7 LOS ANGELES HARBOR SOUTH

7.1 Watershed Hydrology Analysis

Los Angeles Harbor South drainage area is part of the Dominguez Channel and LA Harbor watershed defined by County of Los Angeles DPW (Exhibit I). The San Pedro Canyon is located in the northeast portion of this drainage area. It collects runoff water from multiple storm drains then passes through a culvert under Via Colinita and further downstream it is tributary to a storm drain that goes under Miraleste Drive and discharges into the continuation of the San Pedro Canyon in the City of LA, which is a natural open channel parallel to 1st street.

Most of this drainage area consists of natural open channels that receive runoff water from small and short storm drain systems that collect runoff from local streets, pass under private property and then discharge to the open channels. There are two major storm drain systems located in the northwest portion of this drainage area. One begins at Paseo de Castana and discharges onto a natural open channel north of Via Frascati, the other one is located parallel to Via Subida. These systems collect runoff water from the urbanized areas uphill and discharge into natural open canyons.

The hydrology results for the 10-, 25- and 50-year storm events are provided in Appendix H-1.

7.1.1 Hydrology Results Summary 10-, 25-, 50-year storm events

Los Angeles Harbor South drainage area was divided into 58 subwatersheds and Table 7-1 summarizes the maximum 10-, 25-, and 50- year storm event discharge flow draining into each node.

Table 7-1: LAS Hydrology Summary

Hydrology ID	Structure ID	Subarea (acres)	10-Year Flow (cfs)	25-Year Flow (cfs)	50-Year Flow (cfs)
1A	CB0785	12.1	17.5	23.5	29.4
2A	CB0822	11.3	12.8	17.9	21.9
3A	CB0820	3.1	6.4	9.1	10.5
4B	CB0814	15.5	16.8	23	29.1
6A	IS0825	7.1	10.8	14.8	18.7
7A	JS2703	0.5	0.8	1.1	1.3
8B	CB0813	1.7	2.4	3.3	4.2
9C	CB0806	1.1	1.4	2	2.4
12B	CB10111	32.8	25.6	36.1	44.4
13B	TS0777	16.7	19.6	27.7	34
14B	MH0770	12.6	12	16.7	20
15B	IS0823	17.5	21.7	30.8	38.2
17B	CB0828	2.9	3.4	4.5	5.6
19B	CB0834	9.1	8.9	12.5	15.3
21B	CB0228	0.9	1	1.4	1.7
23A	IS0235	24.6	15.9	24	30.5
24A	OS0232	2.1	2.2	3.1	3.9
25B	CB0234	0.2	0.2	0.3	0.4
26C	CB0239	1.1	1.9	2.8	3.2
28C	CB0246	0.9	1.8	2.6	3
29D	CB45327	4.8	7.1	9.7	12.4

Table 7-1: LAS Hydrology Summary					
Hydrology ID	**Structure ID**	**Subarea (acres)**	**10-Year Flow (cfs)**	**25-Year Flow (cfs)**	**50-Year Flow (cfs)**
30E	CB0226	2.9	3.8	5.5	6.4
31F	CB0099	6.4	6.7	9.2	11.7
32F	CB0101	11.2	10.4	14.3	17.1
33F	JS2535	14.2	17	23.9	29.3
34F	IS0113	4.2	7.7	10.8	12.5
35G	CB42124	2.9	4.7	6.5	8.4
40C	IS0244	13.3	14.5	20.1	24.4
41C	IS0261	2	3.1	4.5	5.2
42C	41C	1.8	5.6	8	9.9
44H	42C	5.1	7	9.4	10.9
45I	CB0053	1.7	1.9	2.5	3.1
47I	CB0057	8.7	12.7	17	21.2
49J	CB0124	0.9	1.6	2.2	3
50E	CB0063	8.7	12.4	16.7	20.9
51E	CB0058	19.2	21.6	30.2	36.9
54C	IS0061	9.3	8.8	11.7	14.1
55C	CB0294	14.8	15.9	22.1	26.9
57B	JS0288	11.5	15	20.6	26.1
58B	MH2578	1.4	1.7	2.5	2.9
59K	JS2586	2.1	3.4	4.7	5.4
60C	CB0257	5.7	6.7	9.4	11.6
62C	CB0119	0.5	0.8	1.2	1.5
63C	CB0255	33.5	39.2	55.3	68.1
65B	65Q	5.9	8.9	12.2	15.5
66L	IS0278	33.1	17.5	26.3	33.9
67M	CB12919	6.8	9	12.9	14.9
68M	CB0247	8.3	5.3	8.1	10.4
69N	CB3453	17	16.3	23.2	28
70N	CB0115	3.7	6	8.3	9.6
71N	CB0254	0.6	1.1	1.5	1.7
72N	CB0253	1.3	2.2	3	3.9
73N	CB0252	6.5	5.6	7.9	10.3
74O	OS0251	5.9	4.9	7.1	9.4
75O	MH1616	6.2	5.2	7.6	10
76O	MH0275	13.6	6.3	10.6	13.7
77P	79W	9.4	8.3	11.6	14.4

