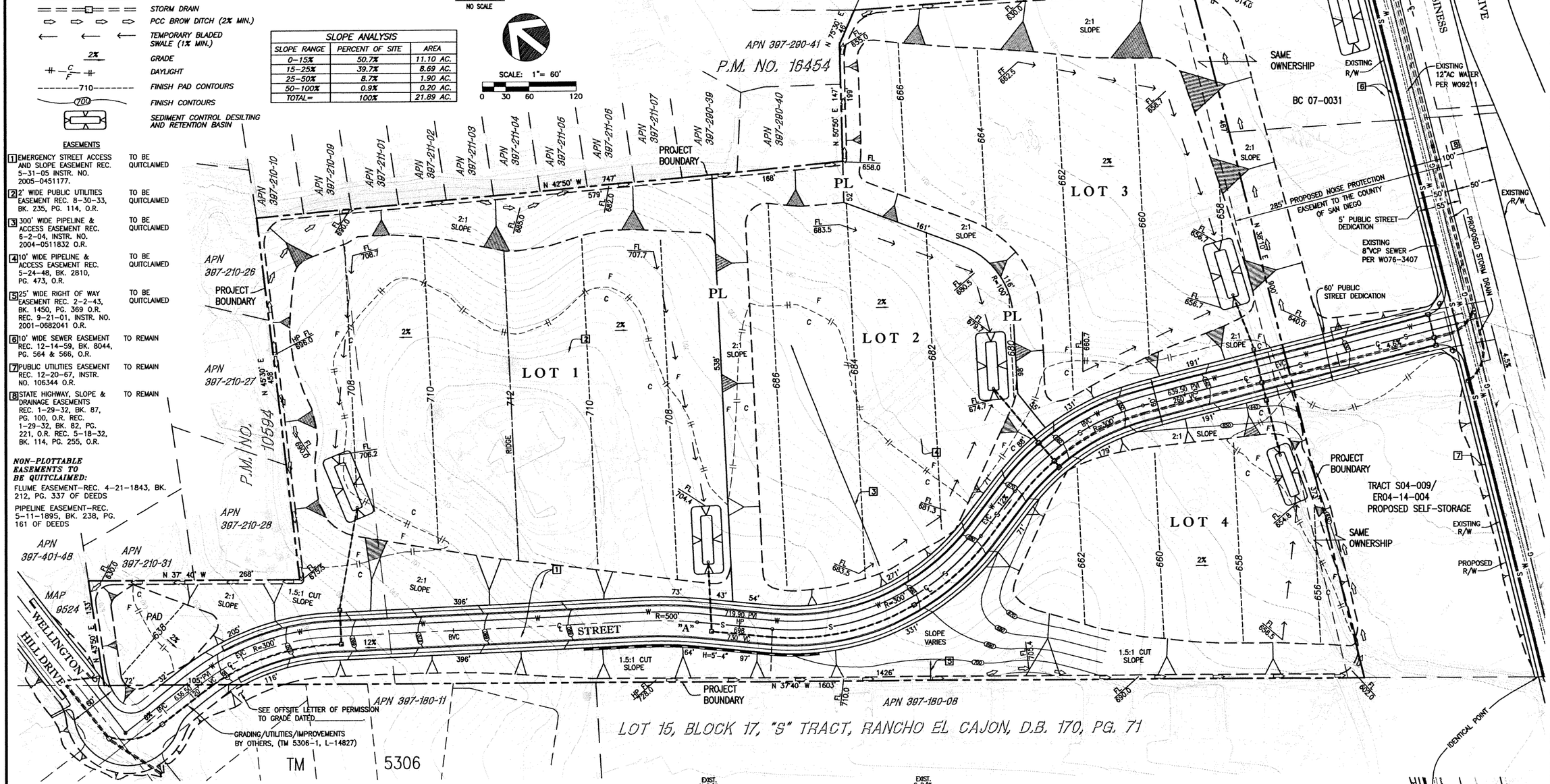
EASEMENTS

1	EMERGENCY STREET ACCESS AND SLOPE EASEMENT REC. 5-31-05 INSTR. NO. 2005-0451177.	TO BE QUITCLAIMED
2	2' WIDE PUBLIC UTILITIES EASEMENT REC. 8-30-33, BK. 235, PG. 114, O.R.	TO BE QUITCLAIMED
3	300' WIDE PIPELINE & ACCESS EASEMENT REC. 6-2-04, INSTR. NO. 2004-0511832 O.R.	TO BE QUITCLAIMED
4	10' WIDE PIPELINE & ACCESS EASEMENT REC. 5-24-48, BK. 2810, PG. 473, O.R.	TO BE QUITCLAIMED
5	25' WIDE RIGHT OF WAY EASEMENT REC. 2-2-43, BK. 1450, PG. 369 O.R. REC. 9-21-01, INSTR. NO. 2001-0682041 O.R.	TO BE QUITCLAIMED
6	10' WIDE SEWER EASEMENT REC. 12-14-59, BK. 8044, PG. 564 & 566, O.R.	TO REMAIN
7	PUBLIC UTILITIES EASEMENT REC. 12-20-67, INSTR. NO. 106344 O.R.	TO REMAIN
8	STATE HIGHWAY, SLOPE & DRAINAGE EASEMENTS REC. 1-29-32, BK. 87, PG. 100, O.R. REC. 1-29-32, BK. 82, PG. 221, O.R. REC. 5-18-32, BK. 114, PG. 255, O.R.	TO REMAIN

NON-PLOTTABLE EASEMENTS TO BE QUITCLAIMED:

FLUME EASEMENT–REC. 4-21-1843, BK. 212, PG. 337 OF DEEDS

PIPELINE EASEMENT–REC. 5-11-1895, BK. 238, PG. 161 OF DEEDS



OWNER/SUBDIVIDER

DANIEL B. ODOM AND THOMAS B. ODOM
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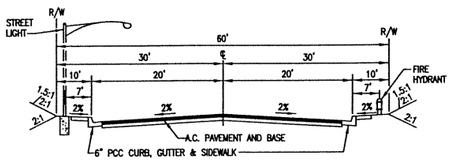
