

west, east, and north of the project site, at a height sufficient to break the line of site with construction equipment.

Also, potential use of HVAC units with the proposed residential units could cause ambient noise levels to exceed allowable existing ambient levels (between 50 dBA, Leq[15] and 70 dBA, Leq[15]). Because of this, the following attenuating measure is recommended:

- **Shielded or Enclosed HVAC Units.** To ensure ambient noise levels do not exceed allowable noise standards, shielding or enclosure of HVAC units would be required.

Lastly, outdoor living areas of the eastern-most residences, closest to S. Vermont Avenue, would be exposed to noise levels that fall within the City's "normally unacceptable" noise standards.

Therefore, the following noise attenuating measure is recommended:

- **S. Vermont Boundary Wall Building Materials.** The proposed block wall along S. Vermont Avenue, adjacent to proposed outdoor patios of the condominium units along the eastern area of the project site, must be designed with materials sufficient to provide noise reduction of at least 10 dBA at the proposed condominium outdoor patios. Possible combinations of materials that may be used to provide a 10 dBA noise reduction include 16-gauge steel, 1-inch thick plywood, and any reasonable thickness of concrete, all of which must have a surface density of four pounds per square foot (FTA 2006).

3.4 Conclusions

On-site operational noise would be limited to vehicle engines, landscaping equipment, and general conversations. Although it is assumed HVAC equipment is not used, it is estimated that HVAC equipment would generate noise levels within existing ambient noise levels (between 50 dBA, Leq[15] and 70 dBA, Leq[15]).

Additionally, the proposed residences near the eastern boundary of the project site would experience noise levels that exceed the City's "conditionally acceptable" level of 65 dBA CNEL for new residential land uses, and would fall within the "normally unacceptable" level of 65-75 dBA, CNEL. However, state requirements (Title 24) of the California Code of Regulations requires new dwellings to have interior noise levels, attributable to exterior noise sources, to not exceed 45 dBA, CNEL in any habitable room. Therefore, with compliance with state standards, proposed new residences would not be exposed to interior noise exceeding applicable standards.

Off-site roadway noise impacts would be limited to proposed ingress and egress solely on S. Vermont Avenue, with an approximate two percent increase of daily vehicle traffic along S. Vermont Avenue and approximate one percent increase of daily vehicle traffic along W. Rosecrans Avenue.

Although construction noise is exempt from the City of Gardena noise standards, because of the proximity to nearby noise-sensitive receptors, temporary construction noise level impacts could be considered significant. As shown in Table 6, unmitigated construction noise levels could reach up to an estimated 99.5 dBA at the nearest sensitive receptor. However, with the recommended mitigation measures, noise temporary construction noise impacts to nearby sensitive receptors could be reduced at a minimum of 15 dBA with the temporary sound attenuation barrier placed between construction activities and the nearby sensitive receptors to the west, east, and north. By providing a barrier from the line of sight to the construction activity, the barrier could reduce noise levels up to 15 dBA (FHWA 2017). This would reduce noise levels to approximately 84.5 dBA at the nearest sensitive receptor. In addition, construction hours are limited to daytime hours, and would not affect normal sleep schedules of nearby sensitive receptors.

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4 References

- California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013.
http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf
- California Geological Survey (CGS). 2016. *Earthquake Zones of Required Investigation: Inglewood Quadrangle*. [map]. Tabular digital data and vector digital data. 1:24,000. California Department of Conservation. Sacramento, CA.
http://gmw.conservation.ca.gov/shp/EZRIM/Maps/INGLEWOOD_EZRIM.pdf (accessed October 2018).
- California State Water Resources Control Board (SWRCB). 1999. *Appendix G. Background Information on Acoustics*. General Waste Discharge Requirements for Biosolids Land Application Draft Statewide Program EIR. June 28, 1999.
http://www.waterboards.ca.gov/water_issues/programs/biosolids/deir/appendices/app_g.pdf
- Federal Highway Administration (FHWA). 2006. "Highway Construction Noise Handbook." August 2006. http://www.fhwa.dot.gov/environment/construction_noise/handbook
- _____. 2017. "Highway Traffic Noise Analysis and Abatement Policy and Guidance". U.S. Department of Transportation. Last modified: August 24, 2017.
https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide05.cfm
- Federal Transit Administration (FTA). 2006. *Transit Noise and Vibration Impact Assessment*. May 2006.
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf
- Gardena, City of. 2006. *Noise Plan*. Gardena, CA. April 25, 2006. <http://www.cityofgardena.org/wp-content/uploads/2016/04/generalplan9.pdf>
- _____. 2015. *2015 Traffic Counts*. Department of Public Works, Engineering Division. July 2, 2015.
<http://www2.cityofgardena.org/wp-content/uploads/2017/09/TRAFFIC-COUNTS-15-1200x1553.jpg>
- University of Washington. 2006. *Construction Industry Noise Exposures: Operating Engineers*. School of Public Health and Community Medicine, Department of Environmental and Occupational Health Sciences. September 2006.
- United States Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Washington, D.C. December 31, 1971.

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Appendix A

Noise Measurement Data

Ambient Noise Survey Data Sheet

Instructions: Document noise measurement locations with a photo of the site, including the noise meter. Additionally, take notes on general and secondary noise sources, including the instantaneous noise level if possible. As a reminder, A/C weighting should be set to "A" and generally response time should be set to "fast." For additional information, please review the *Noise Measurement Protocol* in the pelican case.

Project Name: Lady Luck 56 units Job Number: 18-05655
Date: 4/5/18 Operator Name: Vanessa V.

Measurement #1

Location: 1 Begin time: 4:48:36 Finish time: 4:51
Measurement No.: 1 Wind (mph): _____ Direction: _____
Cloud Cover Class: Overcast (>80%) ☐ Light (20-80%) ☐ Sunny (<20%) ☒
Calibration (dB): Start: 94 End: 94
Primary Noise Sources: some wind, seagulls, Distance: _____
Secondary Noise Sources: planes
Notes: ice cream truck

Traffic Count: Passenger Cars: 0
Medium to Heavy Duty Trucks (3 axles): 0 Heavy Duty Trucks (4+ axles): 0

Instantaneous Noise Sources/Levels (e.g., airplane, bus airbrake, etc.): _____

Leq: 50.4 SEL: 79.9 Lmax: 61.6 Lmin: 45.7 PK: 80.5
L(05): _____ L(10): _____ L(50): _____ L(90): _____ L(95): _____
Response: Slow ☐ Fast ☒ Peak ☐ Impulse ☐

Measurement #2

Location: 2 Begin time: 5:28 Finish time: 5:435
Measurement No.: 2 Wind (mph): _____ Direction: _____
Cloud Cover Class: Overcast (>80%) ☐ Light (20-80%) ☐ Sunny (<20%) ☒
Calibration (dB): Start: 94 End: 94
Primary Noise Sources: birds, dog, planes Distance: _____
Secondary Noise Sources: _____
Notes: _____

Traffic Count: Passenger Cars: 26
Medium to Heavy Duty Trucks (3 axles): 0 Heavy Duty Trucks (4+ axles): 0

Instantaneous Noise Sources/Levels (e.g., airplane, bus airbrake, etc.): _____

Leq: 60.7 SEL: 90.2 Lmax: 79.6 Lmin: 41.9 PK: 91.0
L(05): _____ L(10): _____ L(50): _____ L(90): _____ L(95): _____
Response: Slow ☐ Fast ☒ Peak ☐ Impulse ☐



Ambient Noise Survey Data Sheet

Instructions: Document noise measurement locations with a photo of the site, including the noise meter. Additionally, take notes on general and secondary noise sources, including the instantaneous noise level if possible. As a reminder, A/C weighting should be set to "A" and generally response time should be set to "fast." For additional information, please review the *Noise Measurement Protocol* in the pelican case.

Project Name: _____ Job Number: _____
Date: _____ Operator Name: _____

Measurement #1

Location: _____ Begin time: 5:54 Finish time: 6:087
Measurement No.: 3 Wind (mph): _____ Direction: _____
Cloud Cover Class: Overcast (>80%) ☐ Light (20-80%) ☐ Sunny (<20%) ☐
Calibration (dB): Start: _____ End: _____
Primary Noise Sources: traffic Distance: _____
Secondary Noise Sources: _____
Notes: 3 lanes + median parking island

Traffic Count: Passenger Cars: ~551
Medium to Heavy Duty Trucks (3 axles): 141 Heavy Duty Trucks (4+ axles): 111

Instantaneous Noise Sources/Levels (e.g., airplane, bus airbrake, etc.): _____
Leq: 70.2 SEL: 99.5 Lmax: 85.2 Lmin: 54.5 PK: 96.0
L(05): _____ L(10): _____ L(50): _____ L(90): _____ L(95): _____
Response: Slow ☐ Fast ☒ Peak ☐ Impulse ☐

Measurement #2

Location: _____ Begin time: _____ Finish time: _____
Measurement No.: _____ Wind (mph): _____ Direction: _____
Cloud Cover Class: Overcast (>80%) ☐ Light (20-80%) ☐ Sunny (<20%) ☐
Calibration (dB): Start: _____ End: _____
Primary Noise Sources: _____ Distance: _____
Secondary Noise Sources: _____
Notes: _____
Traffic Count: Passenger Cars: _____
Medium to Heavy Duty Trucks (3 axles): _____ Heavy Duty Trucks (4+ axles): _____
Instantaneous Noise Sources/Levels (e.g., airplane, bus airbrake, etc.): _____
Leq: _____ SEL: _____ Lmax: _____ Lmin: _____ PK: _____
L(05): _____ L(10): _____ L(50): _____ L(90): _____ L(95): _____
Response: Slow ☐ Fast ☐ Peak ☐ Impulse ☐

*could not do NM4, unsafe conditions

Noise Measurement 1

Freq Weight : A
 Time Weight : FAST
 Level Range : 40-100
 Max dB : 61.6 - 2018/04/05 16:37:29
 Level Range : 40-100
 SEL : 79.9
 Leq : 50.4

No.s	Date Time	(dB)
1	2018/04/05 16:35:34	46.9
2	2018/04/05 16:35:37	46.7
3	2018/04/05 16:35:40	48.2
4	2018/04/05 16:35:43	48.6
5	2018/04/05 16:35:46	46.7
6	2018/04/05 16:35:49	48.0
7	2018/04/05 16:35:52	46.0
8	2018/04/05 16:35:55	47.8
9	2018/04/05 16:35:58	50.1
10	2018/04/05 16:36:01	47.9
11	2018/04/05 16:36:04	47.6
12	2018/04/05 16:36:07	47.2
13	2018/04/05 16:36:10	47.4
14	2018/04/05 16:36:13	48.3
15	2018/04/05 16:36:16	49.1
16	2018/04/05 16:36:19	48.2
17	2018/04/05 16:36:22	49.1
18	2018/04/05 16:36:25	48.3
19	2018/04/05 16:36:28	48.3
20	2018/04/05 16:36:31	47.8
21	2018/04/05 16:36:34	47.5
22	2018/04/05 16:36:37	47.3
23	2018/04/05 16:36:40	48.2
24	2018/04/05 16:36:43	47.5
25	2018/04/05 16:36:46	48.5
26	2018/04/05 16:36:49	48.8
27	2018/04/05 16:36:52	48.9
28	2018/04/05 16:36:55	49.2
29	2018/04/05 16:36:58	53.6
30	2018/04/05 16:37:01	53.1
31	2018/04/05 16:37:04	52.2
32	2018/04/05 16:37:07	54.2
33	2018/04/05 16:37:10	52.4
34	2018/04/05 16:37:13	52.2
35	2018/04/05 16:37:16	54.0
36	2018/04/05 16:37:19	54.0
37	2018/04/05 16:37:22	51.7
38	2018/04/05 16:37:25	53.2
39	2018/04/05 16:37:28	56.0
40	2018/04/05 16:37:31	50.0
41	2018/04/05 16:37:34	54.4
42	2018/04/05 16:37:37	58.1
43	2018/04/05 16:37:40	54.0
44	2018/04/05 16:37:43	52.3
45	2018/04/05 16:37:46	50.4
46	2018/04/05 16:37:49	49.2
47	2018/04/05 16:37:52	49.0
48	2018/04/05 16:37:55	50.6
49	2018/04/05 16:37:58	51.1
50	2018/04/05 16:38:01	51.1
51	2018/04/05 16:38:04	49.2
52	2018/04/05 16:38:07	49.1
53	2018/04/05 16:38:10	49.7
54	2018/04/05 16:38:13	48.1
55	2018/04/05 16:38:16	52.4
56	2018/04/05 16:38:19	50.1
57	2018/04/05 16:38:22	48.6
58	2018/04/05 16:38:25	47.8
59	2018/04/05 16:38:28	47.6
60	2018/04/05 16:38:31	48.0
61	2018/04/05 16:38:34	48.3
62	2018/04/05 16:38:37	49.0
63	2018/04/05 16:38:40	46.5
64	2018/04/05 16:38:43	48.6
65	2018/04/05 16:38:46	48.6
66	2018/04/05 16:38:49	47.9
67	2018/04/05 16:38:52	48.4
68	2018/04/05 16:38:55	47.9
69	2018/04/05 16:38:58	48.5
70	2018/04/05 16:39:01	47.2
71	2018/04/05 16:39:04	47.4
72	2018/04/05 16:39:07	48.7
73	2018/04/05 16:39:10	49.5
74	2018/04/05 16:39:13	50.6
75	2018/04/05 16:39:16	50.1
76	2018/04/05 16:39:19	50.4
77	2018/04/05 16:39:22	49.8
78	2018/04/05 16:39:25	52.0
79	2018/04/05 16:39:28	49.6
80	2018/04/05 16:39:31	48.8
81	2018/04/05 16:39:34	49.3
82	2018/04/05 16:39:37	49.2
83	2018/04/05 16:39:40	48.5
84	2018/04/05 16:39:43	48.0
85	2018/04/05 16:39:46	48.2

86	2018/04/05	16:39:49	48.2
87	2018/04/05	16:39:52	49.7
88	2018/04/05	16:39:55	47.4
89	2018/04/05	16:39:58	47.3
90	2018/04/05	16:40:01	47.5
91	2018/04/05	16:40:04	52.5
92	2018/04/05	16:40:07	51.4
93	2018/04/05	16:40:10	51.5
94	2018/04/05	16:40:13	51.3
95	2018/04/05	16:40:16	54.9
96	2018/04/05	16:40:19	50.7
97	2018/04/05	16:40:22	50.2
98	2018/04/05	16:40:25	51.4
99	2018/04/05	16:40:28	50.6
100	2018/04/05	16:40:31	49.3
101	2018/04/05	16:40:34	50.6
102	2018/04/05	16:40:37	49.4
103	2018/04/05	16:40:40	50.4
104	2018/04/05	16:40:43	48.8
105	2018/04/05	16:40:46	49.3
106	2018/04/05	16:40:49	48.0
107	2018/04/05	16:40:52	48.3
108	2018/04/05	16:40:55	48.4
109	2018/04/05	16:40:58	49.8
110	2018/04/05	16:41:01	48.2
111	2018/04/05	16:41:04	51.9
112	2018/04/05	16:41:07	50.7
113	2018/04/05	16:41:10	50.8
114	2018/04/05	16:41:13	51.6
115	2018/04/05	16:41:16	51.6
116	2018/04/05	16:41:19	50.4
117	2018/04/05	16:41:22	49.4
118	2018/04/05	16:41:25	49.7
119	2018/04/05	16:41:28	49.5
120	2018/04/05	16:41:31	50.1
121	2018/04/05	16:41:34	47.8
122	2018/04/05	16:41:37	46.1
123	2018/04/05	16:41:40	47.6
124	2018/04/05	16:41:43	47.4
125	2018/04/05	16:41:46	47.7
126	2018/04/05	16:41:49	48.5
127	2018/04/05	16:41:52	47.6
128	2018/04/05	16:41:55	49.0
129	2018/04/05	16:41:58	47.8
130	2018/04/05	16:42:01	48.0
131	2018/04/05	16:42:04	48.0
132	2018/04/05	16:42:07	47.9
133	2018/04/05	16:42:10	53.1
134	2018/04/05	16:42:13	51.8
135	2018/04/05	16:42:16	48.6
136	2018/04/05	16:42:19	49.0
137	2018/04/05	16:42:22	46.5
138	2018/04/05	16:42:25	46.5
139	2018/04/05	16:42:28	47.0
140	2018/04/05	16:42:31	47.3
141	2018/04/05	16:42:34	47.5
142	2018/04/05	16:42:37	48.8
143	2018/04/05	16:42:40	50.4
144	2018/04/05	16:42:43	49.5
145	2018/04/05	16:42:46	51.0
146	2018/04/05	16:42:49	52.2
147	2018/04/05	16:42:52	50.2
148	2018/04/05	16:42:55	50.5
149	2018/04/05	16:42:58	50.4
150	2018/04/05	16:43:01	50.3
151	2018/04/05	16:43:04	51.5
152	2018/04/05	16:43:07	50.1
153	2018/04/05	16:43:10	50.9
154	2018/04/05	16:43:13	52.1
155	2018/04/05	16:43:16	52.0
156	2018/04/05	16:43:19	52.1
157	2018/04/05	16:43:22	51.7
158	2018/04/05	16:43:25	50.0
159	2018/04/05	16:43:28	50.3
160	2018/04/05	16:43:31	49.3
161	2018/04/05	16:43:34	49.0
162	2018/04/05	16:43:37	48.8
163	2018/04/05	16:43:40	48.7
164	2018/04/05	16:43:43	51.6
165	2018/04/05	16:43:46	49.1
166	2018/04/05	16:43:49	51.2
167	2018/04/05	16:43:52	48.8
168	2018/04/05	16:43:55	48.6
169	2018/04/05	16:43:58	47.9
170	2018/04/05	16:44:01	48.4
171	2018/04/05	16:44:04	47.5
172	2018/04/05	16:44:07	48.6
173	2018/04/05	16:44:10	48.4
174	2018/04/05	16:44:13	48.3
175	2018/04/05	16:44:16	49.4
176	2018/04/05	16:44:19	49.9
177	2018/04/05	16:44:22	49.3
178	2018/04/05	16:44:25	49.1
179	2018/04/05	16:44:28	48.9
180	2018/04/05	16:44:31	48.8
181	2018/04/05	16:44:34	48.9
182	2018/04/05	16:44:37	50.6
183	2018/04/05	16:44:40	49.3
184	2018/04/05	16:44:43	48.1