7.2 Hydraulic Analysis

7.2.1 Existing Condition

Most of the storm drain systems consist of storm drains that are short in length, between 12 and 18 inches in diameter and are mostly PVC and CMP. Table 7-2 provides important modeling assumptions used for the hydraulic analysis and Appendix H-2 provides the existing condition hydraulic analysis for the 10-, 25- and 50-year storm events.

Table 7-2: LAS Hydraulic Model Assumptions					
System	**Upstream Structure ID**	**Downstream Structure ID**	**Pipe ID**	**Street**	**Assumption**
1	CB0063	OS0062	SD3022	Palos Verdes Drive East	Used a 3 foot cover and an 18-inch RCP.
	CB0058	OS0059	SD3027		
2	IS0061	OS0060	SD3031		Used a 3 foot cover and a 36-inch CMP.
3	CB0119	OS0120	SD2996		Used a 12-inch PVC with a 1 foot cover.
4	CB42124	CB0111	SD43555		
6	CB12920	CB12921	SD12327	Chandeleur Drive	A 3 foot cover was used to find the invert elevations, using the ground slope.
	CB12921	JS12922	SD12328		
7	IS0240	MH3454	SD2461	Miraleste Drive	This storm drain system has invert elevations in the 200's (As-built 10229.pdf). The actual ground elevations are in the 500's based on the city's 2006 topographic contours. Since the elevations seem to be off, the slopes for the pipes were used to calculate new invert elevations to obtain more accurate results.
	MH3454	GB0238	SD2462		
	GB0238	OS0237	SD0432		

7.2.1.1 Results

A significant number of storm drain systems were found to be deficient in this drainage area. Table 7-3 lists the storm drain structures that were found to be flooded for the 10- and 50-year storm event hydraulic analysis.

Table 7-3: LAS Flooded Storm Drain Structures		
Storm Drain Structure ID	**Floods in 50-Year Storm Event**	**Floods in 10-Year Storm Event**
CB0058	X	X
CB0254	X	X
CB0833	X	X
JS2704	X	
CB0253	X	X
CB0815	X	
CB0814	X	
IS0235	X	X
CB0252	X	X
CB0053	X	
CB0294	X	
CB0834	X	X
CB0249	X	X
CB0124	X	
GB34132	X	

7.2.2 Recommended Improvements

Table 7-4 provides the storm drain systems within this drainage area that were found to be deficient following Section 2.4.4 criteria, and improvements are recommended. The recommended improvement maps (atlas map) are attached at the end of this chapter (Figure 7-1). The proposed condition hydraulic analysis results are included in Appendix H-3.