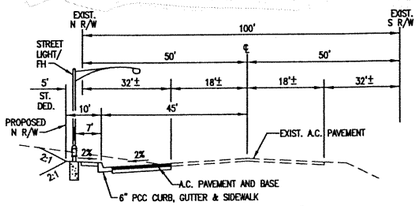
ENGINEER OF WORK

REGISTERED PROFESSIONAL ENGINEER BRUCE A. ROBERTSON NO.48529 EXP. 6/30/08 CIVIL STATE OF CALIFORNIA

BRUCE A. ROBERTSON, R.C.E. 48529 DATE
EXPIRES 6/30/08



STREET "A" PUBLIC STREET – TYPICAL SECTION
NO SCALE
DESIGN SPEED = 30 MPH
RESIDENTIAL COLLECTOR



EXISTING "HWY. 8 BUSINESS"
TYPICAL SECTION
NO SCALE

NOTES

1) TOTAL SITE ACREAGE: 21.89 ACRES

2) ASSESSOR'S PARCEL NUMBER: 397-210-17, 397-212-01, 397-290-04, 397-291-01 & 397-291-03

3) APPROXIMATE GRADING QUANTITIES:

EXCAVATION	218,000 CY
EMBANKMENT	218,000 CY
IMPORT	0 CY

4) THIS PLAN IS PROVIDED TO ALLOW FOR A FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

5) TOPOGRAPHY SHOWN IS NAD83, PROVIDED BY PROJECT DESIGN CONSULTANTS DATED: 11-17-04

Civil Engineering · Environmental Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax
REC Consultants, Inc.

REVISIONS		
BY	DATE	DESCRIPTION

JOB NO. 685

PRELIMINARY GRADING PLAN
"SETTLERS POINT"
COUNTY OF SAN DIEGO
TRACT NO. TM 5423 RPL3

SHEET NO.
1 OF 2

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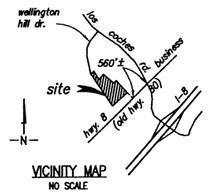
PRELIMINARY GRADING PLAN FOR: SETTLERS POINT
COUNTY OF SAN DIEGO TRACT NO. TM 5423 RPL3