185	2018/04/05	16:44:46	48.5
186	2018/04/05	16:44:49	49.1
187	2018/04/05	16:44:52	50.8
188	2018/04/05	16:44:55	47.3
189	2018/04/05	16:44:58	47.4
190	2018/04/05	16:45:01	48.7
191	2018/04/05	16:45:04	48.8
192	2018/04/05	16:45:07	53.5
193	2018/04/05	16:45:10	47.2
194	2018/04/05	16:45:13	47.4
195	2018/04/05	16:45:16	49.6
196	2018/04/05	16:45:19	48.3
197	2018/04/05	16:45:22	49.5
198	2018/04/05	16:45:25	49.3
199	2018/04/05	16:45:28	49.6
200	2018/04/05	16:45:31	50.2
201	2018/04/05	16:45:34	50.7
202	2018/04/05	16:45:37	52.0
203	2018/04/05	16:45:40	50.3
204	2018/04/05	16:45:43	51.0
205	2018/04/05	16:45:46	51.1
206	2018/04/05	16:45:49	54.3
207	2018/04/05	16:45:52	49.7
208	2018/04/05	16:45:55	49.6
209	2018/04/05	16:45:58	51.0
210	2018/04/05	16:46:01	52.1
211	2018/04/05	16:46:04	51.3
212	2018/04/05	16:46:07	50.9
213	2018/04/05	16:46:10	51.5
214	2018/04/05	16:46:13	50.5
215	2018/04/05	16:46:16	51.2
216	2018/04/05	16:46:19	51.5
217	2018/04/05	16:46:22	52.6
218	2018/04/05	16:46:25	52.1
219	2018/04/05	16:46:28	53.3
220	2018/04/05	16:46:31	50.6
221	2018/04/05	16:46:34	50.9
222	2018/04/05	16:46:37	51.3
223	2018/04/05	16:46:40	49.6
224	2018/04/05	16:46:43	49.6
225	2018/04/05	16:46:46	49.0
226	2018/04/05	16:46:49	48.8
227	2018/04/05	16:46:52	48.9
228	2018/04/05	16:46:55	49.6
229	2018/04/05	16:46:58	49.2
230	2018/04/05	16:47:01	50.1
231	2018/04/05	16:47:04	49.7
232	2018/04/05	16:47:07	51.2
233	2018/04/05	16:47:10	52.2
234	2018/04/05	16:47:13	50.8
235	2018/04/05	16:47:16	49.5
236	2018/04/05	16:47:19	49.4
237	2018/04/05	16:47:22	49.9
238	2018/04/05	16:47:25	50.7
239	2018/04/05	16:47:28	49.6
240	2018/04/05	16:47:31	50.6
241	2018/04/05	16:47:34	50.1
242	2018/04/05	16:47:37	54.1
243	2018/04/05	16:47:40	54.1
244	2018/04/05	16:47:43	50.2
245	2018/04/05	16:47:46	51.7
246	2018/04/05	16:47:49	52.2
247	2018/04/05	16:47:52	50.4
248	2018/04/05	16:47:55	50.8
249	2018/04/05	16:47:58	49.7
250	2018/04/05	16:48:01	49.9
251	2018/04/05	16:48:04	49.0
252	2018/04/05	16:48:07	49.2
253	2018/04/05	16:48:10	49.2
254	2018/04/05	16:48:13	49.3
255	2018/04/05	16:48:16	50.0
256	2018/04/05	16:48:19	50.8
257	2018/04/05	16:48:22	50.4
258	2018/04/05	16:48:25	49.4
259	2018/04/05	16:48:28	49.5
260	2018/04/05	16:48:31	49.7
261	2018/04/05	16:48:34	49.2
262	2018/04/05	16:48:37	49.0
263	2018/04/05	16:48:40	49.6
264	2018/04/05	16:48:43	49.4
265	2018/04/05	16:48:46	49.2
266	2018/04/05	16:48:49	49.8
267	2018/04/05	16:48:52	50.8
268	2018/04/05	16:48:55	50.5
269	2018/04/05	16:48:58	51.2
270	2018/04/05	16:49:01	50.9
271	2018/04/05	16:49:04	49.8
272	2018/04/05	16:49:07	50.3
273	2018/04/05	16:49:10	49.5
274	2018/04/05	16:49:13	51.5
275	2018/04/05	16:49:16	51.1
276	2018/04/05	16:49:19	51.0
277	2018/04/05	16:49:22	52.4
278	2018/04/05	16:49:25	50.8
279	2018/04/05	16:49:28	53.7
280	2018/04/05	16:49:31	53.0
281	2018/04/05	16:49:34	50.6
282	2018/04/05	16:49:37	49.8
283	2018/04/05	16:49:40	50.1

284	2018/04/05	16:49:43	51.5
285	2018/04/05	16:49:46	50.3
286	2018/04/05	16:49:49	54.1
287	2018/04/05	16:49:52	52.6
288	2018/04/05	16:49:55	54.9
289	2018/04/05	16:49:58	53.0
290	2018/04/05	16:50:01	52.6
291	2018/04/05	16:50:04	51.0
292	2018/04/05	16:50:07	59.6
293	2018/04/05	16:50:10	49.3
294	2018/04/05	16:50:13	50.3
295	2018/04/05	16:50:16	52.8
296	2018/04/05	16:50:19	51.5
297	2018/04/05	16:50:22	50.4
298	2018/04/05	16:50:25	51.8
299	2018/04/05	16:50:28	51.5
300	2018/04/05	16:50:31	48.2

Noise Measurement 2

Freq Weight : A
 Time Weight : FAST
 Level Range : 40-100
 Max dB : 79.6 - 2018/04/05 17:29:58
 Level Range : 40-100
 SEL : 90.2
 Leq : 60.7

No.s	Date Time	(dB)
1	2018/04/05 17:28:31	51.4
2	2018/04/05 17:28:34	61.1
3	2018/04/05 17:28:37	62.4
4	2018/04/05 17:28:40	54.2
5	2018/04/05 17:28:43	49.3
6	2018/04/05 17:28:46	68.6
7	2018/04/05 17:28:49	61.8
8	2018/04/05 17:28:52	46.9
9	2018/04/05 17:28:55	49.9
10	2018/04/05 17:28:58	71.8
11	2018/04/05 17:29:01	65.2
12	2018/04/05 17:29:04	62.4
13	2018/04/05 17:29:07	60.1
14	2018/04/05 17:29:10	66.8
15	2018/04/05 17:29:13	65.2
16	2018/04/05 17:29:16	49.5
17	2018/04/05 17:29:19	45.7
18	2018/04/05 17:29:22	57.9
19	2018/04/05 17:29:25	65.2
20	2018/04/05 17:29:28	45.0
21	2018/04/05 17:29:31	46.1
22	2018/04/05 17:29:34	51.5
23	2018/04/05 17:29:37	65.8
24	2018/04/05 17:29:40	73.5
25	2018/04/05 17:29:43	56.8
26	2018/04/05 17:29:46	65.8
27	2018/04/05 17:29:49	75.7
28	2018/04/05 17:29:52	55.1
29	2018/04/05 17:29:55	70.5
30	2018/04/05 17:29:58	48.3
31	2018/04/05 17:30:01	51.2
32	2018/04/05 17:30:04	64.5
33	2018/04/05 17:30:07	65.0
34	2018/04/05 17:30:10	52.7
35	2018/04/05 17:30:13	54.4
36	2018/04/05 17:30:16	54.2
37	2018/04/05 17:30:19	50.1
38	2018/04/05 17:30:22	48.4
39	2018/04/05 17:30:25	48.0
40	2018/04/05 17:30:28	57.1
41	2018/04/05 17:30:31	52.8
42	2018/04/05 17:30:34	48.9
43	2018/04/05 17:30:37	51.6
44	2018/04/05 17:30:40	58.2
45	2018/04/05 17:30:43	59.1
46	2018/04/05 17:30:46	58.0
47	2018/04/05 17:30:49	55.8
48	2018/04/05 17:30:52	71.4
49	2018/04/05 17:30:55	58.5
50	2018/04/05 17:30:58	47.5
51	2018/04/05 17:31:01	59.1
52	2018/04/05 17:31:04	63.2
53	2018/04/05 17:31:07	56.1
54	2018/04/05 17:31:10	54.6
55	2018/04/05 17:31:13	60.7
56	2018/04/05 17:31:16	54.0
57	2018/04/05 17:31:19	47.9
58	2018/04/05 17:31:22	45.7
59	2018/04/05 17:31:25	46.1
60	2018/04/05 17:31:28	49.6
61	2018/04/05 17:31:31	52.4
62	2018/04/05 17:31:34	54.6
63	2018/04/05 17:31:37	49.6
64	2018/04/05 17:31:40	60.0
65	2018/04/05 17:31:43	51.5
66	2018/04/05 17:31:46	50.7
67	2018/04/05 17:31:49	61.4
68	2018/04/05 17:31:52	59.3
69	2018/04/05 17:31:55	57.8
70	2018/04/05 17:31:58	62.8
71	2018/04/05 17:32:01	55.3
72	2018/04/05 17:32:04	56.2
73	2018/04/05 17:32:07	52.6
74	2018/04/05 17:32:10	60.2
75	2018/04/05 17:32:13	62.6
76	2018/04/05 17:32:16	66.6
77	2018/04/05 17:32:19	63.2
78	2018/04/05 17:32:22	59.7
79	2018/04/05 17:32:25	55.1
80	2018/04/05 17:32:28	47.4
81	2018/04/05 17:32:31	47.9
82	2018/04/05 17:32:34	45.3
83	2018/04/05 17:32:37	46.8
84	2018/04/05 17:32:40	47.1
85	2018/04/05 17:32:43	48.2

86	2018/04/05	17:32:46	65.7
87	2018/04/05	17:32:49	63.3
88	2018/04/05	17:32:52	68.3
89	2018/04/05	17:32:55	55.5
90	2018/04/05	17:32:58	61.2
91	2018/04/05	17:33:01	66.5
92	2018/04/05	17:33:04	62.2
93	2018/04/05	17:33:07	65.4
94	2018/04/05	17:33:10	59.3
95	2018/04/05	17:33:13	67.7
96	2018/04/05	17:33:16	56.9
97	2018/04/05	17:33:19	65.6
98	2018/04/05	17:33:22	51.7
99	2018/04/05	17:33:25	65.9
100	2018/04/05	17:33:28	51.2
101	2018/04/05	17:33:31	63.0
102	2018/04/05	17:33:34	58.1
103	2018/04/05	17:33:37	66.8
104	2018/04/05	17:33:40	56.4
105	2018/04/05	17:33:43	45.9
106	2018/04/05	17:33:46	57.8
107	2018/04/05	17:33:49	61.8
108	2018/04/05	17:33:52	63.6
109	2018/04/05	17:33:55	50.5
110	2018/04/05	17:33:58	49.1
111	2018/04/05	17:34:01	55.6
112	2018/04/05	17:34:04	52.0
113	2018/04/05	17:34:07	49.4
114	2018/04/05	17:34:10	59.1
115	2018/04/05	17:34:13	62.7
116	2018/04/05	17:34:16	61.9
117	2018/04/05	17:34:19	50.1
118	2018/04/05	17:34:22	47.9
119	2018/04/05	17:34:25	57.2
120	2018/04/05	17:34:28	47.7
121	2018/04/05	17:34:31	53.8
122	2018/04/05	17:34:34	48.5
123	2018/04/05	17:34:37	56.8
124	2018/04/05	17:34:40	49.9
125	2018/04/05	17:34:43	47.6
126	2018/04/05	17:34:46	47.0
127	2018/04/05	17:34:49	57.0
128	2018/04/05	17:34:52	46.8
129	2018/04/05	17:34:55	46.6
130	2018/04/05	17:34:58	49.6
131	2018/04/05	17:35:01	61.9
132	2018/04/05	17:35:04	50.9
133	2018/04/05	17:35:07	56.2
134	2018/04/05	17:35:10	48.0
135	2018/04/05	17:35:13	53.0
136	2018/04/05	17:35:16	49.3
137	2018/04/05	17:35:19	52.1
138	2018/04/05	17:35:22	53.5
139	2018/04/05	17:35:25	53.4
140	2018/04/05	17:35:28	49.9
141	2018/04/05	17:35:31	53.1
142	2018/04/05	17:35:34	53.3
143	2018/04/05	17:35:37	52.5
144	2018/04/05	17:35:40	55.8
145	2018/04/05	17:35:43	52.8
146	2018/04/05	17:35:46	54.2
147	2018/04/05	17:35:49	53.3
148	2018/04/05	17:35:52	51.1
149	2018/04/05	17:35:55	48.1
150	2018/04/05	17:35:58	45.6
151	2018/04/05	17:36:01	45.4
152	2018/04/05	17:36:04	44.3
153	2018/04/05	17:36:07	47.1
154	2018/04/05	17:36:10	45.7
155	2018/04/05	17:36:13	45.1
156	2018/04/05	17:36:16	45.1
157	2018/04/05	17:36:19	45.2
158	2018/04/05	17:36:22	44.8
159	2018/04/05	17:36:25	46.8
160	2018/04/05	17:36:28	43.9
161	2018/04/05	17:36:31	46.5
162	2018/04/05	17:36:34	46.7
163	2018/04/05	17:36:37	45.9
164	2018/04/05	17:36:40	45.0
165	2018/04/05	17:36:43	44.8
166	2018/04/05	17:36:46	45.3
167	2018/04/05	17:36:49	45.1
168	2018/04/05	17:36:52	46.1
169	2018/04/05	17:36:55	46.1
170	2018/04/05	17:36:58	46.7
171	2018/04/05	17:37:01	46.1
172	2018/04/05	17:37:04	46.3
173	2018/04/05	17:37:07	47.4
174	2018/04/05	17:37:10	47.8
175	2018/04/05	17:37:13	48.2
176	2018/04/05	17:37:16	50.2
177	2018/04/05	17:37:19	49.5
178	2018/04/05	17:37:22	46.7
179	2018/04/05	17:37:25	52.4
180	2018/04/05	17:37:28	49.1
181	2018/04/05	17:37:31	55.9
182	2018/04/05	17:37:34	55.9
183	2018/04/05	17:37:37	55.5
184	2018/04/05	17:37:40	54.7