Table 7-4: LAS Pipes to be Improved

System	Owner	Upstream Structure ID	Downstream Structure ID	Pipe ID	Atlas Map	Existing Size (in)	Proposed Size (in)	Street
1	RPV	CB0124	CB0123	SD3099	26C	18	24	Deluna Drive
		CB0123	JS34128	SD32743		18	24	
		JS34128	GB34131	SD32744		18	24	
		GB34131	GB34132	SD32745		18	24	
		GB34132	JS34133	SD32749		18	24	
		JS34133	GB34129	SD0454		18	24	
		GB34129	GB34130	SD32746		18	24	
		GB34130	OS0125	SD32747		18	24	
2	RPV	CB0058	OS0059	SD3027**	26C	18	24	Palos Verdes Drive East
3	RPV	CB0053	CB0054	SD0487	26C	18	24	Santa Luna Drive
		CB0054	GB1904	SD0730		18	24	
		GB1904	GB1902	SD0727		18	24	
		GB1902	GB1903	SD0729		18	24	
		GB1903	OS0055	SD0728		18	24	
4*	LAC	CB0294	CB0293	SD0519	26D	18	18	Vista Mesa Drive
		CB0293	GB0292	SD0731		18	18	
		GB0292	GB1905	SD0732		18	18	
		GB1905	GB42524	SD0733		18	18	
5	RPV	CB0254	CB0253	SD2980**	26B	12	18	Via Colinita
		CB0253	CB0252	SD2979		12	18	
		CB0252	OS0251	SD2985		12	18	
6	RPV	CB0247	CB0250	SD2964	26B	12	18	Via Colinita Kingsridge Road
		CB0250	CB0249	SD2965		12	18	
		CB0249	OS0248	SD2966		12	18	
7	RPV	CB0785	JS2704	SD0383	16C	21	30	Grandpoint Lane at Highpoint Road
		JS2704	OS0783	SD0385		24	30	
8	RPV	CB0814	CB0815	SD0387	16C	18	24	Crownvie Drive
		CB0815	GB3110	SD2105		18	24	
		GB3110	GB3111	SD2106	16D	18	24	
		GB3111	GB3113	SD2107		18	24	
		GB3113	GB3112	SD2108		18	24	
		GB3112	OS0816	SD0391		18	24	
9	RPV	GB0819	CB0820	SD2912	16C & 16D	24	36	Knoll View Drive
		CB0820	CB0818	SD2910		24	36	
		CB0818	OS0817	SD0402		30	36	
10	RPV	CB0834	CB0833	SD2909	16D	12	18	Via Siena
		CB0833	CB0832	SD2911		12	18	
		CB0832	OS0831	SD2915		12	18	