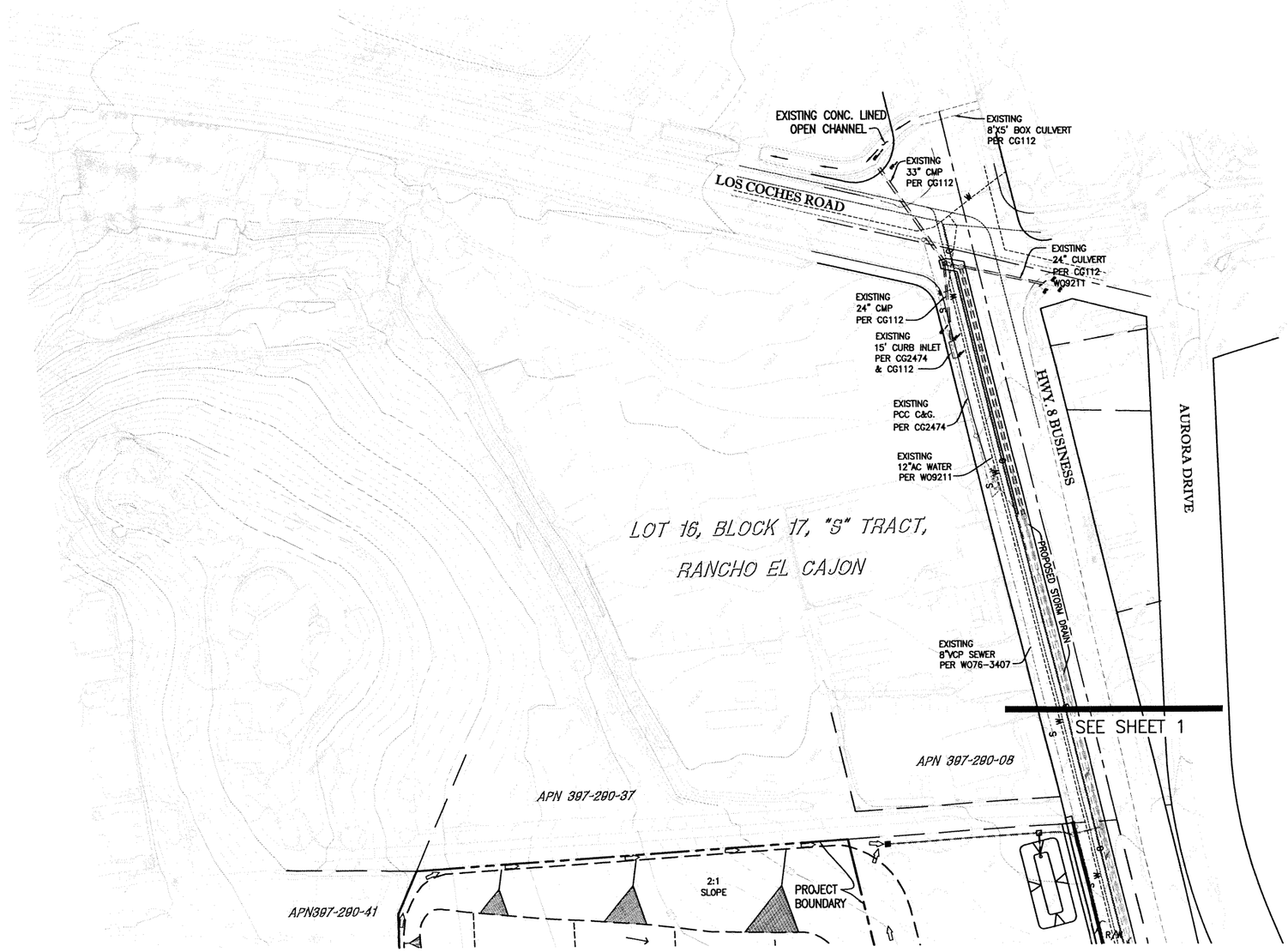
LEGEND

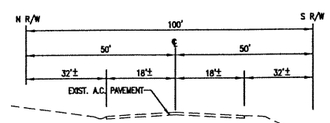
PROPOSED		EXISTING	
	PARCEL LINE	420	CONTOUR
	PROJECT BOUNDARY	W	WATER
	EASEMENTS	S	SEWER
W	WATER	G	GAS
S	SEWER		POWER POLE
	RETAINING WALL		STORM DRAIN
FILL 2:1 / CUT 1.5:1/2:1	FILL/CUT SLOPE		
	PCC CURB, GUTTER & SIDEWALK		
	STORM DRAIN		
	PCC BROW DITCH		
	EARTHEN SWALE (1% MIN.)		
2%	GRADE		
C/F	DAYLIGHT		
710	FINISH PAD ELEVATIONS		
700	FINISH STREET CONTOURS		
	SEDIMENT CONTROL DESILTING AND RETENTION BASIN		