185	2018/04/05	17:37:43	54.4
186	2018/04/05	17:37:46	56.5
187	2018/04/05	17:37:49	55.6
188	2018/04/05	17:37:52	56.6
189	2018/04/05	17:37:55	58.2
190	2018/04/05	17:37:58	56.1
191	2018/04/05	17:38:01	56.9
192	2018/04/05	17:38:04	55.3
193	2018/04/05	17:38:07	51.2
194	2018/04/05	17:38:10	51.4
195	2018/04/05	17:38:13	49.9
196	2018/04/05	17:38:16	48.0
197	2018/04/05	17:38:19	53.3
198	2018/04/05	17:38:22	50.9
199	2018/04/05	17:38:25	51.0
200	2018/04/05	17:38:28	49.5
201	2018/04/05	17:38:31	49.7
202	2018/04/05	17:38:34	51.3
203	2018/04/05	17:38:37	48.7
204	2018/04/05	17:38:40	55.7
205	2018/04/05	17:38:43	54.4
206	2018/04/05	17:38:46	50.7
207	2018/04/05	17:38:49	48.3
208	2018/04/05	17:38:52	49.0
209	2018/04/05	17:38:55	51.4
210	2018/04/05	17:38:58	47.3
211	2018/04/05	17:39:01	50.7
212	2018/04/05	17:39:04	50.6
213	2018/04/05	17:39:07	47.7
214	2018/04/05	17:39:10	51.0
215	2018/04/05	17:39:13	47.6
216	2018/04/05	17:39:16	47.5
217	2018/04/05	17:39:19	51.0
218	2018/04/05	17:39:22	50.3
219	2018/04/05	17:39:25	51.3
220	2018/04/05	17:39:28	49.3
221	2018/04/05	17:39:31	57.3
222	2018/04/05	17:39:34	55.2
223	2018/04/05	17:39:37	55.2
224	2018/04/05	17:39:40	55.5
225	2018/04/05	17:39:43	50.1
226	2018/04/05	17:39:46	50.2
227	2018/04/05	17:39:49	51.2
228	2018/04/05	17:39:52	52.6
229	2018/04/05	17:39:55	51.1
230	2018/04/05	17:39:58	54.6
231	2018/04/05	17:40:01	60.7
232	2018/04/05	17:40:04	51.4
233	2018/04/05	17:40:07	47.8
234	2018/04/05	17:40:10	49.0
235	2018/04/05	17:40:13	47.3
236	2018/04/05	17:40:16	48.4
237	2018/04/05	17:40:19	48.9
238	2018/04/05	17:40:22	49.4
239	2018/04/05	17:40:25	49.7
240	2018/04/05	17:40:28	49.2
241	2018/04/05	17:40:31	46.5
242	2018/04/05	17:40:34	45.9
243	2018/04/05	17:40:37	46.3
244	2018/04/05	17:40:40	47.6
245	2018/04/05	17:40:43	49.5
246	2018/04/05	17:40:46	51.0
247	2018/04/05	17:40:49	46.5
248	2018/04/05	17:40:52	47.0
249	2018/04/05	17:40:55	50.0
250	2018/04/05	17:40:58	48.8
251	2018/04/05	17:41:01	51.4
252	2018/04/05	17:41:04	63.2
253	2018/04/05	17:41:07	50.9
254	2018/04/05	17:41:10	47.7
255	2018/04/05	17:41:13	47.3
256	2018/04/05	17:41:16	45.7
257	2018/04/05	17:41:19	45.9
258	2018/04/05	17:41:22	48.4
259	2018/04/05	17:41:25	45.8
260	2018/04/05	17:41:28	47.4
261	2018/04/05	17:41:31	49.8
262	2018/04/05	17:41:34	48.0
263	2018/04/05	17:41:37	49.4
264	2018/04/05	17:41:40	54.7
265	2018/04/05	17:41:43	53.1
266	2018/04/05	17:41:46	48.5
267	2018/04/05	17:41:49	48.7
268	2018/04/05	17:41:52	47.4
269	2018/04/05	17:41:55	47.4
270	2018/04/05	17:41:58	48.4
271	2018/04/05	17:42:01	52.7
272	2018/04/05	17:42:04	51.0
273	2018/04/05	17:42:07	46.8
274	2018/04/05	17:42:10	46.1
275	2018/04/05	17:42:13	47.7
276	2018/04/05	17:42:16	49.4
277	2018/04/05	17:42:19	57.4
278	2018/04/05	17:42:22	46.9
279	2018/04/05	17:42:25	46.6
280	2018/04/05	17:42:28	45.8
281	2018/04/05	17:42:31	47.0
282	2018/04/05	17:42:34	72.5
283	2018/04/05	17:42:37	47.2

284	2018/04/05	17:42:40	64.3
285	2018/04/05	17:42:43	59.6
286	2018/04/05	17:42:46	47.4
287	2018/04/05	17:42:49	48.4
288	2018/04/05	17:42:52	47.5
289	2018/04/05	17:42:55	64.6
290	2018/04/05	17:42:58	45.6
291	2018/04/05	17:43:01	43.3
292	2018/04/05	17:43:04	44.0
293	2018/04/05	17:43:07	53.1
294	2018/04/05	17:43:10	60.3
295	2018/04/05	17:43:13	45.8
296	2018/04/05	17:43:16	47.1
297	2018/04/05	17:43:19	44.6
298	2018/04/05	17:43:22	45.3
299	2018/04/05	17:43:25	44.9
300	2018/04/05	17:43:28	64.8

Noise Measurement 3

Freq Weight : A
 Time Weight : FAST
 Level Range : 40-100
 Max dB : 85.2 - 2018/04/05 17:53:46
 Level Range : 40-100
 SEL : 99.5
 Leq : 70.0

No.s	Date Time	(dB)
1	2018/04/05 17:52:37	70.3
2	2018/04/05 17:52:40	69.6
3	2018/04/05 17:52:43	69.5
4	2018/04/05 17:52:46	71.4
5	2018/04/05 17:52:49	69.9
6	2018/04/05 17:52:52	67.2
7	2018/04/05 17:52:55	69.5
8	2018/04/05 17:52:58	66.8
9	2018/04/05 17:53:01	60.6
10	2018/04/05 17:53:04	60.2
11	2018/04/05 17:53:07	62.6
12	2018/04/05 17:53:10	64.4
13	2018/04/05 17:53:13	67.9
14	2018/04/05 17:53:16	66.6
15	2018/04/05 17:53:19	63.6
16	2018/04/05 17:53:22	61.1
17	2018/04/05 17:53:25	60.4
18	2018/04/05 17:53:28	58.3
19	2018/04/05 17:53:31	64.1
20	2018/04/05 17:53:34	60.3
21	2018/04/05 17:53:37	61.0
22	2018/04/05 17:53:40	72.0
23	2018/04/05 17:53:43	82.6
24	2018/04/05 17:53:46	74.9
25	2018/04/05 17:53:49	74.2
26	2018/04/05 17:53:52	68.5
27	2018/04/05 17:53:55	67.2
28	2018/04/05 17:53:58	72.4
29	2018/04/05 17:54:01	69.3
30	2018/04/05 17:54:04	68.4
31	2018/04/05 17:54:07	63.6
32	2018/04/05 17:54:10	71.1
33	2018/04/05 17:54:13	67.8
34	2018/04/05 17:54:16	62.5
35	2018/04/05 17:54:19	61.4
36	2018/04/05 17:54:22	64.4
37	2018/04/05 17:54:25	68.7
38	2018/04/05 17:54:28	69.1
39	2018/04/05 17:54:31	67.3
40	2018/04/05 17:54:34	65.4
41	2018/04/05 17:54:37	57.7
42	2018/04/05 17:54:40	62.4
43	2018/04/05 17:54:43	65.2
44	2018/04/05 17:54:46	64.7
45	2018/04/05 17:54:49	63.2
46	2018/04/05 17:54:52	69.7
47	2018/04/05 17:54:55	68.1
48	2018/04/05 17:54:58	64.4
49	2018/04/05 17:55:01	70.3
50	2018/04/05 17:55:04	71.9
51	2018/04/05 17:55:07	67.8
52	2018/04/05 17:55:10	57.7
53	2018/04/05 17:55:13	58.3
54	2018/04/05 17:55:16	72.3
55	2018/04/05 17:55:19	73.6
56	2018/04/05 17:55:22	74.8
57	2018/04/05 17:55:25	76.8
58	2018/04/05 17:55:28	72.5
59	2018/04/05 17:55:31	76.2
60	2018/04/05 17:55:34	71.8
61	2018/04/05 17:55:37	69.8
62	2018/04/05 17:55:40	64.0
63	2018/04/05 17:55:43	63.8
64	2018/04/05 17:55:46	62.1
65	2018/04/05 17:55:49	60.2
66	2018/04/05 17:55:52	67.5
67	2018/04/05 17:55:55	60.9
68	2018/04/05 17:55:58	59.8
69	2018/04/05 17:56:01	66.4
70	2018/04/05 17:56:04	63.5
71	2018/04/05 17:56:07	59.2
72	2018/04/05 17:56:10	60.5
73	2018/04/05 17:56:13	60.7
74	2018/04/05 17:56:16	66.6
75	2018/04/05 17:56:19	69.2
76	2018/04/05 17:56:22	66.6
77	2018/04/05 17:56:25	65.7
78	2018/04/05 17:56:28	61.0
79	2018/04/05 17:56:31	62.3
80	2018/04/05 17:56:34	64.0
81	2018/04/05 17:56:37	67.2
82	2018/04/05 17:56:40	69.9
83	2018/04/05 17:56:43	63.7
84	2018/04/05 17:56:46	63.7
85	2018/04/05 17:56:49	62.0

86	2018/04/05	17:56:52	62.2
87	2018/04/05	17:56:55	68.7
88	2018/04/05	17:56:58	76.8
89	2018/04/05	17:57:01	66.9
90	2018/04/05	17:57:04	68.7
91	2018/04/05	17:57:07	65.8
92	2018/04/05	17:57:10	59.6
93	2018/04/05	17:57:13	61.1
94	2018/04/05	17:57:16	62.4
95	2018/04/05	17:57:19	58.0
96	2018/04/05	17:57:22	64.9
97	2018/04/05	17:57:25	60.8
98	2018/04/05	17:57:28	68.7
99	2018/04/05	17:57:31	65.3
100	2018/04/05	17:57:34	63.1
101	2018/04/05	17:57:37	67.9
102	2018/04/05	17:57:40	61.7
103	2018/04/05	17:57:43	58.5
104	2018/04/05	17:57:46	55.2
105	2018/04/05	17:57:49	56.6
106	2018/04/05	17:57:52	72.3
107	2018/04/05	17:57:55	62.0
108	2018/04/05	17:57:58	59.9
109	2018/04/05	17:58:01	68.1
110	2018/04/05	17:58:04	59.6
111	2018/04/05	17:58:07	57.1
112	2018/04/05	17:58:10	64.8
113	2018/04/05	17:58:13	66.6
114	2018/04/05	17:58:16	67.4
115	2018/04/05	17:58:19	75.3
116	2018/04/05	17:58:22	73.7
117	2018/04/05	17:58:25	72.1
118	2018/04/05	17:58:28	74.9
119	2018/04/05	17:58:31	74.1
120	2018/04/05	17:58:34	72.2
121	2018/04/05	17:58:37	69.5
122	2018/04/05	17:58:40	69.3
123	2018/04/05	17:58:43	65.1
124	2018/04/05	17:58:46	65.1
125	2018/04/05	17:58:49	66.4
126	2018/04/05	17:58:52	68.1
127	2018/04/05	17:58:55	66.2
128	2018/04/05	17:58:58	65.8
129	2018/04/05	17:59:01	63.2
130	2018/04/05	17:59:04	69.4
131	2018/04/05	17:59:07	64.1
132	2018/04/05	17:59:10	74.1
133	2018/04/05	17:59:13	62.7
134	2018/04/05	17:59:16	58.4
135	2018/04/05	17:59:19	56.4
136	2018/04/05	17:59:22	55.7
137	2018/04/05	17:59:25	55.5
138	2018/04/05	17:59:28	57.1
139	2018/04/05	17:59:31	60.1
140	2018/04/05	17:59:34	62.8
141	2018/04/05	17:59:37	72.9
142	2018/04/05	17:59:40	66.9
143	2018/04/05	17:59:43	60.5
144	2018/04/05	17:59:46	59.3
145	2018/04/05	17:59:49	61.3
146	2018/04/05	17:59:52	72.4
147	2018/04/05	17:59:55	66.7
148	2018/04/05	17:59:58	68.5
149	2018/04/05	18:00:01	69.5
150	2018/04/05	18:00:04	72.7
151	2018/04/05	18:00:07	71.5
152	2018/04/05	18:00:10	69.7
153	2018/04/05	18:00:13	58.9
154	2018/04/05	18:00:16	63.0
155	2018/04/05	18:00:19	64.9
156	2018/04/05	18:00:22	67.9
157	2018/04/05	18:00:25	66.7
158	2018/04/05	18:00:28	64.2
159	2018/04/05	18:00:31	65.9
160	2018/04/05	18:00:34	62.9
161	2018/04/05	18:00:37	62.9
162	2018/04/05	18:00:40	62.9
163	2018/04/05	18:00:43	69.9
164	2018/04/05	18:00:46	66.5
165	2018/04/05	18:00:49	68.4
166	2018/04/05	18:00:52	62.6
167	2018/04/05	18:00:55	63.2
168	2018/04/05	18:00:58	70.2
169	2018/04/05	18:01:01	68.8
170	2018/04/05	18:01:04	64.8
171	2018/04/05	18:01:07	68.1
172	2018/04/05	18:01:10	67.7
173	2018/04/05	18:01:13	64.3
174	2018/04/05	18:01:16	74.5
175	2018/04/05	18:01:19	72.2
176	2018/04/05	18:01:22	72.3
177	2018/04/05	18:01:25	74.9
178	2018/04/05	18:01:28	72.9
179	2018/04/05	18:01:31	71.2
180	2018/04/05	18:01:34	73.3
181	2018/04/05	18:01:37	70.3
182	2018/04/05	18:01:40	73.9
183	2018/04/05	18:01:43	74.3
184	2018/04/05	18:01:46	67.8

185	2018/04/05	18:01:49	65.5
186	2018/04/05	18:01:52	65.4
187	2018/04/05	18:01:55	65.7
188	2018/04/05	18:01:58	69.1
189	2018/04/05	18:02:01	60.3
190	2018/04/05	18:02:04	68.1
191	2018/04/05	18:02:07	64.6
192	2018/04/05	18:02:10	58.3
193	2018/04/05	18:02:13	69.1
194	2018/04/05	18:02:16	61.4
195	2018/04/05	18:02:19	64.5
196	2018/04/05	18:02:22	64.2
197	2018/04/05	18:02:25	67.4
198	2018/04/05	18:02:28	64.6
199	2018/04/05	18:02:31	68.5
200	2018/04/05	18:02:34	62.9
201	2018/04/05	18:02:37	67.1
202	2018/04/05	18:02:40	64.6
203	2018/04/05	18:02:43	63.5
204	2018/04/05	18:02:46	62.5
205	2018/04/05	18:02:49	61.3
206	2018/04/05	18:02:52	62.8
207	2018/04/05	18:02:55	62.2
208	2018/04/05	18:02:58	69.8
209	2018/04/05	18:03:01	71.4
210	2018/04/05	18:03:04	67.9
211	2018/04/05	18:03:07	68.5
212	2018/04/05	18:03:10	61.7
213	2018/04/05	18:03:13	59.8
214	2018/04/05	18:03:16	58.3
215	2018/04/05	18:03:19	58.9
216	2018/04/05	18:03:22	59.2
217	2018/04/05	18:03:25	60.0
218	2018/04/05	18:03:28	64.1
219	2018/04/05	18:03:31	66.6
220	2018/04/05	18:03:34	61.9
221	2018/04/05	18:03:37	59.9
222	2018/04/05	18:03:40	66.9
223	2018/04/05	18:03:43	63.0
224	2018/04/05	18:03:46	69.1
225	2018/04/05	18:03:49	64.5
226	2018/04/05	18:03:52	69.9
227	2018/04/05	18:03:55	61.5
228	2018/04/05	18:03:58	60.3
229	2018/04/05	18:04:01	67.5
230	2018/04/05	18:04:04	75.9
231	2018/04/05	18:04:07	66.5
232	2018/04/05	18:04:10	67.6
233	2018/04/05	18:04:13	75.4
234	2018/04/05	18:04:16	72.6
235	2018/04/05	18:04:19	75.3
236	2018/04/05	18:04:22	76.2
237	2018/04/05	18:04:25	70.8
238	2018/04/05	18:04:28	70.6
239	2018/04/05	18:04:31	72.2
240	2018/04/05	18:04:34	68.3
241	2018/04/05	18:04:37	65.3
242	2018/04/05	18:04:40	70.1
243	2018/04/05	18:04:43	72.7
244	2018/04/05	18:04:46	73.6
245	2018/04/05	18:04:49	70.8
246	2018/04/05	18:04:52	69.6
247	2018/04/05	18:04:55	68.5
248	2018/04/05	18:04:58	67.7
249	2018/04/05	18:05:01	64.8
250	2018/04/05	18:05:04	67.5
251	2018/04/05	18:05:07	67.7
252	2018/04/05	18:05:10	63.8
253	2018/04/05	18:05:13	71.5
254	2018/04/05	18:05:16	66.4
255	2018/04/05	18:05:19	64.5
256	2018/04/05	18:05:22	66.0
257	2018/04/05	18:05:25	59.8
258	2018/04/05	18:05:28	61.1
259	2018/04/05	18:05:31	59.9
260	2018/04/05	18:05:34	58.2
261	2018/04/05	18:05:37	57.4
262	2018/04/05	18:05:40	59.2
263	2018/04/05	18:05:43	58.2
264	2018/04/05	18:05:46	65.0
265	2018/04/05	18:05:49	69.8
266	2018/04/05	18:05:52	70.3
267	2018/04/05	18:05:55	72.1
268	2018/04/05	18:05:58	65.0
269	2018/04/05	18:06:01	69.7
270	2018/04/05	18:06:04	65.6
271	2018/04/05	18:06:07	69.2
272	2018/04/05	18:06:10	59.8
273	2018/04/05	18:06:13	57.8
274	2018/04/05	18:06:16	58.8
275	2018/04/05	18:06:19	59.2
276	2018/04/05	18:06:22	57.0
277	2018/04/05	18:06:25	58.7
278	2018/04/05	18:06:28	58.4
279	2018/04/05	18:06:31	58.7
280	2018/04/05	18:06:34	62.2
281	2018/04/05	18:06:37	63.0
282	2018/04/05	18:06:40	65.8
283	2018/04/05	18:06:43	66.2