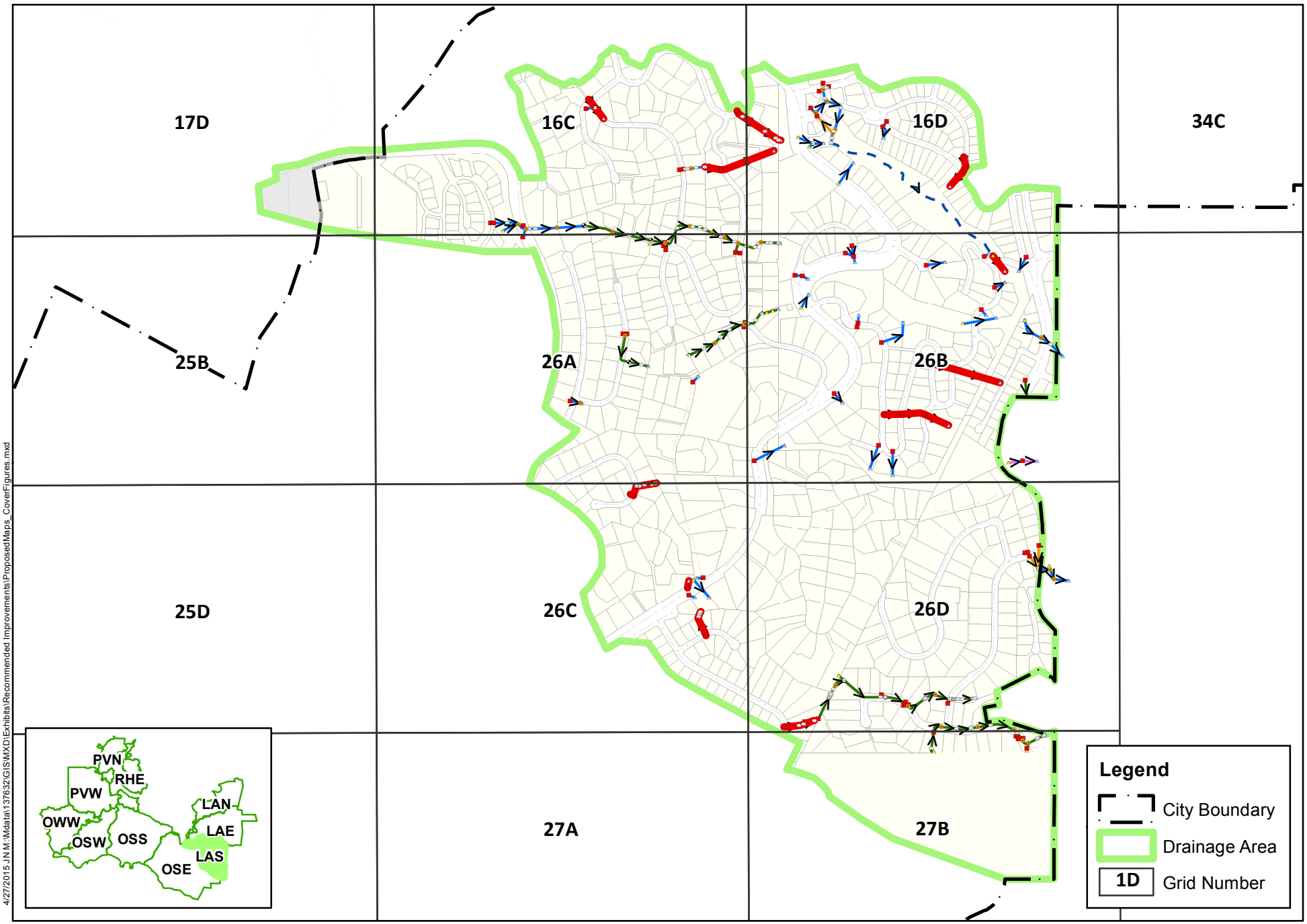
Table 7-4: LAS Pipes to be Improved								
System	Owner	Upstream Structure ID	Downstream Structure ID	Pipe ID	Atlas Map	Existing Size (in)	Proposed Size (in)	Street
11	RPV	IS0235	OS0232	SD2939	26B	30	48	Via Colinita

Notes:
*No pipe size change required for deficiency removal (Slope Change).
**Existing pipe characteristic includes assumptions.

7.2.3 Cost Estimates

Table 7-5 provides an estimate of the construction cost of recommended improvements for this drainage area. Appendix B-5 includes the cost estimates for each recommended improvement map.

Table 7-5: LAS Total Cost Estimate	
Atlas Map	Total Project Cost
16C	$102,000
16C & 16D	$616,000
16D	$115,000
26B	$610,000
26C	$335,000
26D	$103,000
Total	**$1,881,000**