VICINITY MAP
NO SCALE

SCALE: 1"= 60'
0 30 60 120





EXISTING "HWY. 8 BUSINESS"
TYPICAL SECTION
NO SCALE

REGISTERED PROFESSIONAL ENGINEER BRUCE A. ROBERTSON NO.48529 EXP. 6/30/08 CIVIL STATE OF CALIFORNIA

ENGINEER OF WORK

BRUCE A. ROBERTSON, R.C.E. 48529 DATE
EXPIRES 6/30/08

OWNER/SUBDIVIDER

DANIEL B. ODOM AND THOMAS B. ODOM
1440 WEST RENWICK ROAD
SAN DIMAS, CA. 91773
TEL: (951) 295-9344

NOTES

1) TOTAL SITE ACREAGE: 21.89 ACRES

2) ASSESSOR'S PARCEL NUMBER: 397-210-17, 397-212-01, 397-290-04, 397-291-01 & 397-291-03

3) APPROXIMATE GRADING QUANTITIES:

EXCAVATION	218,000 CY
EMBANKMENT	218,000 CY
IMPORT	0 CY

4) THIS PLAN IS PROVIDED TO ALLOW FOR A FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

5) TOPOGRAPHY SHOWN IS NAD83, PROVIDED BY PROJECT DESIGN CONSULTANTS DATED: 11-17-04

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REVISIONS		
BY	DATE	DESCRIPTION

JOB NO. 685

PRELIMINARY GRADING PLAN
"SETTLERS POINT"
COUNTY OF SAN DIEGO
TRACT NO. TM 5423 RPL3

SHEET NO.
2 OF 2

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ATTACHMENT 3

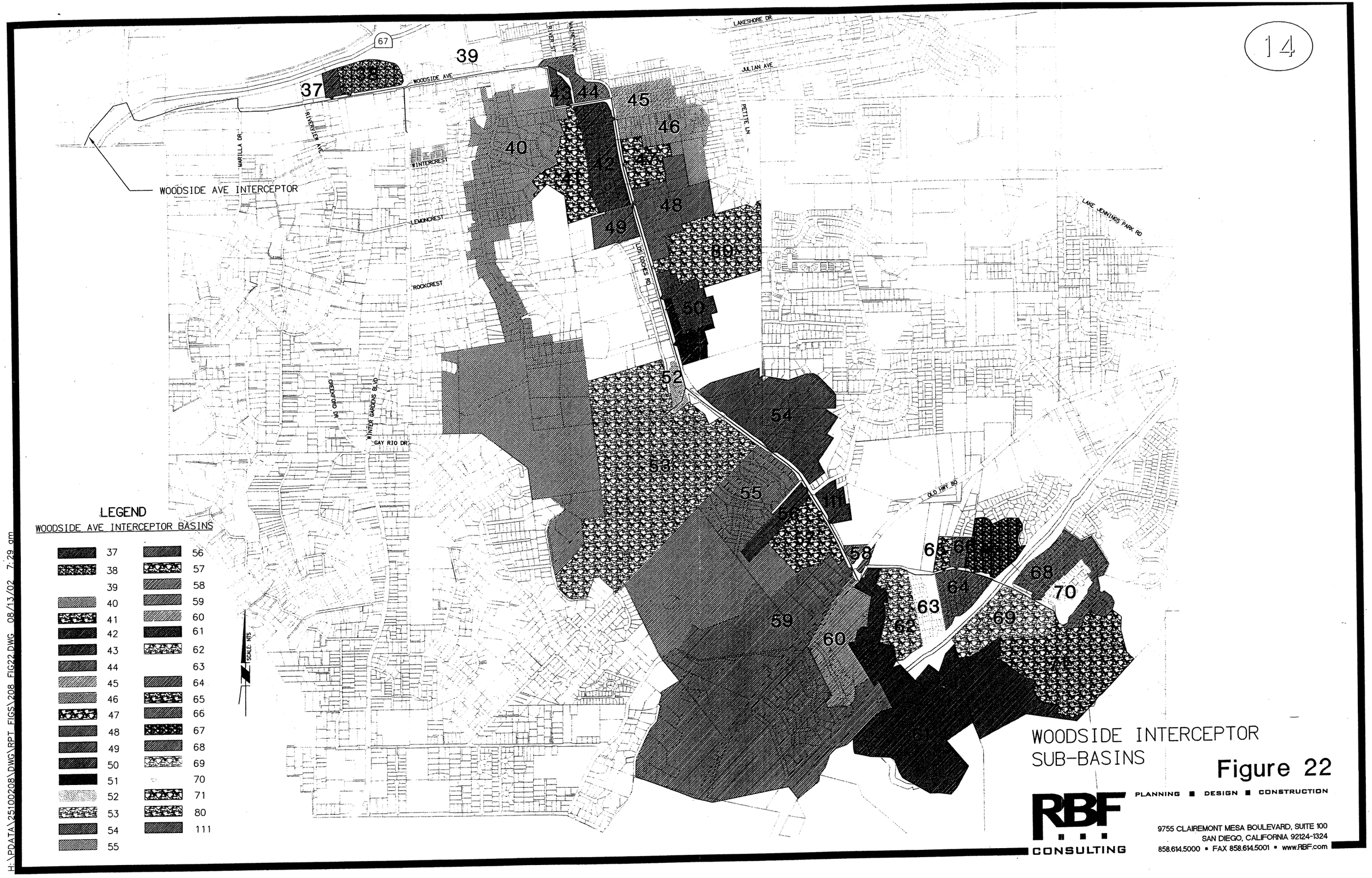
EXCERPTS FROM "COUNTY OF SAN DIEGO FACILITY PLAN STUDY LAKESIDE SANITATION DISTRICT" BY RBF DATED AUGUST 2002