284	2018/04/05	18:06:46	71.8
285	2018/04/05	18:06:49	68.6
286	2018/04/05	18:06:52	66.6
287	2018/04/05	18:06:55	65.6
288	2018/04/05	18:06:58	67.0
289	2018/04/05	18:07:01	72.7
290	2018/04/05	18:07:04	72.5
291	2018/04/05	18:07:07	66.1
292	2018/04/05	18:07:10	70.2
293	2018/04/05	18:07:13	69.9
294	2018/04/05	18:07:16	70.6
295	2018/04/05	18:07:19	72.0
296	2018/04/05	18:07:22	73.5
297	2018/04/05	18:07:25	73.0
298	2018/04/05	18:07:28	71.8
299	2018/04/05	18:07:31	72.1
300	2018/04/05	18:07:34	72.1

Appendix B

Construction Noise Calculations

Typical Noise Levels Generated by Construction Equipment

Typical Noise Levels Generated by Construction Equipment

Equipment	Type	Typical Lmax (dBA) 50 Feet from the Source
Air Compressor	Stationary	81
Backhoe	Mobile	80
Compactor (ground)	Mobile	83
Concrete Mixer	Stationary	85
Dozer	Mobile	82
Dump Truck	Mobile	76
Flat Bed Truck	Mobile	74
Forklift ¹	Mobile	55
Front End Loader	Mobile	79
Generator	Stationary	81
Grader	Mobile	83
Jack Hammer	Mobile	88
Paver	Mobile	89
Pickup Truck	Mobile	75
Pneumatic Tools	Stationary	85
Roller	Mobile	80
Saw	Stationary	70
Scraper	Mobile	89
Truck	Mobile	88
Welder/Torch	Stationary	74

¹The average noise level at the source is 89.4 dBA, using the standard 6 dBA per doubling of distance for the attenuation rate, 55 dBA is the Lmax (dBA) at a distance of 50 feet

Source: FHWA 2006, University of Washington 2004

emolition ase Modeled Construction Equipment Noise Levels

Demo						
Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	100.0	0.0
Excavator	No	40		80.7	100.0	0.0
Excavator	No	40		80.7	100.0	0.0
Excavator	No	40		80.7	100.0	0.0
Dozer	No	40		81.7	100.0	0.0
Dozer	No	40		81.7	100.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night		Day	Calculated (dBA)		Day	Night	Evening		
Equipment	Leq	Lmax	Leq	Lmax	Lmax	Leq	Lmax	Leq	Lmax
Concrete Saw	N/A	N/A	83.6	76.6	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	75.6	71.7	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	75.6	71.7	N/A	N/A	N/A	N/A	N/A
Total			83.6	80.4	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA)	Night
Motel (east)	Commercial	70.0	Evening	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	200.0	0.0
Excavator	No	40		80.7	200.0	0.0
Excavator	No	40		80.7	200.0	0.0
Excavator	No	40		80.7	200.0	0.0
Dozer	No	40		81.7	200.0	0.0

Dozer	No	40	Demo 81.7	200.0	0.0
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Results

Noise Limit Exceedance (dBA)	Noise Limits (dBA)
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Night		Day		Calculated (dBA) Evening		Day Night		Evening		
Equipment Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Concrete Saw	N/A	N/A	77.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	68.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	68.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	68.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			77.5	74.4	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Description	Baselines (dBA)		Evening	Night
	Land Use	Daytime		
Single-Family Residential (east)	Residential	60.7	60.7	45.0

Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
Description	Impact Device		
Concrete Saw	No	20	89.6
Excavator	No	40	80.7
Excavator	No	40	80.7
Excavator	No	40	80.7
Dozer	No	40	81.7
Dozer	No	40	81.7

Results

Noise Limit Exceedance (dBA)	Noise Limits (dBA)
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Night		Day		Calculated (dBA) Evening		Day Night		Evening	
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Demo									
Equipment	Lmax		Lmax		Lmax		Lmax		Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Saw	N/A	N/A	71.5	64.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	62.6	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	62.6	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	62.6	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			71.5	68.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nursing Facility	Residential	70.0	70.0	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0

Results

Noise Limit Exceedance (dBA) Noise Limits (dBA)

Night		Day	Calculated (dBA)		Day	Evening			
				Evening	Night				
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
Concrete Saw			66.7	59.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Excavator			57.8	53.8	Demo	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8		N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8		N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	66.7	63.5		N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #6 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Multi-Family Residential	Residential	70.0	70.0	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Excavator	No	40		80.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Day		Calculated (dBA)		Day		Evening		
			Evening		Night				

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq			

Concrete	Saw		66.7	59.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	66.7	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #7 ****

Description	Demo Land Use	Daytime	Evening	Night
-----	-----	-----	-----	-----
Single-Family Residential (SE)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
-----	-----	-----	-----	-----	-----	-----
Concrete Saw	No	20		89.6	800.0	0.0
Excavator	No	40		80.7	800.0	0.0
Excavator	No	40		80.7	800.0	0.0
Excavator	No	40		80.7	800.0	0.0
Dozer	No	40		81.7	800.0	0.0
Dozer	No	40		81.7	800.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night		Day	Calculated (dBA) Evening		Day Night		Evening		
-----		-----	-----		-----		-----		
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Concrete Saw			65.5	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			56.6	52.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			56.6	52.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			56.6	52.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			65.5	62.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Site Preparation Phase Modeled Construction Equipment Noise Levels

Site Prep
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 04/13/2018
Case Description: Lady Luck, 64 Unit - Site Prep

**** Receptor #1 ****

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Single-Family Residential (adjacent)	Residential	50.4	50.4	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Dozer	No	40		81.7	25.0	0.0
Dozer	No	40		81.7	25.0	0.0
Dozer	No	40		81.7	25.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Day		Calculated (dBA)		Day		Evening		
			Evening	Night					

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq			

Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			87.7	83.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			87.7	83.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			87.7	83.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			87.7	90.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #2 ****

Baselines (dBA)
Page 1

Description	Site Prep Land Use	Daytime	Evening	Night
Single-Family Residential (north)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Dozer	No	40		81.7	100.0	0.0
Dozer	No	40		81.7	100.0	0.0
Dozer	No	40		81.7	100.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Day		Calculated (dBA)		Day		Evening		
			Evening	Night	Evening				

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Backhoe			71.5	67.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			71.5	67.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			71.5	67.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			71.5	67.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			75.6	71.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			75.6	71.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			75.6	71.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			75.6	78.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA) Evening	Night
Motel (east)	Commercial	70.0	70.0	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Site Prep					
Backhoe	No	40	77.6	200.0	0.0
Backhoe	No	40	77.6	200.0	0.0
Backhoe	No	40	77.6	200.0	0.0
Backhoe	No	40	77.6	200.0	0.0
Dozer	No	40	81.7	200.0	0.0
Dozer	No	40	81.7	200.0	0.0
Dozer	No	40	81.7	200.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night		Calculated (dBA)			Day		Evening		
		Day			Night		Evening		
Equipment		Lmax			Lmax		Lmax		
Leq		Leq			Leq		Leq		
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			69.6	72.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
Single-Family Residential (east)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Dozer	No	40		81.7	400.0	0.0
Dozer	No	40		81.7	400.0	0.0
Dozer	No	40		81.7	400.0	0.0

Site Prep

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

		Calculated (dBA)		Day		Evening			
Night		Day		Evening		Night		Evening	
Equipment		Lmax		Leq		Lmax		Leq	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Backhoe	N/A	N/A	59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		N/A	63.6	66.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nursing Facility	Residential	70.0	70.0	45.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

		Calculated (dBA)		Day		Evening	
--	--	------------------	--	-----	--	---------	--

		Site Prep							
Night		Day	Evening		Night				
Equipment									
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	58.7	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #6 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
-----	-----	-----	-----	-----
Multi-Family Residential	Residential	70.0	70.0	45.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
-----	-----	-----	-----	-----	-----	-----
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0

Results

Noise Limit Exceedance (dBA) Noise Limits (dBA)

		Calculated (dBA)							
Night		Day	Evening		Day	Night		Evening	
Equipment									
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Site Prep									
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			58.7	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #7 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Single-Family Residential (SE)	Residential	60.7	60.7	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Dozer	No	40		81.7	800.0	0.0
Dozer	No	40		81.7	800.0	0.0
Dozer	No	40		81.7	800.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Day		Calculated (dBA)		Day		Evening		
			Evening	Night	Evening				

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A

					Site Prep					
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total		57.6	60.2	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Grading Phase Modeled Construction Equipment Noise Levels

Grading						
Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	100.0	0.0
Dozer	No	40		81.7	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Grader	No	40	85.0		100.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night		Day	Calculated (dBA) Evening		Day Night		Evening		
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	N/A	N/A	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	75.6	71.7	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Grader	N/A	N/A	79.0	75.0	N/A	N/A	N/A	N/A	N/A
Total	N/A	N/A	79.0	78.8	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA) Evening	Night
Motel (east)	Commercial	70.0	70.0	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	200.0	0.0
Dozer	No	40		81.7	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0

Grader	No	40	85.0	Grading	200.0	0.0
--------	----	----	------	---------	-------	-----

Results

Noise Limit Exceedance (dBA)

Noise Limits (dBA)

		Calculated (dBA)				Day		Evening	
Night		Day		Evening		Night		Evening	
Equipment		Leq		Lmax		Leq		Lmax	
Leq		Lmax		Leq		Lmax		Leq	
Excavator	N/A	N/A	68.7	64.7	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	69.6	65.6	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	65.5	61.5	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	65.5	61.5	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	65.5	61.5	N/A	N/A	N/A	N/A	N/A
Grader	N/A	N/A	73.0	69.0	N/A	N/A	N/A	N/A	N/A
Total		73.0		72.7		N/A		N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

		Baselines (dBA)		
Description		Land Use		Night
Single-Family Residential (east)		Residential		45.0

		Equipment		
Description		Impact Device	Usage (%)	Spec Lmax (dBA)
Excavator	No	40	80.7	400.0
Dozer	No	40	81.7	400.0
Backhoe	No	40	77.6	400.0
Backhoe	No	40	77.6	400.0
Backhoe	No	40	77.6	400.0
Grader	No	40	85.0	400.0

Results

Noise Limit Exceedance (dBA)

Noise Limits (dBA)

		Calculated (dBA)				Day		Evening	
Night		Day		Evening		Night		Evening	

Grading									
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq									
Excavator			62.6	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			63.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader			66.9	63.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	66.9	66.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nursing Facility	Residential	70.0	70.0	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Grader	No	40	85.0		700.0	0.0

Results

Noise Limit Exceedance (dBA)									
Noise Limits (dBA)									
Night	Day	Calculated (dBA)		Day	Night	Evening		Lmax	Lmax
		Evening	Evening			Evening	Evening		
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq									
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

			Grading							
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader			62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total		62.1	61.9	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #6 ****

Description		Land Use		Baselines (dBA)		
				Daytime	Evening	Night
Multi-Family Residential		Residential		70.0	70.0	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Grader	No	40	85.0		700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night		Day	Calculated (dBA)		Day	Evening			
			Evening		Night				
			-----		-----	-----			
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
Excavator			57.8	53.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			58.7	54.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader			62.1	58.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total		62.1	61.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #7 ****

Description	Grading Land Use	Daytime	Evening	Night
-----	-----	-----	-----	-----
Single-Family Residential (SE)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
-----	-----	-----	-----	-----	-----	-----
Excavator	No	40		80.7	800.0	0.0
Dozer	No	40		81.7	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Grader	No	40	85.0		800.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night		Day	Calculated (dBA) Evening		Day Night		Evening		

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq									

Excavator			56.6	52.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			57.6	53.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader			60.9	56.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	Total	60.9	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Building Construction Phase Modeled Construction Equipment Noise Levels

Building Construction
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 04/13/2018
Case Description: Lady Luck, 64 unit - Building Construction

**** Receptor #1 ****

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Single-Family Residential (adjacent)	Residential	50.4	50.4	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	25.0	0.0
Forklift	No	80		89.4	25.0	0.0
Forklift	No	80		89.4	25.0	0.0
Forklift	No	80		89.4	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Backhoe	No	40		77.6	25.0	0.0
Generator	No	50		80.6	25.0	0.0
Welder / Torch	No	40		74.0	25.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Day		Calculated (dBA)		Day Night		Evening		
			Evening						

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq									

Crane			86.6	78.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			95.4	94.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			95.4	94.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			95.4	94.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			83.6	79.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator			86.7	83.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			80.0	76.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[illegible]

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Single-Family Residential (north)	Residential	60.7	60.7	45.0

Results

Night		Day	Calculated (dBA)		Day Night		Evening		
			Evening						
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq			
Crane	N/A	N/A	74.5	66.6	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	83.4	82.4	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	83.4	82.4	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	83.4	82.4	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Generator	N/A	N/A	74.6	71.6	N/A	N/A	N/A	N/A	N/A
Welder / Torch	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	N/A
Total			83.4	87.5	N/A	N/A	N/A	N/A	N/A

Building Construction
**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA) Evening	Night
Motel (east)	Commercial	70.0	70.0	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200.0	0.0
Forklift	No	80		89.4	200.0	0.0
Forklift	No	80		89.4	200.0	0.0
Forklift	No	80		89.4	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0
Backhoe	No	40		77.6	200.0	0.0
Generator	No	50		80.6	200.0	0.0
Welder / Torch	No	40		74.0	200.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night		Day	Calculated (dBA) Evening		Day Night		Evening		

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq			

Crane			68.5	60.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			77.4	76.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			77.4	76.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			77.4	76.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			65.5	61.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator			68.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			62.0	58.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	Total	77.4	81.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #4 ****

Description	Building Construction		Daytime	Evening	Night
	Land Use				
Single-Family Residential (east)	Residential		60.7	60.7	45.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	400.0	0.0
Forklift	No	80		89.4	400.0	0.0
Forklift	No	80		89.4	400.0	0.0
Forklift	No	80		89.4	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Generator	No	50		80.6	400.0	0.0
Welder / Torch	No	40		74.0	400.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Calculated (dBA)				Day		Evening		
	Evening				Night				

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq									

Crane			62.5	54.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			71.3	70.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			71.3	70.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			71.3	70.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator			62.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			55.9	52.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			71.3	75.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #5 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nursing Facility	Residential	70.0	70.0	45.0

Building Construction

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Generator	No	50		80.6	700.0	0.0
Welder / Torch	No	40		74.0	700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night		Day	Calculated (dBA)		Day		Evening		
			Evening		Night				

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq			Lmax	Leq	Lmax	Leq			

Crane			57.6	49.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			66.5	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			66.5	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			66.5	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator			57.7	54.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			51.1	47.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A		Total	66.5	70.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