Michael Baker INTERNATIONAL

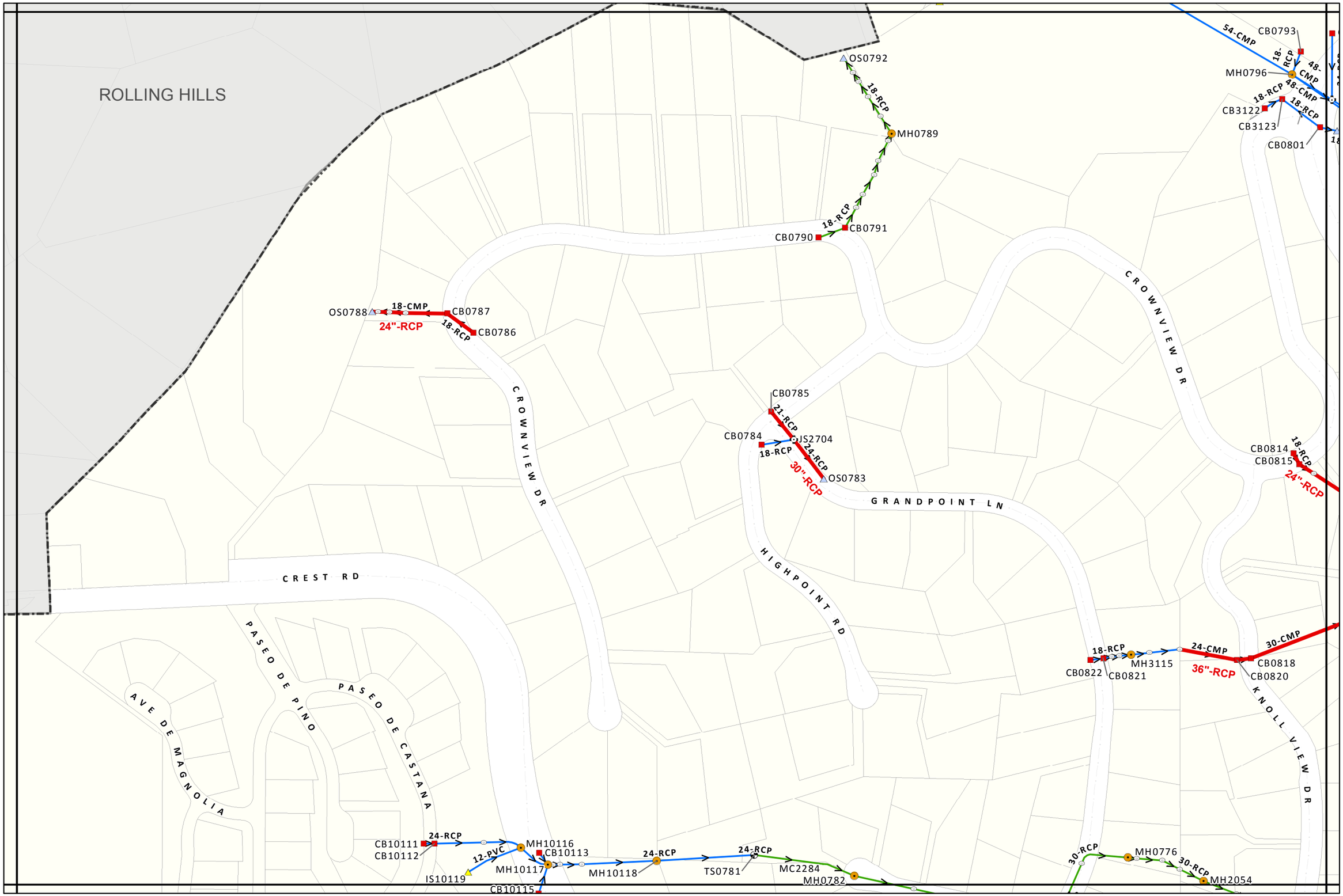
0 500 1,000 2,000 Feet

Source:

CITY OF RANCHO PALOS VERDES MASTER PLAN OF DRAINAGE

LAS - Recommended Improvements Index Map

Figure 7-1



City of Rancho Palos Verdes

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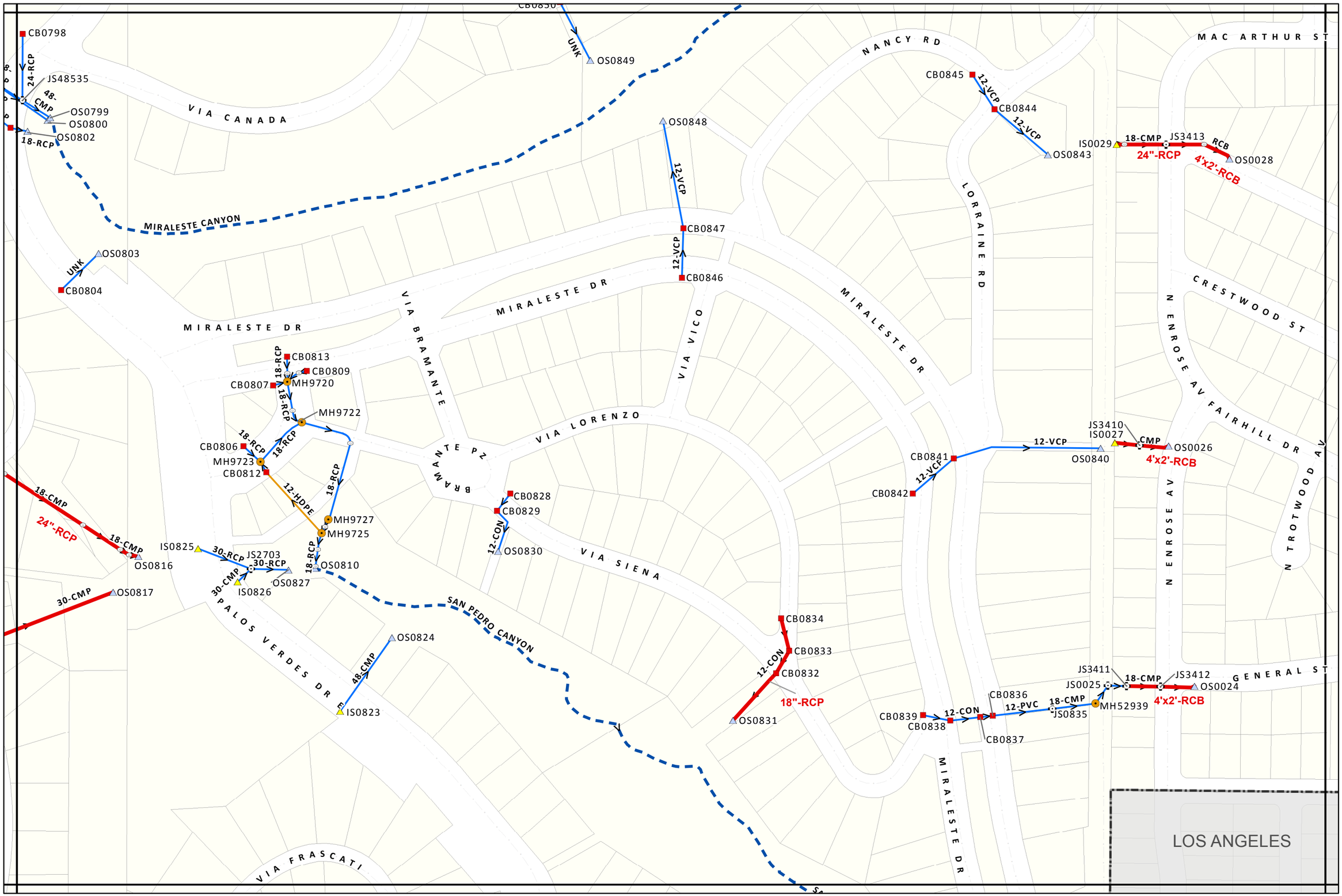
Storm Water Recommended Improvements

- Catch Basin
- Inlet
- Outlet
- Parkway Outlet
- Manhole
- Junction
- Transition
- Grade Break
- Storm Filter and Storm Gate
- Proposed Pipe
- 30" Proposed Size
- Open Watercourse
- Rancho Palos Verdes
- Rolling Hills Estates
- Palos Verdes Estates
- Private
- City of LA
- County of LA
- Unknown
- City Boundary