August 2002

County of San Diego Facility Plan Study Alpine and Lakeside Sanitation Districts

Prepared by:

RBF CONSULTING



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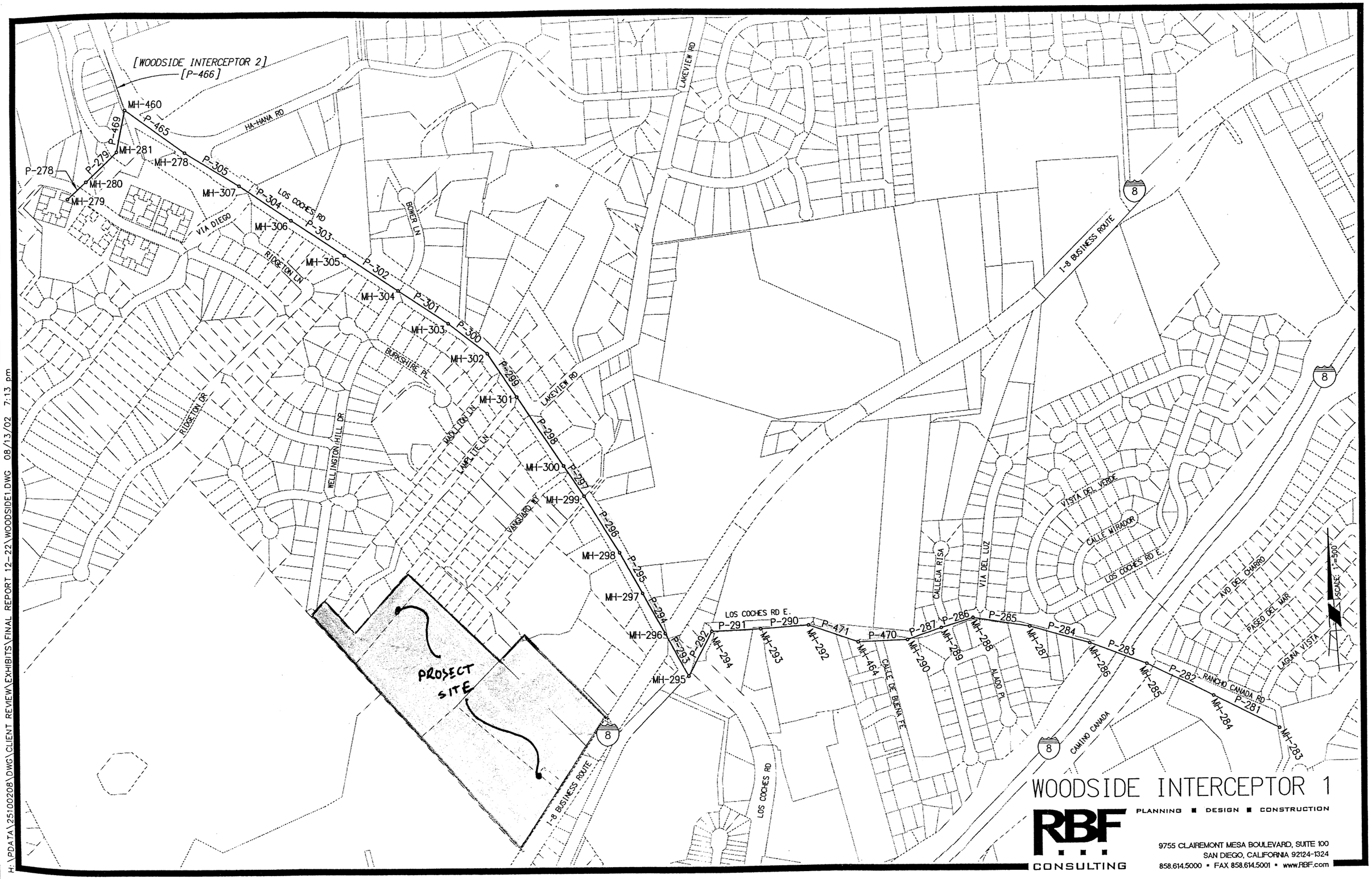