**** Receptor #6 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Multi-Family Residential	Residential	70.0	70.0	45.0

Equipment

Description	Impact Device	Usage (%)	Building Construction		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Forklift	No	80		89.4	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Generator	No	50		80.6	700.0	0.0
Welder / Torch	No	40		74.0	700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night		Day		Calculated (dBA) Evening	Day Night		Evening		
Equipment	Leq	Lmax	Leq	Lmax	Lmax	Leq	Lmax	Leq	Lmax
Crane				57.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift				66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift				66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift				66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe				54.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe				54.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe				54.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator				57.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch				51.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total				66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #7 ****

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Single-Family Residential (SE)	Residential	60.7	60.7	45.0

Description	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage (%)		

Building Construction

Crane	No	16	80.6	800.0	0.0
Forklift	No	80	89.4	800.0	0.0
Forklift	No	80	89.4	800.0	0.0
Forklift	No	80	89.4	800.0	0.0
Backhoe	No	40	77.6	800.0	0.0
Backhoe	No	40	77.6	800.0	0.0
Backhoe	No	40	77.6	800.0	0.0
Generator	No	50	80.6	800.0	0.0
Welder / Torch	No	40	74.0	800.0	0.0

Results

Noise Limit Exceedance (dBA) Noise Limits (dBA)

Night		Day		Calculated (dBA) Evening		Day Night		Evening			
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Lmax
Crane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total											
N/A											

Paving Phase Modeled Construction Equipment Noise Levels

Description	Paving Land Use	Daytime	Evening	Night
Single-Family Residential (north)	Residential	60.7	60.7	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80.0	100.0	0.0
Drum Mixer	No	50		80.0	100.0	0.0
Paver	No	50		77.2	100.0	0.0
Roller	No	20		80.0	100.0	0.0
Roller	No	20		80.0	100.0	0.0
Backhoe	No	40		77.6	100.0	0.0
Pavement Scarafier	No	20		89.5	100.0	0.0

Results

Noise Limit Exceedance (dBA) Noise Limits (dBA)

Night		Day		Calculated (dBA) Evening		Day Night		Evening		
Equipment Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Drum Mixer	N/A	N/A	74.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer	N/A	N/A	74.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	N/A	N/A	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	74.0	67.0	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	74.0	67.0	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	83.5	76.5	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			83.5	79.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA) Evening	Night
Motel (east)	Commercial	70.0	70.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
-------------	------------------	--------------	-----------------------	-------------------------	--------------------------------	---------------------------------

Paving					
Drum Mixer	No	50	80.0	200.0	0.0
Drum Mixer	No	50	80.0	200.0	0.0
Paver	No	50	77.2	200.0	0.0
Roller	No	20	80.0	200.0	0.0
Roller	No	20	80.0	200.0	0.0
Backhoe	No	40	77.6	200.0	0.0
Pavement Scarafier	No	20	89.5	200.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night		Calculated (dBA)			Day Night		Evening		
		Day	Evening						
Equipment	Leq	Lmax	Leq	Lmax	Lmax	Leq	Lmax	Leq	Lmax
Drum Mixer	N/A	N/A	68.0	64.9	N/A	N/A	N/A	N/A	N/A
Drum Mixer	N/A	N/A	68.0	64.9	N/A	N/A	N/A	N/A	N/A
Paver	N/A	N/A	65.2	62.2	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	68.0	61.0	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	68.0	61.0	N/A	N/A	N/A	N/A	N/A
Backhoe	N/A	N/A	65.5	61.5	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	77.5	70.5	N/A	N/A	N/A	N/A	N/A
Total		N/A	77.5	73.6	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
Single-Family Residential (east)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80.0	400.0	0.0
Drum Mixer	No	50		80.0	400.0	0.0
Paver	No	50		77.2	400.0	0.0
Roller	No	20		80.0	400.0	0.0
Roller	No	20		80.0	400.0	0.0
Backhoe	No	40		77.6	400.0	0.0
Pavement Scarafier	No	20		89.5	400.0	0.0

Paving

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

		Calculated (dBA)			Day		Evening		
Night		Day		Evening		Night		Evening	
Equipment		Lmax		Leq		Lmax		Leq	
Leq		Lmax		Leq		Lmax		Leq	
Drum Mixer			61.9		58.9	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer			61.9		58.9	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver			59.2		56.1	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.9		54.9	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.9		54.9	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			59.5		55.5	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			71.4		64.4	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			71.4		67.6	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

		Baselines (dBA)		
Description		Daytime		Night
Nursing Facility	Residential	70.0	70.0	45.0

		Equipment				
Description		Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
						Estimated Shielding (dBA)
Drum Mixer		No	50		80.0	700.0
Drum Mixer		No	50		80.0	700.0
Paver		No	50		77.2	700.0
Roller		No	20		80.0	700.0
Roller		No	20		80.0	700.0
Backhoe		No	40		77.6	700.0
Pavement Scarafier		No	20		89.5	700.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

		Calculated (dBA)		Day	Evening

Night		Day		Paving Evening		Night			
Equipment									
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Drum Mixer			57.1	54.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer			57.1	54.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver			54.3	51.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			57.1	50.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			57.1	50.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			66.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			66.6	62.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #6 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Multi-Family Residential	Residential	70.0	70.0	45.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80.0	700.0	0.0
Drum Mixer	No	50		80.0	700.0	0.0
Paver	No	50		77.2	700.0	0.0
Roller	No	20		80.0	700.0	0.0
Roller	No	20		80.0	700.0	0.0
Backhoe	No	40		77.6	700.0	0.0
Pavement Scarafier	No	20		89.5	700.0	0.0

Results

Noise Limit Exceedance (dBA)

Noise Limits (dBA)

Night		Day		Calculated (dBA) Evening		Day Night		Evening	
Equipment									
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Drum Mixer			57.1	54.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paving									
Drum Mixer			57.1	54.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver			54.3	51.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			57.1	50.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			57.1	50.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe			54.6	50.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			66.6	59.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			66.6	62.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #7 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Single-Family Residential (SE)	Residential	60.7	60.7	45.0

Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80.0	800.0	0.0
Drum Mixer	No	50		80.0	800.0	0.0
Paver	No	50		77.2	800.0	0.0
Roller	No	20		80.0	800.0	0.0
Roller	No	20		80.0	800.0	0.0
Backhoe	No	40		77.6	800.0	0.0
Pavement Scarafier	No	20		89.5	800.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				

Night	Calculated (dBA)				Day		Evening		
	Day	Evening			Night				

Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			

Drum Mixer			55.9	52.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Drum Mixer			55.9	52.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Paver			53.1	50.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			55.9	48.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			55.9	48.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Backhoe			53.5	49.5	N/A	N/A	N/A	N/A	N/A

					Paving					
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement	Scarafier		65.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total		65.4	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Architectural Coating Phase Modeled Construction Equipment Noise Levels

Arch Coat

Night		Day		Calculated (dBA) Evening		Day Night		Evening		
Equipment Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Compressor (air)	N/A	N/A	71.6	67.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	71.6	67.7	N/A	N/A	N/A	N/A	N/A	N/A
			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Daytime	Baselines (dBA)			
			Evening	Night		
Motel (east)	Commercial	70.0	70.0	45.0		
		Equipment				
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	200.0	0.0

Results

Noise Limit Exceedance (dBA) Noise Limits (dBA)

Night		Day		Calculated (dBA) Evening		Day Night		Evening		
Equipment Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Compressor (air)	N/A	N/A	65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Description	Land Use	Daytime	Evening	Night
Single-Family Residential (east)	Residential	60.7	60.7	45.0
		Equipment		
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)

		Arch Coat			
Compressor (air)	No	40	77.7	400.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
		Calculated (dBA)			Day		Evening		
Night		Day			Night		Evening		
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	N/A	N/A	59.6	55.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nursing Facility	Residential	70.0	70.0	45.0

		Equipment				
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
		Calculated (dBA)			Day		Evening		
Night		Day			Night		Evening		
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	N/A	N/A	54.7	50.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		54.7	50.8	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #6 ****

Description		Arch Coat	Daytime	Evening	Night
-----		Land Use	-----	-----	-----
Multi-Family Residential		Residential	70.0	70.0	45.0

Description		Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
-----		-----	-----	-----	-----	-----	-----
Compressor (air)		No	40		77.7	700.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
-----					-----				
Night		Day	Calculated (dBA)		Day Night		Evening		
-----		-----	-----		-----		-----		
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq		Lmax	Leq	Leq	Lmax	Leq			
-----		-----	-----	-----	-----	-----	-----	-----	-----
Compressor (air)			54.7	50.8	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			54.7	50.8	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A	N/A			

**** Receptor #7 ****

Description		Baselines (dBA)	Daytime	Evening	Night
-----		Land Use	-----	-----	-----
Single-Family Residential (SE)		Residential	60.7	60.7	45.0

Description		Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
-----		-----	-----	-----	-----	-----	-----
Compressor (air)		No	40		77.7	800.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
-----					-----				
Night		Day	Calculated (dBA)		Day Night		Evening		
-----		-----	-----		-----		-----		
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq		Lmax	Leq	Leq	Lmax	Leq			
-----		-----	-----	-----	-----	-----	-----	-----	-----

Arch Coat									
Compressor	(air)		53.6	49.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total		53.6	49.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Appendix C

HUD Barrier Performance Model

[Home \(/\)](#) > [Programs \(/programs/\)](#) > [Environmental Review \(/programs/environmental-review/\)](#) > BPM Calculator

Barrier Performance Module

This module provides to the user a measure on the barrier's effectiveness on noise reduction. A list of the input/output variables and their definitions, as well as illustrations of different scenarios are provided.

Calculator

[View Day/Night Noise Level Calculator \(/programs/environmental-review/dnl-calculator/\)](#)

[View Descriptions of the Input/Output variables.](#)

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the Input and Output variables with the mouse.

WARNING: If there is direct line-of-sight between the Source and the Observer, the module will report erroneous attenuation. "Direct line-of-sight" means if the 5' tall Observer can see the noise Source (cars, trucks, trains, etc.) over the Barrier (wall, hill/excavation, building, etc.), the current version of Barrier Performance Module will not accurately calculate the attenuation provided. In this instance, there is unlikely to be any appreciable attenuation.

Road/Rail Site DNL:

Note: Barrier height must block the line of sight

Input Data

H	73	R ¹	34
S	65	D ¹	18
O	70	α	146

[Calculate Output](#)

Output Data

h	5	R	35
D	18	FS	7.3368

New Site DNL:

-7.3368

[Refresh](#)

Note: If you have separate Road and Rail DNL values, please enter the values below to calculate the new site DNL:

Road DNL:

Rail DNL:

Calculate

Combined New Site DNL:

74

Input/Output Variables

Input Variables

The following variables and definitions from the barrier being assessed are the input required for the web-based barrier performance module:

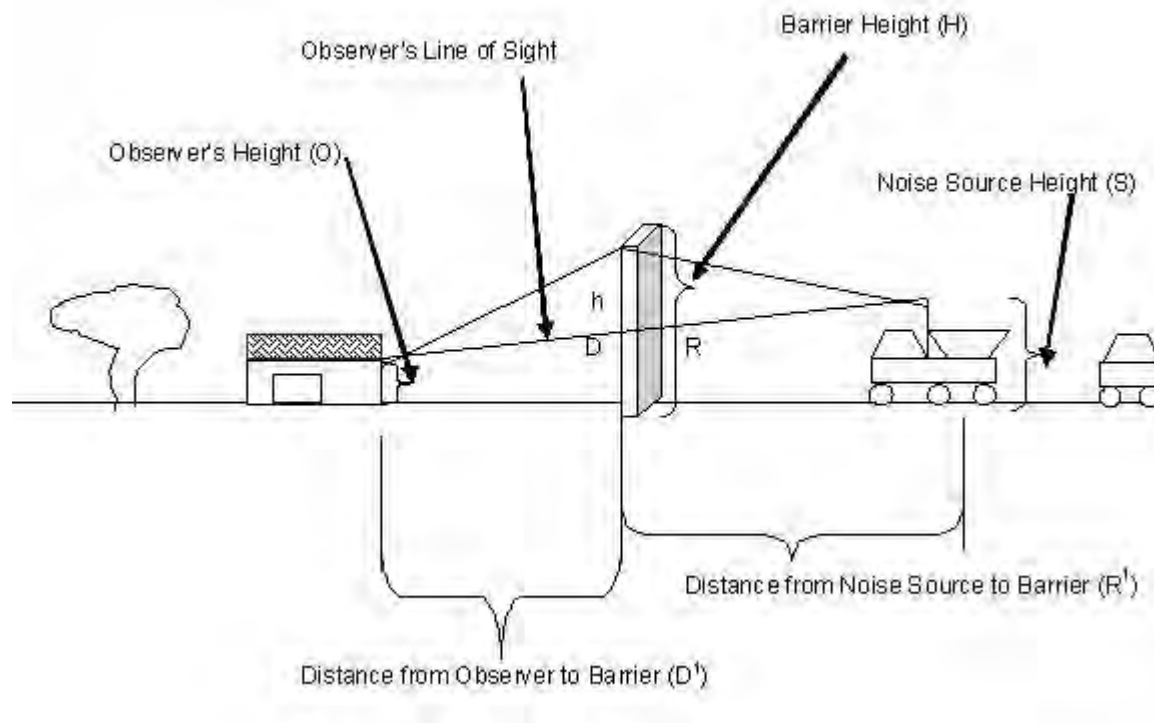
- H = Barrier Height
- S = Noise Source Height
- O = Observer Height (known as the receiver)
- R^1 = Distance from Noise Source to Barrier
- D^1 = Distance from the Observer to the Barrier
- α = Line of sight angle between the Observer and the Noise Source, subtended by the barrier at observer's location

Output Variables

Definitions of the output variables from the mitigation module of the Day/Night Noise Level Assessment Tools as part of the Assessment Tools for Environmental Compliance:

- h = The shortest distance from the barrier top to the line of sight from the Noise source to the Observer.
- R = Slant distance along the line of sight from the Barrier to the Noise Source
- D = Slant distance along the line of sight from the Barrier to the Observer

The "actual barrier performance for barriers of finite length" is noted on the worksheets(in the Guidebook) as **FS**.

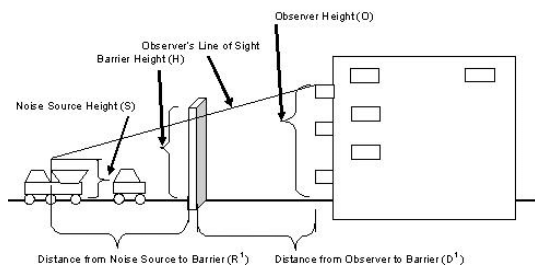


Barrier Implementation Scenarios

Locate the cursor on the following thumbnails to enlarge the respective scenario as implementation examples of the barrier performance module.

Scenario #1:

Scenario #1:



Noise receiver at a higher elevation than the noise source and a man-made noise barrier in between the receiver and the source.

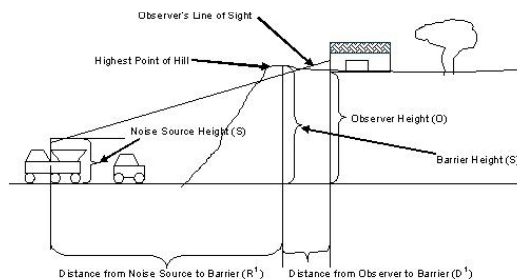
Noise receiver at a higher elevation than the noise source and a man-made noise barrier in between the receiver and the source.

(<https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-1.gif>)

view larger version of image (</resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/>)

Scenario #2:

Scenario #2:



Noise receiver at a higher elevation than the noise source and a natural barrier (hill) between the receiver and the source.

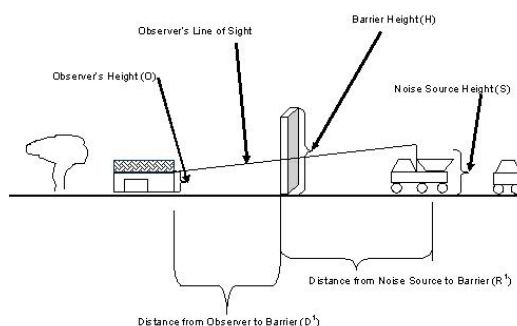
Noise receiver at a higher elevation than the noise source and a natural barrier (hill) between the receiver and the source.

(<https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-2.gif>)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

Scenario #3:

Scenario #3:



Noise receiver at almost the same elevation of the noise source and a man-made noise barrier between the receiver and the source.