0 100 200
Feet

17B	16A	16B
17D	**16C**	16D
25B	26A	26B



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0 100 200
Feet

16A	16B	34A
16C	**16D**	34C
26A	26B	

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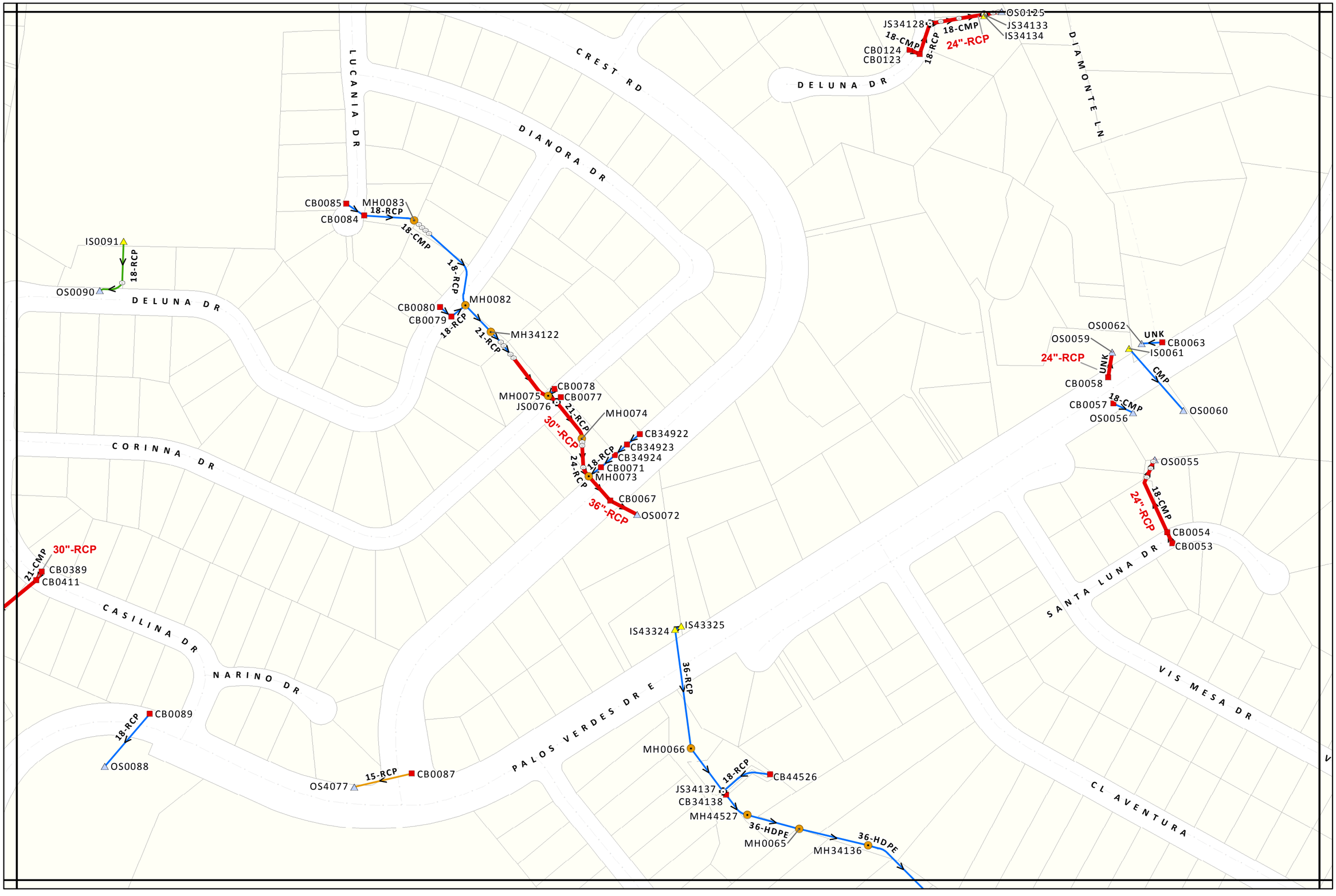
0 100 200
Feet