WOODSIDE INTERCEPTOR 1

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 CLAIREMONT MESA BOULEVARD, SUITE 100
SAN DIEGO, CALIFORNIA 92124-1324
858.614.5000 ▪ FAX 858.614.5001 ▪ www.RBF.com

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Woodside Interceptor 1
Existing Conditions - Sewer Study Summary

Sewer Line	Upstream Manhole	Downstream Manhole	Sewer Slope (ft/ft)	Pipe Material	Diameter (in)	Length (ft)	Sewer Capacity @ 92% Full (mgd)	Average Day Conditions		Peak Dry Weather Conditions			Peak Wet Weather Conditions		
								Flow (mgd)	Depth / Diam (d / D) %	Flow (mgd)	Depth / Diam (d / D) %	Capacity Note	Flow (mgd)	Depth / Diam (d / D) %	Capacity Note
P-281	MH-283	MH-284	0.0474	Vitrified Clay Pipe	8 inch	436.0	1.8251	0.0396	10.0	0.1194	17.0	-	0.1314	18.0	-
P-282	MH-284	MH-285	0.0286	Vitrified Clay Pipe	8 inch	436.0	1.4187	0.0660	15.0	0.1790	24.0	-	0.1969	26.0	-
P-283	MH-285	MH-286	0.0417	Vitrified Clay Pipe	8 inch	362.0	1.7108	0.0830	15.0	0.2066	24.0	-	0.2273	25.0	-
P-284	MH-286	MH-287	0.0401	Vitrified Clay Pipe	8 inch	368.0	1.6781	0.0830	15.0	0.2066	24.0	-	0.2273	25.0	-
P-285	MH-287	MH-288	0.0156	Vitrified Clay Pipe	8 inch	335.0	1.0463	0.0996	21.0	0.2431	34.0	-	0.2674	35.0	-
P-286	MH-288	MH-289	0.0239	Vitrified Clay Pipe	8 inch	199.0	1.2950	0.1029	19.0	0.2502	30.0	-	0.2752	32.0	-
P-287	MH-289	MH-290	0.0264	Vitrified Clay Pipe	8 inch	212.0	1.3611	0.1170	20.0	0.2792	31.0	-	0.3072	33.0	-
P-470	MH-290	MH-464	0.0040	Vitrified Clay Pipe	8 inch	293.0	0.5274	0.1227	34.0	0.2912	55.0	> 50% FULL	0.3203	58.0	-
P-471	MH-464	MH-292	0.0039	Vitrified Clay Pipe	8 inch	306.0	0.5205	0.1227	34.0	0.2912	55.0	> 50% FULL	0.3203	59.0	-
P-290	MH-292	MH-293	0.0505	Vitrified Clay Pipe	8 inch	280.0	1.8830	0.1227	17.0	0.2912	27.0	-	0.3203	28.0	-
P-291	MH-293	MH-294	0.0516	Vitrified Clay Pipe	8 inch	290.0	1.9038	0.1558	20.0	0.3577	30.0	-	0.3934	32.0	-
P-292	MH-294	MH-295	0.0068	Vitrified Clay Pipe	8 inch	290.0	0.6891	0.1558	33.0	0.3577	53.0	> 50% FULL	0.3934	56.0	-