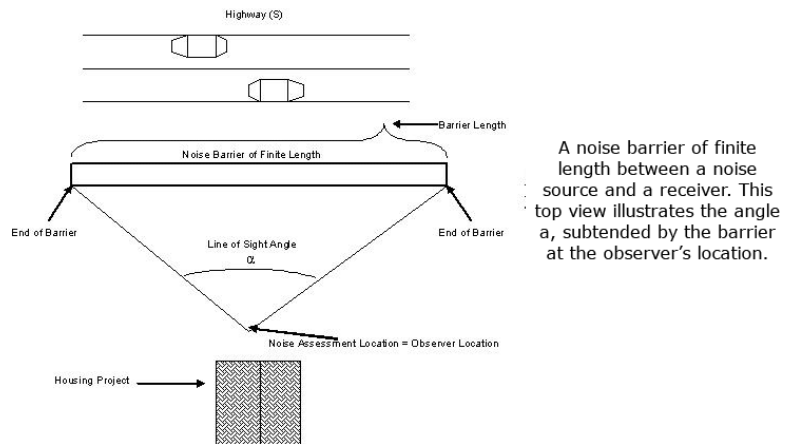
Noise receiver at almost the same elevation of the noise source and a man-made noise barrier between the receiver and the source.

(<https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-3.gif>)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

Scenario #4:

Scenario #4:



A noise barrier of finite length between a noise source and a receiver. This top view illustrates the angle α , subtended by the barrier at the observer's location.

(<https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-4.gif>)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

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Barrier Implementation Scenarios



MEMORANDUM

To: Mr. Ray Barragan & Ms. Lisa Kranitz
City of Gardena

From: Ace Malisos
Kimley-Horn and Associates, Inc.

Date: October 29, 2018

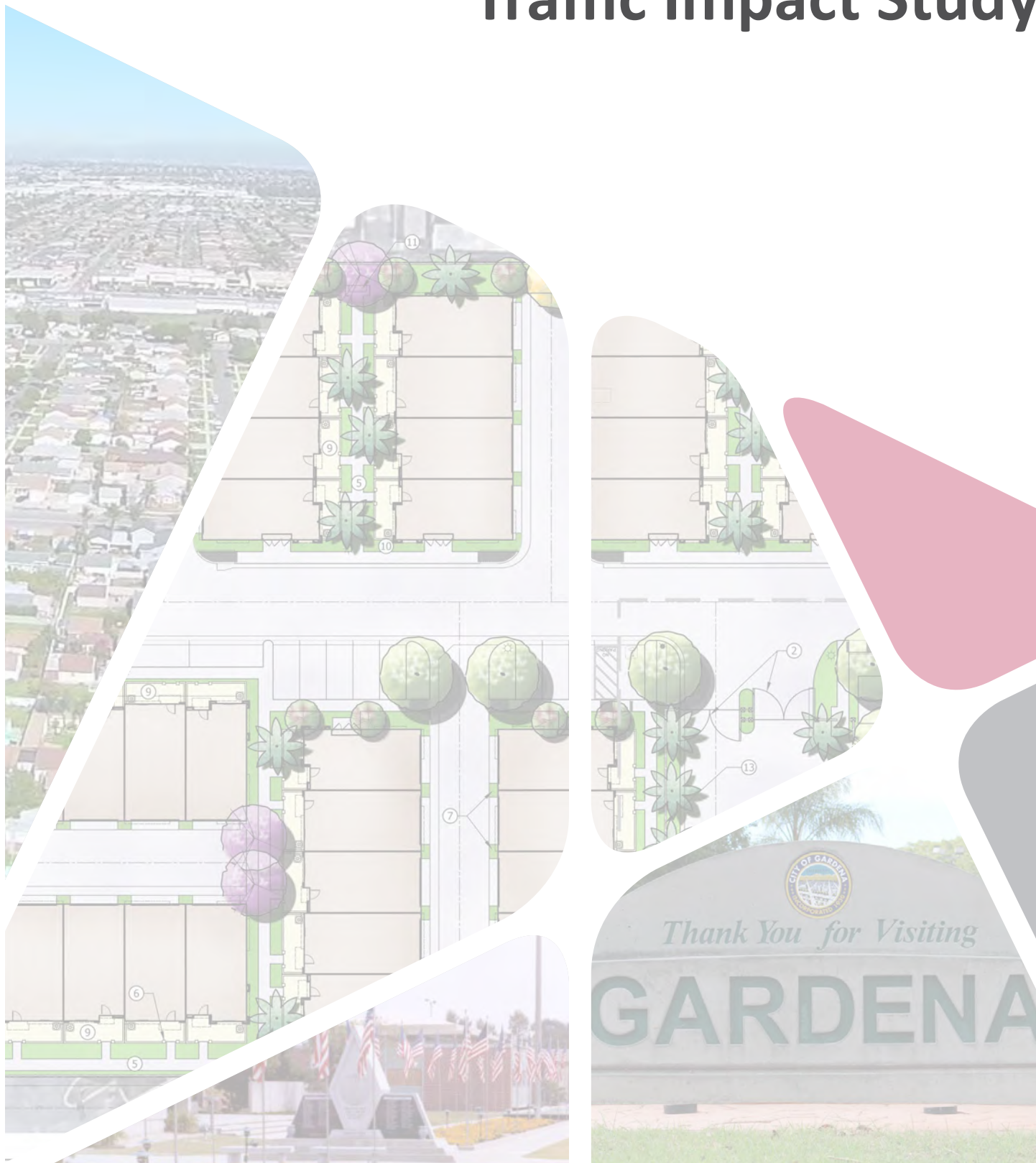
Subject: **City of Gardena Lady Luck Project Noise Study Peer Review
(2nd Round)**

Kimley-Horn has performed a review of the October 9, 2018, response to comments letter prepared by Rincon Consultants, for the Lady Luck Project Noise Study in Gardena, California. The response was prepared to address third-party peer review comments presented by Kimley Horn in the September 19, 2018 third party peer review letter, pertaining to Rincon's April 2017 Noise Study.

Based on our review of Rincon's response and the revised Noise Study (October 2018), we conclude that Rincon has adequately addressed the review comments presented in our September 19, 2018 third-party peer review letter.

We appreciate the opportunity to provide our professional services to you on this project. If you have any questions or require any additional information, please do not hesitate to contact me a 714.705.1380 or ace.malisos@kimley-horn.com.

Traffic Impact Study



TRAFFIC IMPACT STUDY
FOR THE
STONEFIELD 63 PROJECT

IN THE
CITY OF GARDENA

Prepared for:

KB Home

Prepared by:

Kimley-Horn and Associates, Inc.
765 The City Drive, Suite 200
Orange, CA 92868

October, 2018

TRAFFIC IMPACT ANALYSIS
FOR THE STONEFIELD 63 PROJECT
IN THE CITY OF GARDENA

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TRAFFIC IMPACT ANALYSIS
FOR THE STONEFIELD 63 PROJECT
IN THE CITY OF GARDENA

INTRODUCTION

This traffic impact analysis has been prepared to evaluate the project-related traffic impacts associated with the proposed Stonefield 63 Project, located in the eastern area of the City of Gardena. The project site location is shown in its regional setting on Figure 1.

PROJECT DESCRIPTION

The site is located on the west side of Vermont Avenue, approximately 460 feet north of Rosecrans Avenue. The site is bounded by commercial uses to the north, the Lucky Lady Casino to the south, residential development to the west, and South Vermont Avenue to the east. The site is currently developed primarily as an asphalt surface parking lot, used for vehicle storage by South Bay Auto Auction, a vehicle repossession/ auction company. Two single-story buildings used for wood shop and office storage are also located on the site.

The project site plan is shown on Figure 2. The project would consist of removal of the existing on-site uses and the development of 63 attached townhomes. Vehicular access to the project is proposed via a two-way driveway at the southeast corner of the site, connecting to the easterly West 141st Street cul-de-sac, which connects to South Vermont Avenue. No vehicular access is proposed via the westerly West 141st Street cul-de-sac. Pedestrian access is proposed via a sidewalk along 141st Street, from South Vermont Avenue to the project entrance.

ANALYSIS SCENARIOS AND METHODOLOGY

Analysis Scenarios

This traffic analysis provides an evaluation of morning and evening peak hour operations for the following scenarios:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year 2021 (Cumulative Conditions) without Project
- Opening Year 2021 (Cumulative Conditions) with Project
- Build-Out without Project
- Build-Out with Project

The following study intersections are included in the analysis:

- 141st Street at Vermont Avenue
- Rosecrans Avenue at Budlong Avenue
- Rosecrans Avenue at Vermont Avenue



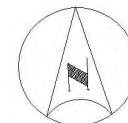
NOT TO SCALE



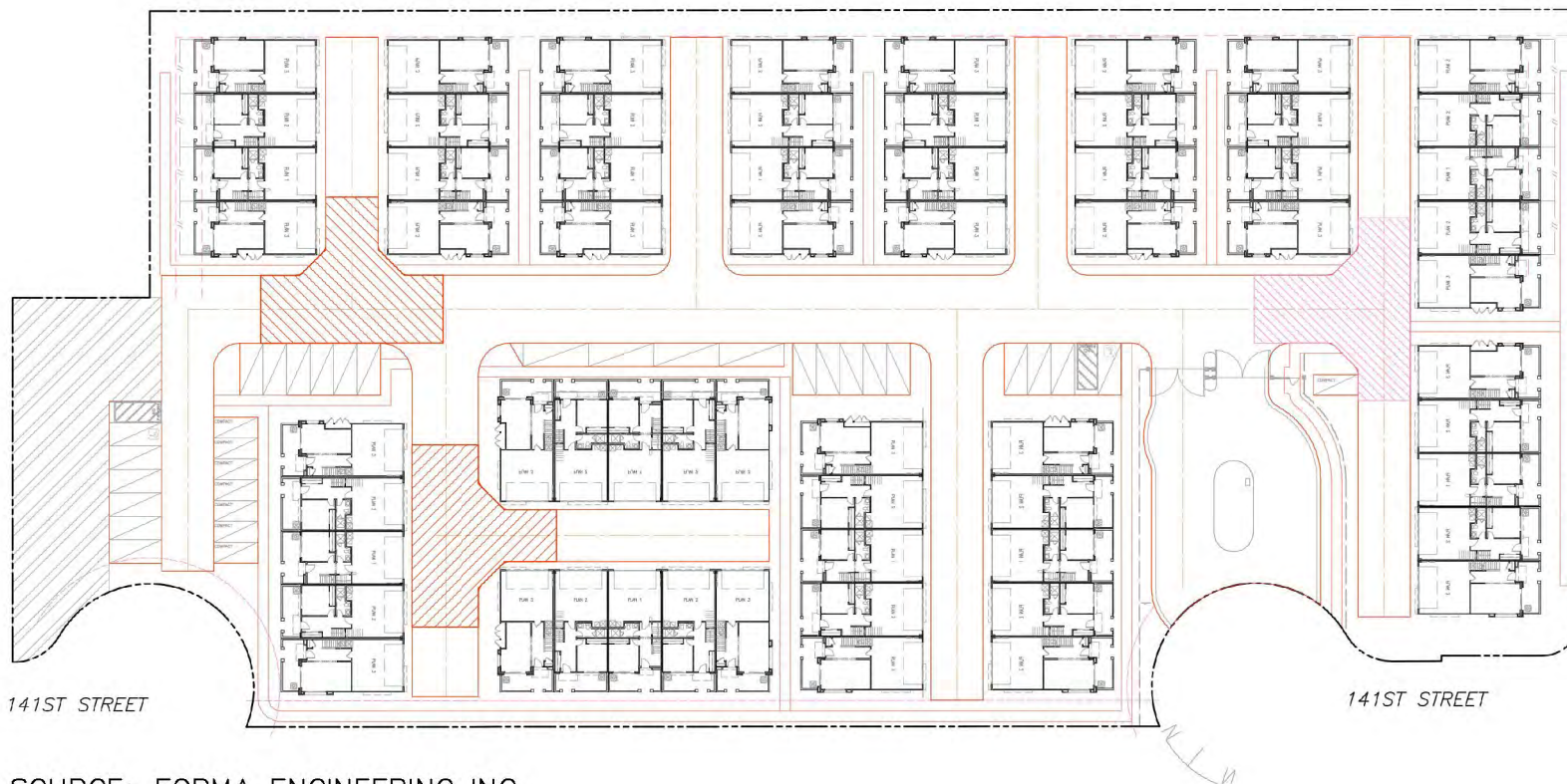
**FIGURE 1
VICINITY MAP**

LEGEND:

 = Project Site



NOT TO SCALE



SOURCE: FORMA ENGINEERING INC.

FIGURE 2
PROJECT SITE PLAN

Analysis Methodology

The analysis focuses on the project's off-site traffic-related impacts. In accordance with the City of Gardena study requirements, intersection operation for study area signalized intersections is evaluated using the Intersection Capacity Utilization (ICU) methodology, and intersection operation for study area unsignalized intersections is evaluated using the Highway Capacity Manual (HCM) methodology.

The ICU methodology provides a comparison of the theoretical hourly vehicular capacity of an intersection to the number of vehicles passing through that intersection during the peak hour. The ICU calculation returns a volume-to-capacity (V/C) ratio. The ICU calculations assume a per-lane capacity of 1,600 vehicles per hour (vph), with a clearance interval of 0.10. The HCM methodology returns a delay value, expressed in terms of the average seconds of delay per vehicle.

For signalized intersections in the City of Los Angeles, the Critical Movement Analysis (CMA) planning method is used to evaluate the impacts of development projects. The CMA methodology determines the V/C ratio for signalized intersections on a critical lane basis. The intersection of Rosecrans Avenue at Vermont Avenue is located on the border of the City of Gardena and the City of Los Angeles. Due to its proximity to the City of Los Angeles, the intersection of Rosecrans Avenue at Vermont Avenue has also been analyzed using the City's CMA methodology. The results are summarized alongside the ICU results in the intersection operations tables in this report.

Operating conditions for both the ICU/CMA capacity-based methodologies and the HCM delay-based methodology are expressed in terms of Level of Service (LOS). The ICU and CMA calculations return a V/C ratio that translates into a corresponding Level of Service, ranging from LOS A, representing uncongested, free-flowing conditions; to LOS F, representing congested, over-capacity conditions. The HCM methodology returns a delay value, expressed in terms of the average seconds of delay per vehicle, which also corresponds to a Level of Service measure. A summary description of each Level of Service and the corresponding V/C ratio for the ICU/CMA methodology, and average seconds of delay for the HCM methodology are provided on the chart on the following page.

Performance Criteria

The City of Gardena's Level of Service standard for intersections in a residential area is LOS D, while the standard for intersections in a commercial area is LOS E. The three study intersections are located within a commercial area, therefore, the Level of Service standard for the study intersections is LOS E.

INTERSECTION PEAK HOUR LEVEL OF SERVICE DESCRIPTIONS			
LOS	Signalized: ICU	Unsignalized: HCM	Description
	V/C Ratio	Delay (sec)	
A	0.000 - 0.604	≤10.0	EXCELLENT – No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.605 - 0.704	> 10.0 and ≤ 15.0	VERY GOOD – An occasional approach phase is fully utilized; drivers begin to feel somewhat restricted within groups of vehicles.
C	0.705 - 0.804	> 15.0 and ≤ 25.0	GOOD – Occasionally drivers may have to wait through more than one red light; back-ups may develop behind turning vehicles.
D	0.805 - 0.904	> 25.0 and ≤ 35.0	FAIR – Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive back-ups.
E	0.905 - 1.004	> 35.0 and ≤ 50.0	POOR – Represents the most vehicles that intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.004	> 50.0	FAILURE – Back-ups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of intersection approaches. Substantial delays with continuously increasing queue lengths.

Significance Thresholds

Based on City of Gardena standards, a project impact would be considered to be significant if it either:

- causes an intersection operating at an acceptable Level of Service to deteriorate to an unacceptable Level of Service, or;
- if already operating at an unacceptable Level of Service, adds 0.01 or more to the peak hour ICU.

Based on the City of Los Angeles standards, an impact at a signalized intersection would be deemed significant in accordance with the following impact thresholds:

<u>Level of Service</u>	<u>Final V/C Ratio</u>	<u>Project-Related Increase in V/C</u>
C	> 0.701 – 0.800	equal to or greater than 0.040
D	> 0.801 – 0.900	equal to or greater than 0.020
E	> 0.901 – 1.000	equal to or greater than 0.010
F	Greater than 1.000	equal to or greater than 0.010

EXISTING CONDITIONS

Existing Roadway System

Regional access to the project site is provided by the Interstate 110 (I-110) Freeway, located approximately 0.25 mile east of the project site; the Interstate 105 (I-105) Freeway, located approximately 2 miles north of the project site; and the Interstate 405 (I-405) Freeway, located approximately 3 miles south of the project site.