16C	16D	34C
26A	**26B**	
26C	26D	



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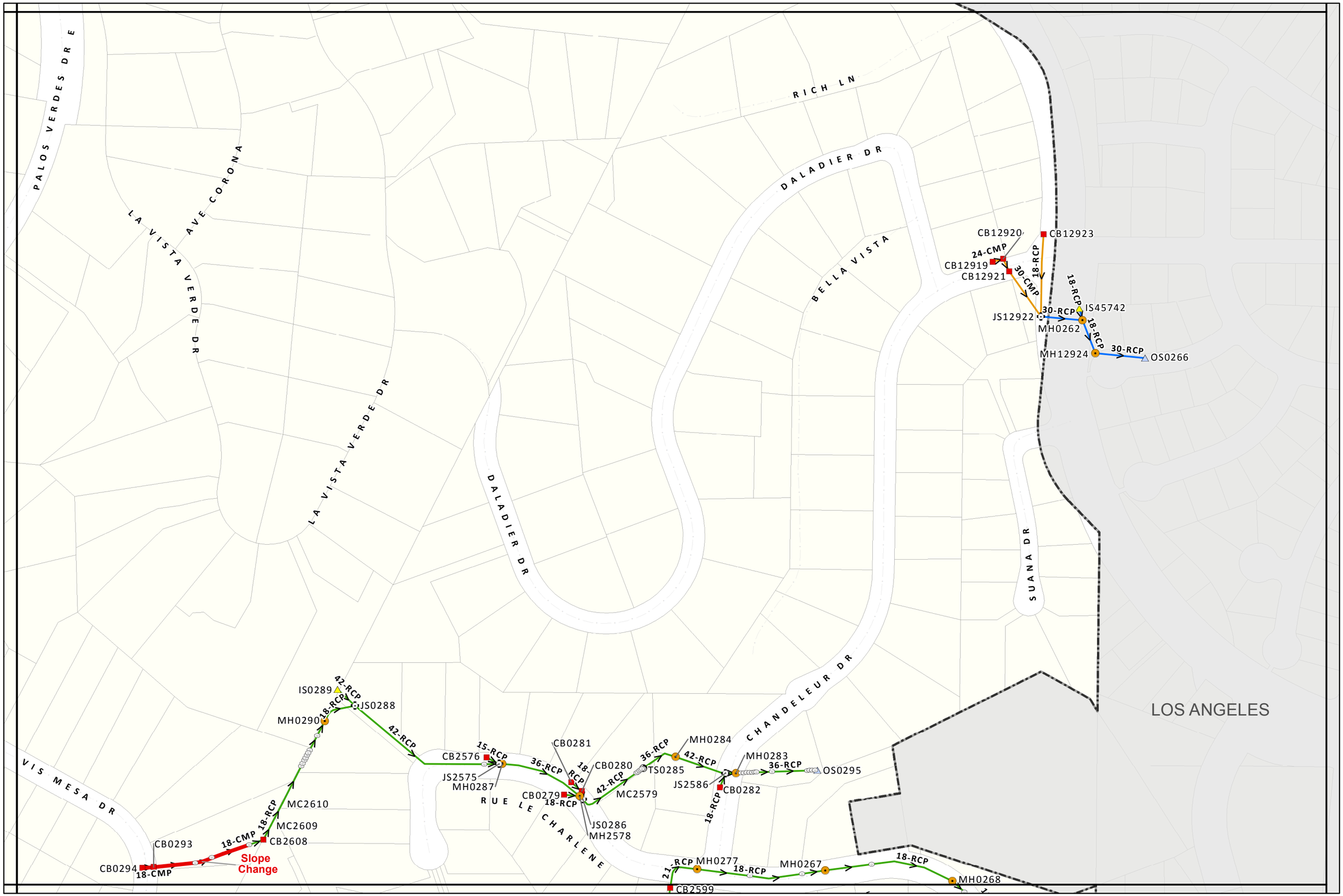
0 100 200
Feet

25B	26A	26B
25D	**26C**	26D
28B	27A	27B



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0 100 200
Feet

26A	26B	
26C	**26D**	
27A	27B	