P-293	MH-295	MH-296	0.0033	Vitrified Clay Pipe	8 inch	282.0	0.4839	0.2369	51.0	0.5082	100.0	> 50% FULL	0.5591	100.0	> 92% FULL
P-294	MH-296	MH-297	0.0093	Vitrified Clay Pipe	8 inch	266.0	0.8093	0.2946	43.0	0.6133	68.0	> 50% FULL	0.6747	73.0	-
P-295	MH-297	MH-298	0.0130	Vitrified Clay Pipe	8 inch	271.0	0.9553	0.2973	39.0	0.6179	61.0	> 50% FULL	0.6797	65.0	-
P-296	MH-298	MH-299	0.0256	Vitrified Clay Pipe	8 inch	389.0	1.3419	0.3009	33.0	0.6239	49.0	-	0.6863	52.0	-
P-297	MH-299	MH-300	0.0093	Vitrified Clay Pipe	8 inch	212.0	0.8101	0.3044	44.0	0.6299	69.0	> 50% FULL	0.6929	75.0	-
P-298	MH-300	MH-301	0.0262	Vitrified Clay Pipe	8 inch	485.0	1.3574	0.3114	33.0	0.6417	50.0	-	0.7059	53.0	-
P-299	MH-301	MH-302	0.0283	Vitrified Clay Pipe	8 inch	305.0	1.4091	0.3169	33.0	0.6509	49.0	-	0.7160	52.0	-
P-300	MH-302	MH-303	0.0432	Vitrified Clay Pipe	8 inch	290.0	1.7416	0.3199	30.0	0.6562	44.0	-	0.7218	46.0	-
P-301	MH-303	MH-304	0.0525	Vitrified Clay Pipe	8 inch	350.0	1.9203	0.3199	28.0	0.6562	41.0	-	0.7218	44.0	-
P-302	MH-304	MH-305	0.0459	Vitrified Clay Pipe	8 inch	372.0	1.7961	0.3482	30.0	0.7076	45.0	-	0.7783	47.0	-
P-303	MH-305	MH-306	0.0545	Vitrified Clay Pipe	8 inch	372.0	1.9561	0.3482	29.0	0.7076	43.0	-	0.7783	45.0	-
P-304	MH-306	MH-307	0.0385	Vitrified Clay Pipe	8 inch	370.0	1.6455	0.3482	32.0	0.7076	47.0	-	0.7783	50.0	-
P-305	MH-307	MH-278	0.0053	Vitrified Clay Pipe	10 inch	375.0	1.1015	0.3482	40.0	0.7076	61.0	> 50% FULL	0.7783	65.0	-
P-465	MH-278	MH-460	0.0115	Vitrified Clay Pipe	15 inch	427.0	4.8146	0.6453	25.0	1.1875	35.0	-	1.3062	36.0	-
P-278	MH-279	MH-280	0.1042	Vitrified Clay Pipe	8 inch	147.0	2.7051	0.0684	11.0	0.1824	18.0	-	0.2007	19.0	-
P-279	MH-280	MH-281	0.0040	Vitrified Clay Pipe	8 inch	250.0	0.5301	0.0684	25.0	0.1824	42.0	-	0.2007	44.0	-
P-469	MH-281	MH-460	0.0040	Vitrified Clay Pipe	8 inch	243.0	0.5296	0.0684	25.0	0.1824	42.0	-	0.2007	44.0	-