Local access to the project site is provided by the following arterial and commuter roadways:

Vermont Avenue is a north-south Arterial with three lanes in each direction, divided by a 65-foot median, with pockets of public parking within the median area. There is a Class II Bicycle Lane (on-street striped bicycle lane) in the northbound direction within the project vicinity. Vermont Avenue is located along the City of Gardena's eastern boundary. On-street parking is allowed, and the posted speed limit is 40 miles per hour. Vermont Avenue is designated as a truck route on the City of Gardena General Plan Circulation Element.

Rosecrans Avenue is an east-west Arterial with three lanes in each direction and a center two-way-left-turn lane within 80 feet of right-of-way. On-street parking is prohibited and the posted speed limit is 40 miles per hour. Rosecrans Avenue is a designated truck route on the City of Gardena General Plan.

141st Street is a two-lane undivided east-west Local Street with one lane in each direction within 54 feet of right-of-way. 141st Street extends westward from Vermont Avenue, ending in a cul-de-sac near the southeast corner of the project site. The project would take access to and from the 141st Street east cul-de-sac. 141st Street also extends eastward from Budlong Avenue, through a single-family neighborhood, ending in a cul-de-sac at the southwest corner of the project site. The project would not take access via the 141st Street west cul-de-sac.

Existing Transit Service

Transit service to the project area is provided by LA Metro, which serves the greater Los Angeles metropolitan area; and by GTrans, the City of Gardena transit service. The bus stops closest to the project site are located as follows:

- on the east and west sides of Vermont Avenue, south of 140th Street; and
- on the northwest and southwest corners of the intersection of Vermont Avenue at Rosecrans Avenue.

Bus routes serving the project area are described below.

LA Metro Route 125 operates between the Cities of Norwalk and El Segundo, traveling through the City of Gardena along Rosecrans Avenue in the project vicinity. Route 125 operates on weekdays from approximately 4:30 AM to 10:00 PM, with 15- to 25-minute headways (the time between bus arrivals); on Saturdays from approximately 5:00 AM to 9:15 PM and on Sundays and Holidays from approximately 6:00 AM to 8:45 PM with approximately 30-minute headways.

GTrans Line 1X operates between the Redondo Beach Green Line Station and Downtown LA, traveling along Vermont Avenue and Rosecrans Avenue in the project vicinity. Line 1X operates on weekdays from approximately 5:00 AM to 10:15 PM with 25- to 45-minute headways. On weekends, Line 1X operates from approximately 7:30 AM to 8:00 PM with approximately 45-minute headways, and does not go downtown; it stops at the Harbor Freeway Green Line Station.

GTrans Line 2 operates on a loop between PCH and Imperial Highway, traveling along Vermont Avenue in the project vicinity. Line 2 operates on weekdays from approximately 4:40 AM to 10:00 PM with 15- to 30-minute headways. On weekends, Line 2 operates from approximately 5:00 AM to 9:30 PM with 40- to 40-minute headways.

Existing Peak Hour Traffic Volumes

Existing peak hour turning movement traffic count data was collected at the study intersections in April and September 2018. Existing lane configurations and traffic control and existing morning and evening peak hour turning movement volumes for the study intersections are shown on Figure 3. Copies of the traffic count data forms are provided in *Appendix A* to this report.

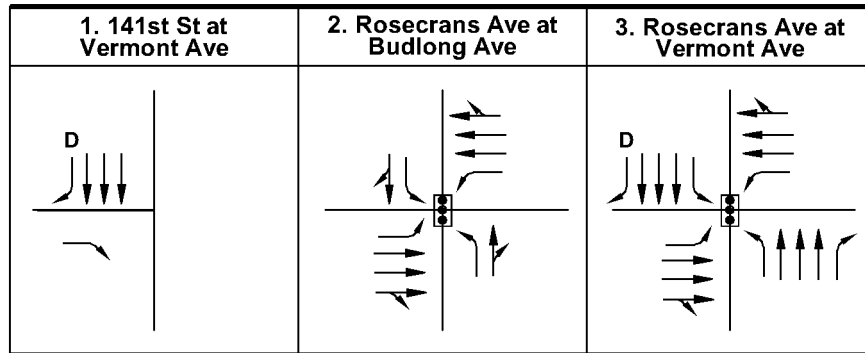
Existing Peak Hour Traffic Conditions

Existing peak hour operations at the study intersections were evaluated, and the results of the analysis are summarized on Table 1. Review of this table shows that all study intersections are currently operating at LOS C or better in both peak hours. Intersection analysis worksheets are provided in *Appendix B* of this report.

TRIP GENERATION

Existing Site Uses

The project site is currently developed as an asphalt surface parking lot, used for vehicle storage; and two buildings used for wood shop and office storage. The proposed project would remove the existing site uses. The peak hour traffic counts at the intersection of 141st Street at Vermont Avenue indicate that on the day the traffic counts were conducted, the existing site uses generated 48 trips in the morning peak hour (29 inbound and 19 outbound), and 44 trips in the evening peak hour (22 inbound and 22 outbound).



1. 141st St at Vermont Ave	2. Rosecrans Ave at Budlong Ave	3. Rosecrans Ave at Vermont Ave
29/22 994/1098 19/22	32/38 142/159 131/117 236/134 1097/1052 33/76 26/53 960/1199 29/82 16/42 103/133 61/44	94/110 581/678 206/270 159/170 1188/1017 166/158 100/113 977/1142 76/72 121/153 451/698 85/223

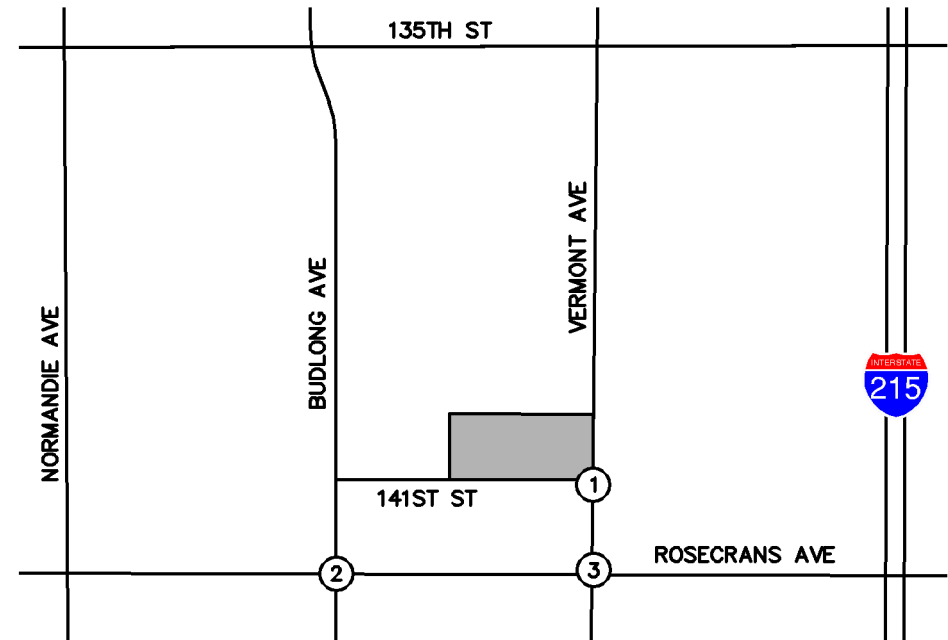


FIGURE 3
EXISTING LANE CONFIGURATION, TRAFFIC CONTROL AND
PEAK HOUR TRAFFIC VOLUMES

LEGEND:

- = Project Site
- = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			V/C /Delay	LOS	V/C /Delay	LOS
1	141st Street at Vermont Ave	U	10.2	B	10.4	B
2	Rosecrans Ave at Budlong Ave	S	0.578	A	0.598	A
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.666	B	0.766	C
	Rosecrans Ave at Vermont Ave (CMA)	S	0.658	B	0.775	C

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.

Proposed Project Trip Generation

Daily and peak hour trip estimates for the proposed project were developed, based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition rates for mid-rise, multi-family housing (ITE Land Use 221). The trip rates and resulting project trip generation estimates are shown on Table 2. The project is estimated to generate approximately 23 trips in the morning peak hour and 28 trips in the evening peak hour, with 343 daily vehicle trips.

For a conservative analysis, the traffic analysis for the proposed project is based on the full trip-making potential for the project, without applying a trip credit for the existing site trips.

Project Trip Distribution and Assignment

Project trip distribution assumptions for the project site were developed based on the surrounding street system serving the site, the location and configuration of the site access, and the area's existing traffic patterns. All project trips would enter and exit the site via the intersection of 141st Street at Vermont Avenue, which is restricted to right-in/right-out only movements, due to the raised median on Vermont Avenue. Trip distribution and assignment assumptions are shown on Figure 4. Based on these assumptions, the project-related peak hour trips are shown on Figure 5.

EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project analysis addresses the impacts associated with adding project-related trips to Existing Conditions traffic volumes. The Existing Plus Project scenario is a hypothetical scenario, which assumes that the project would be fully implemented at the present time, with no other changes to area traffic volumes or to the street network serving the site. This analysis is required by the California Environmental Quality Act (CEQA) and assumes full development of the project and full absorption of project traffic on the circulation system at the present time.

Existing Plus Project Peak Hour Analysis

Project-related trips were added to existing traffic volumes to forecast Existing Plus Project Conditions. Morning and evening peak hour traffic volumes for this scenario are shown on Figure 6. A summary of the resulting intersection Level of Service is provided on Table 3. Review of this table shows that all study intersections would continue to operate at LOS C or better under Existing Plus Project Conditions.

TABLE 2
SUMMARY OF PROJECT TRIP GENERATION
STONEFIELD 63 PROJECT

Land Use	ITE Code	Unit	Trip Generation Rates ¹						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	221	DU	5.440	0.094	0.266	0.36	0.268	0.172	0.44
Land Use	Quantity	Unit	Trip Generation Estimates						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	63	DU	343	6	17	23	17	11	28
Total Project Trips			343	6	17	23	17	11	28

¹ Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition



NOT TO SCALE

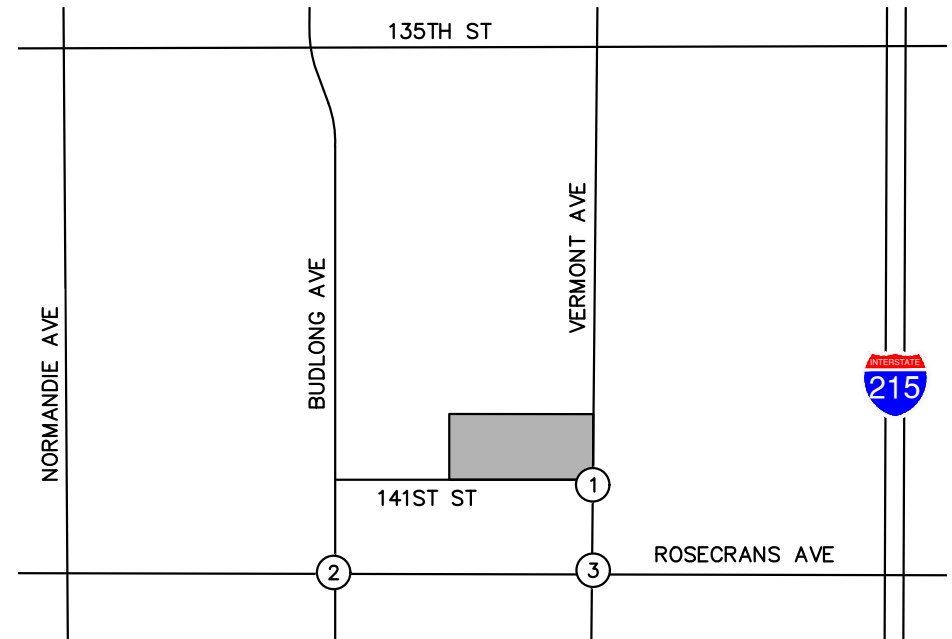


LEGEND:

-  = Project Site
- XX% = Percent Trip Distribution
-  = Study Intersection

FIGURE 4
PROJECT TRIP DISTRIBUTION

		1. 141st St at Vermont Ave	
2. Rosecrans Ave at Budlong Ave		3. Rosecrans Ave at Vermont Ave	



LEGEND:

- = Project Site
- = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

FIGURE 5
PROJECT-RELATED PEAK HOUR TRAFFIC



		1. 141st St at Vermont Ave	
2. Rosecrans Ave at Budlong Ave		3. Rosecrans Ave at Vermont Ave	

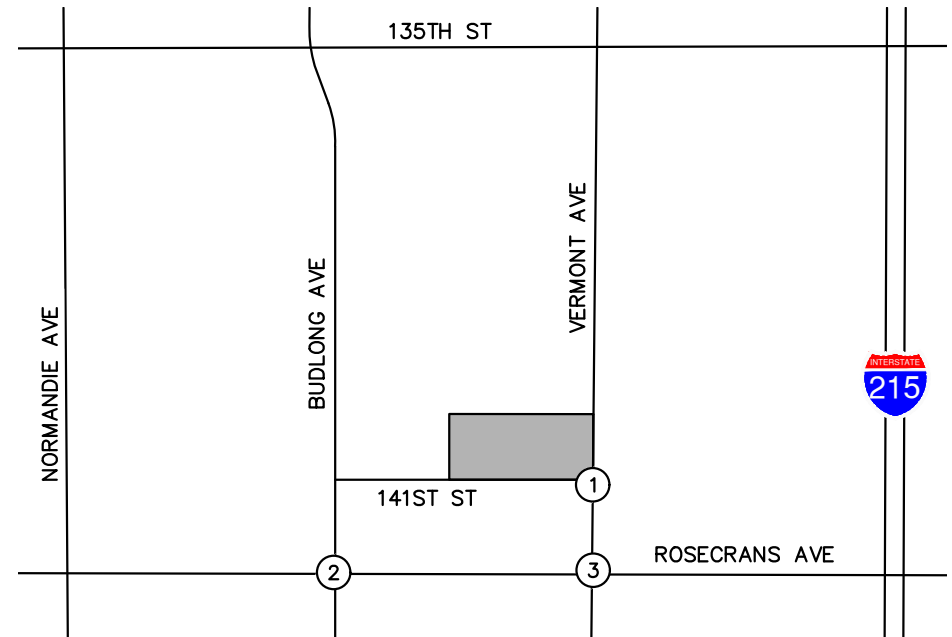


FIGURE 6
EXISTING PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

LEGEND:

- = Project Site
- = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

TABLE 3
SUMMARY OF INTERSECTION OPERATION
EXISTING PLUS PROJECT CONDITIONS

Int. #	Intersection	Traffic Control	AM Peak Hour						PM Peak Hour					
			Without Project		With Project		Project Impact	Impact Sig?	Without Project		With Project		Project Impact	Impact Sig?
			V/C /Delay	LOS	V/C /Delay	LOS			V/C /Delay	LOS	V/C /Delay	LOS		
1	141st Street at Vermont Ave	U	10.2	B	10.3	B	0.1	No	10.4	B	10.5	B	0.1	No
2	Rosecrans Ave at Budlong Ave	S	0.578	A	0.579	A	0.001	No	0.598	A	0.599	A	0.001	No
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.666	B	0.673	B	0.007	No	0.766	C	0.770	C	0.004	No
	Rosecrans Ave at Vermont Ave (CMA)	S	0.658	B	0.668	B	0.010	No	0.775	C	0.780	C	0.005	No

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.

FUTURE CONDITIONS

Project completion is estimated to occur in Year 2021. Near-term future (Opening Year 2021) traffic forecasts have been developed to evaluate Cumulative Conditions for the anticipated project opening year. Opening Year 2021 traffic forecast volumes were developed using the approach described below.

Opening Year 2021

Background Growth

Future year forecasts for Opening Year 2021 were developed using the “build-up” process, starting with adding a background growth factor to existing peak hour volumes. Based on the Los Angeles County Congestion Management Program (CMP) for the South Bay / LAX area, the annual growth rate between the years 2018 and 2021 is 0.233%.