Woodside Interceptor 1
Ultimate - Sewer Study Summary

Sewer Line	Upstream Manhole	Downstream Manhole	Sewer Slope (ft/ft)	Pipe Material	Diameter (in)	Length (ft)	Sewer Capacity @ 92% Full (mgd)	Average Day Conditions		Peak Dry Weather Conditions			Peak Wet Weather Conditions		
								Flow (mgd)	Depth / Diam (d / D) %	Flow (mgd)	Depth / Diam (d / D) %	Capacity Note	Flow (mgd)	Depth / Diam (d / D) %	Capacity Note
P-281	MH-283	MH-284	0.0474	Vitrified Clay Pipe	8 inch	436.0	1.8251	0.0471	11.0	0.1379	19.0	-	0.1517	20.0	-
P-282	MH-284	MH-285	0.0286	Vitrified Clay Pipe	8 inch	436.0	1.4187	0.0786	16.0	0.1978	26.0	-	0.2176	27.0	-
P-283	MH-285	MH-286	0.0417	Vitrified Clay Pipe	8 inch	362.0	1.7108	0.0967	16.0	0.2368	26.0	-	0.2605	27.0	-
P-284	MH-286	MH-287	0.0401	Vitrified Clay Pipe	8 inch	368.0	1.6781	0.0967	16.0	0.2368	26.0	-	0.2605	27.0	-
P-285	MH-287	MH-288	0.0156	Vitrified Clay Pipe	8 inch	335.0	1.0463	0.1164	23.0	0.2781	36.0	-	0.3059	38.0	-
P-286	MH-288	MH-289	0.0239	Vitrified Clay Pipe	8 inch	199.0	1.2950	0.1204	21.0	0.2864	33.0	-	0.3151	34.0	-
P-287	MH-289	MH-290	0.0264	Vitrified Clay Pipe	8 inch	212.0	1.3611	0.1371	22.0	0.3205	34.0	-	0.3525	36.0	-
P-470	MH-290	MH-464	0.0040	Vitrified Clay Pipe	8 inch	293.0	0.5274	0.1440	37.0	0.3340	60.0	> 50% FULL	0.3674	64.0	-
P-471	MH-464	MH-292	0.0039	Vitrified Clay Pipe	8 inch	306.0	0.5205	0.1440	37.0	0.3340	60.0	> 50% FULL	0.3674	65.0	-
P-290	MH-292	MH-293	0.0505	Vitrified Clay Pipe	8 inch	280.0	1.8830	0.1440	19.0	0.3340	29.0	-	0.3674	31.0	-
P-291	MH-293	MH-294	0.0516	Vitrified Clay Pipe	8 inch	290.0	1.9038	0.1834	21.0	0.4110	32.0	-	0.4521	34.0	-
P-292	MH-294	MH-295	0.0068	Vitrified Clay Pipe	8 inch	290.0	0.6891	0.1834	36.0	0.4110	58.0	> 50% FULL	0.4521	61.0	-
P-293	MH-295	MH-296	0.0033	Vitrified Clay Pipe	8 inch	282.0	0.4839	0.2719	56.0	0.5729	100.0	> 50% FULL	0.6301	100.0	> 92% FULL
P-294	MH-296	MH-297	0.0093	Vitrified Clay Pipe	8 inch	266.0	0.8093	0.3634	48.0	0.7350	79.0	> 50% FULL	0.8085	91.0	-
P-295	MH-297	MH-298	0.0130	Vitrified Clay Pipe	8 inch	271.0	0.9553	0.3660	44.0	0.7399	69.0	> 50% FULL	0.8138	75.0	-
P-296	MH-298	MH-299	0.0256	Vitrified Clay Pipe	8 inch	389.0	1.3419	0.3738	37.0	0.7538	56.0	> 50% FULL	0.8291	59.0	-
P-297	MH-299	MH-300	0.0093	Vitrified Clay Pipe	8 inch	212.0	0.8101	0.3780	49.0	0.7612	82.0	> 50% FULL	0.8373	100.0	> 92% FULL
P-298	MH-300	MH-301	0.0262	Vitrified Clay Pipe	8 inch	485.0	1.3574	0.3936	38.0	0.7887	57.0	> 50% FULL	0.8676	60.0	-
P-299	MH-301	MH-302	0.0283	Vitrified Clay Pipe	8 inch	305.0	1.4091	0.4002	37.0	0.8003	56.0	> 50% FULL	0.8803	59.0	-
P-300	MH-302	MH-303	0.0432	Vitrified Clay Pipe	8 inch	290.0	1.7416	0.4036	33.0	0.8063	49.0	-	0.8869	52.0	-
P-301	MH-303	MH-304	0.0525	Vitrified Clay Pipe	8 inch	350.0	1.9203	0.4036	32.0	0.8063	47.0	-	0.8869	49.0	-
P-302	MH-304	MH-305	0.0459	Vitrified Clay Pipe	8 inch	372.0	1.7961	0.4372	34.0	0.8629	50.0	-	0.9492	53.0	-
P-303	MH-305	MH-306	0.0545	Vitrified Clay Pipe	8 inch	372.0	1.9561	0.4372	33.0	0.8629	48.0	-	0.9492	51.0	-
P-304	MH-306	MH-307	0.0385	Vitrified Clay Pipe	8 inch	370.0	1.6455	0.4372	36.0	0.8629	53.0	> 50% FULL	0.9492	56.0	-
P-305	MH-307	MH-278	0.0053	Vitrified Clay Pipe	10 inch	375.0	1.1015	0.4372	45.0	0.8629	70.0	> 50% FULL	0.9492	75.0	-
P-465	MH-278	MH-460	0.0115	Vitrified Clay Pipe	15 inch	427.0	4.8146	0.9782	31.0	1.7302	43.0	-	1.9033	45.0	-
P-278	MH-279	MH-280	0.1042	Vitrified Clay Pipe	8 inch	147.0	2.7051	0.0814	12.0	0.2031	19.0	-	0.2234	20.0	-
P-279	MH-280	MH-281	0.0040	Vitrified Clay Pipe	8 inch	250.0	0.5301	0.0814	27.0	0.2031	44.0	-	0.2234	47.0	-
P-469	MH-281	MH-460	0.0040	Vitrified Clay Pipe	8 inch	243.0	0.5296	0.0814	27.0	0.2031	44.0	-	0.2234	47.0	-