Cumulative Projects

In addition to ambient growth, cumulative project traffic volumes are added to existing traffic volumes. Cumulative projects consist of projects in the vicinity that have been approved but are not yet built and fully occupied, as well as projects that are in various stages of the application and approval process, but have not yet been approved. These projects are considered “reasonably foreseeable,” and must therefore be included in the Cumulative Projects analysis. Cumulative project information was obtained from the City of Gardena Planning Department and the City of Los Angeles Department of Public Works and Department of City Planning. A summary of the cumulative projects included in the Cumulative Conditions analysis is provided on Table 4. The location of the cumulative projects in relation to the project site is shown on Figure 7. Information regarding cumulative projects, their location, and associated trips is provided in *Appendix C* of this report.

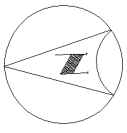
Opening Year 2021 without Project Conditions

The ambient growth and the project-related traffic volumes from the cumulative projects were added to the existing peak hour volumes to develop Opening Year 2021 Without Project peak hour forecasts. The resulting peak hour volumes are shown on Figure 8.

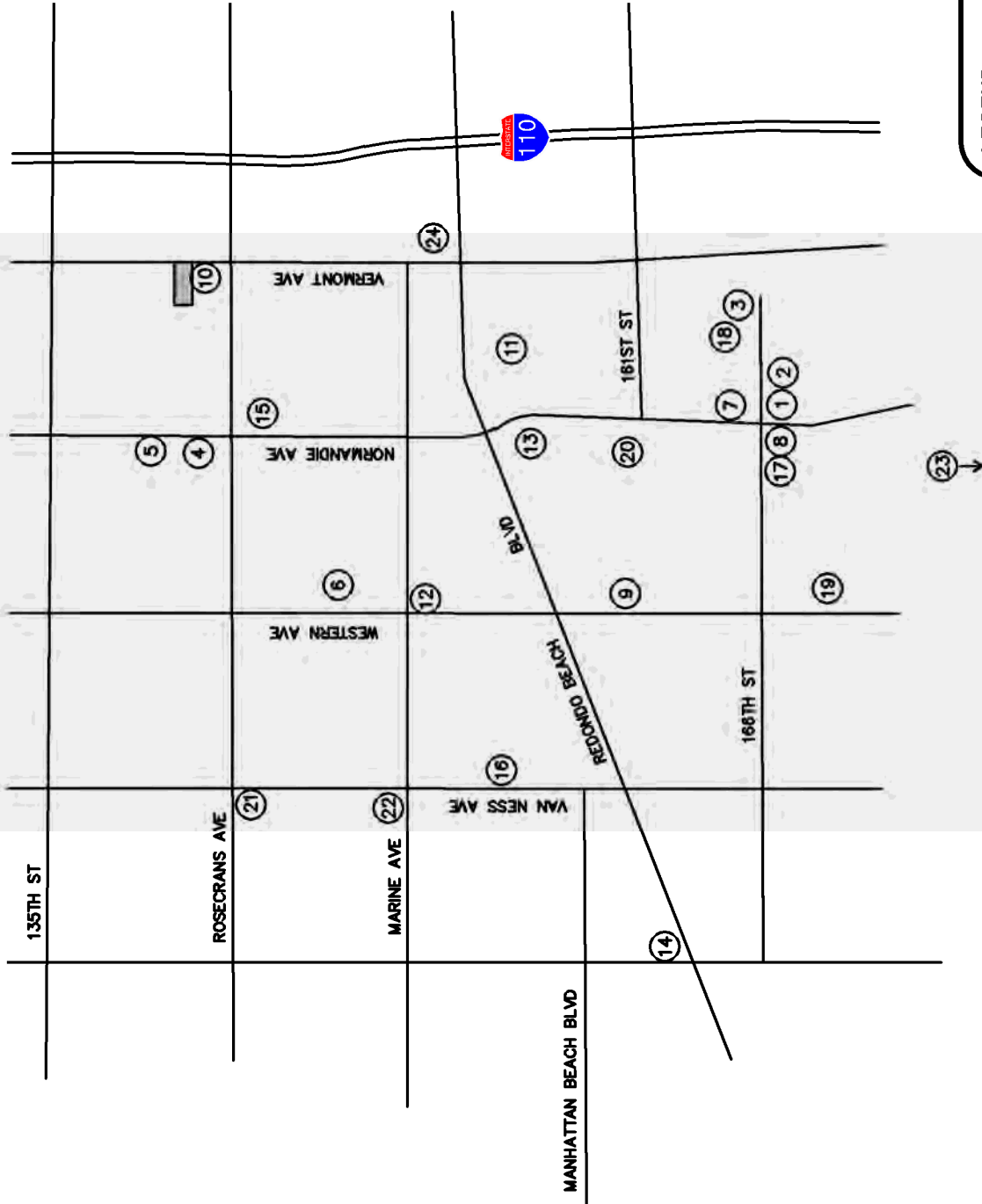
The results of the Opening Year 2021 Without Project intersection analysis are summarized on Table 5. Review of this table shows that, with the addition of ambient growth and the traffic from cumulative projects, the study intersections would continue to operate at LOS C or better in both peak hours.

TABLE 4
SUMMARY OF CUMULATIVE PROJECTS

Proj. No.	Project Address	Land Use	Quantity	Unit	Project Trips				
					Daily Trips	AM Peak Hour		PM Peak Hour	
						In	Out	In	Out
City of Gardena									
1	1333 W. 168th Street	Multi-Family Residential	4	DU	29	0	1	1	1
2	1348 W. 168th Street	Multi-Family Residential	10	DU	73	1	4	4	2
3	1112 Gardena Blvd.	Multi-Family Residential	12	DU	88	1	4	4	2
4	1417 W. 141st St.	Multi-Family Residential	63	DU	461	7	22	22	13
5	13919 Normandie Ave.	Multi-Family Residential	20	DU	146	2	7	7	4
6	1715 W. 149th St.	Multi-Family Residential	5	DU	37	1	2	2	1
7	1341 W. Gardena Blvd.	Multi-Family Residential	14	DU	102	1	5	5	3
8	16819 Normandie Ave.	Multi-Family Residential	63	DU	461	7	22	22	13
9	15930 S. Western Avenue	Medical Office	6.430	KSF	224	14	4	6	16
10	14105 S. Vermont Ave.	Fast-food Restaurant	1.500	KSF	706	31	30	25	24
11	1201 W. 155th Ave.	Medical Office	11.550	KSF	402	25	7	11	29
12	15106 S. Western Ave.	Commercial	6.573	KSF	248	4	2	12	13
13	1420 Redondo Beach Blvd.	Restaurant	4.053	KSF	455	22	18	25	15
14	16210 Crenshaw Blvd	Fast-food Restaurant	4.860	KSF	545	27	22	29	18
15	14504 S. Normandie Ave.	Multi-Family Residential	96	DU	703	10	34	34	20
16	15350 Van Ness Ave.	Multi-Family Residential	42	DU	307	4	15	15	9
17	16809 S. Normandie Ave.	Multi-Family Residential	21	DU	154	2	7	7	4
18	1147 W. Gardena Blvd.	Multi-Family Residential	4	DU	29	0	1	1	1
19	16958 S. Western Ave.	Multi-Family Residential	46	DU	337	5	16	16	10
20	15927 S. Brighton Ave.	Multi-Family Residential	2	DU	15	0	1	1	0
21	14321 Van Ness Ave.	Multi-Family Residential	40	DU	293	4	14	14	8
22	2315 Marine Avenue	Multi-Family Residential	66	DU	483	7	23	23	14
23	1515 W. 178th St.	Multi-Family Residential	63	DU	461	7	22	22	13
City of Gardena Total					6,759	182	283	308	233
City of Los Angeles									
24	15134 S. Vermont Avenue	Warehousing	322.32	KSF	1,503	100	25	34	100
City of Los Angeles Total					1,503	100	25	34	100
Total					8,262	282	308	342	333
KSF = Thousand Square Feet, DU = Dwelling Units									



NOT TO SCALE



LEGEND:

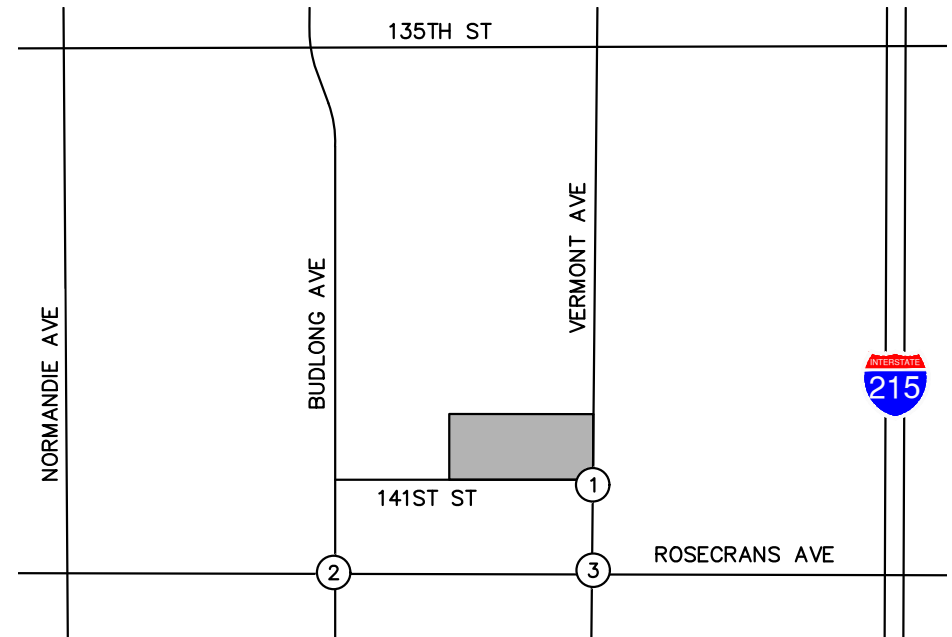
 = Project Site

 = Cumulative Project

FIGURE 7
LOCATION OF CUMULATIVE PROJECTS



2. Rosecrans Ave at Budlong Ave <table border="1"> <tr> <td>32/38 143/160 132/118</td> <td>238/135 1124/1101 33/77</td> </tr> <tr> <td>26/53 1010/1234 29/83</td> <td>16/42 104/134 61/44</td> </tr> </table>		32/38 143/160 132/118	238/135 1124/1101 33/77	26/53 1010/1234 29/83	16/42 104/134 61/44		
32/38 143/160 132/118	238/135 1124/1101 33/77						
26/53 1010/1234 29/83	16/42 104/134 61/44						
1. 141st St at Vermont Ave <table border="1"> <tr> <td>60/47 1007/1113</td> <td>49/46</td> </tr> </table>	60/47 1007/1113	49/46	3. Rosecrans Ave at Vermont Ave <table border="1"> <tr> <td>103/118 599/695 222/284</td> <td>168/177 1207/1060 168/162</td> </tr> <tr> <td>110/120 1019/1171 78/72</td> <td>122/155 467/716 89/227</td> </tr> </table>	103/118 599/695 222/284	168/177 1207/1060 168/162	110/120 1019/1171 78/72	122/155 467/716 89/227
60/47 1007/1113	49/46						
103/118 599/695 222/284	168/177 1207/1060 168/162						
110/120 1019/1171 78/72	122/155 467/716 89/227						



LEGEND:

-  = Project Site
-  = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

FIGURE 8
OPENING YEAR 2021 WITHOUT PROJECT
PEAK HOUR TRAFFIC VOLUMES

TABLE 5
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2021 WITHOUT PROJECT

Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			V/C /Delay	LOS	V/C /Delay	LOS
1	141st Street at Vermont Ave	U	10.4	B	10.7	B
2	Rosecrans Ave at Budlong Ave	S	0.586	A	0.607	B
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.691	B	0.787	C
	Rosecrans Ave at Vermont Ave (CMA)	S	0.688	B	0.800	C

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.

Opening Year 2021 with Project Conditions

Project-related peak hour traffic volumes for the proposed project were added to the Opening Year 2021 without Project traffic volumes to develop Opening Year 2021 with Project traffic forecast volumes. The resulting peak hour traffic volumes are shown on Figure 9.

The intersection analysis was run with the addition of project trips, and the results are summarized on Table 6. Review of this table shows that all study intersections would continue to operate at LOS C or better with the addition of project traffic. Intersection analysis worksheets are provided in *Appendix B* of this report.

BUILD-OUT CONDITIONS

The proposed project would require a General Plan Amendment, therefore, an analysis of peak hour operating conditions for General Plan Build-out conditions has been conducted.

Build-out Without Project Conditions

To develop General Plan Build-out forecasts, the growth between Existing Conditions and Build-out Conditions was determined using the 0.38% annual growth rate that was used to develop build-out traffic forecasts for the most recent City of Gardena General Plan Update. Build-out traffic forecasts at the study intersections are shown on Figure 10.

The Build-out Without Project analysis results and Level of Service for the study intersections are presented in Table 7. Review of this table shows that, with the applied growth factor, all study intersections would operate at LOS D or better in both peak hours.

Build-out With Project Conditions

Project-related traffic was added to the Build-out Without Project traffic volumes. Build-out With Project peak hour turning movement volumes at the study intersections are shown on Figure 11.

Build-out With Project peak hour intersection operations are summarized on Table 8. With the addition of project traffic, all study intersections would continue to operate at LOS D or better in both peak hours. Intersection Level of Service worksheets are provided in *Appendix B* of this report.

		1. 141st St at Vermont Ave 	
2. Rosecrans Ave at Budlong Ave 		3. Rosecrans Ave at Vermont Ave 	

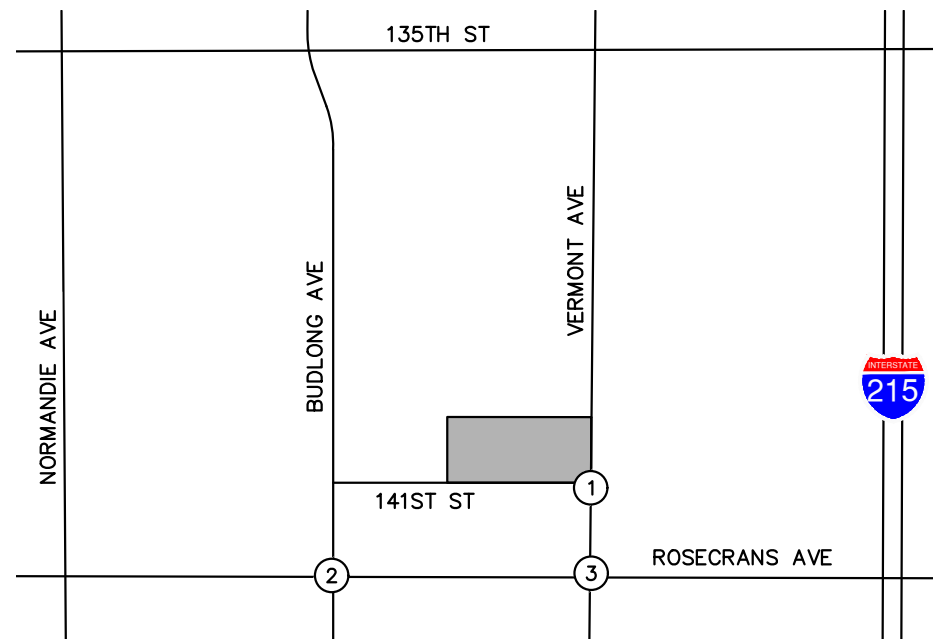


FIGURE 9
OPENING YEAR 2021 WITH PROJECT
PEAK HOUR TRAFFIC VOLUMES

LEGEND:

- = Project Site
- = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

TABLE 6
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2021 WITH PROJECT

Int. #	Intersection	Traffic Control	AM Peak Hour						PM Peak Hour					
			Without Project		With Project		Project Impact	Impact Sig?	Without Project		With Project		Project Impact	Impact Sig?
			ICU/ Delay	LOS	ICU/ Delay	LOS			ICU/ Delay	LOS	ICU/ Delay	LOS		
1	141st Street at Vermont Ave	U	10.4	B	10.6	B	0.2	No	10.7	B	10.8	B	0.1	No
2	Rosecrans Ave at Budlong Ave	S	0.586	A	0.587	A	0.001	No	0.607	B	0.608	B	0.001	No
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.691	B	0.699	B	0.008	No	0.787	C	0.791	C	0.004	No
	Rosecrans Ave at Vermont Ave (CMA)	S	0.688	B	0.697	B	0.009	No	0.800	C	0.805	D	0.005	No

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.



		1. 141st St at Vermont Ave	
2. Rosecrans Ave at Budlong Ave		3. Rosecrans Ave at Vermont Ave	

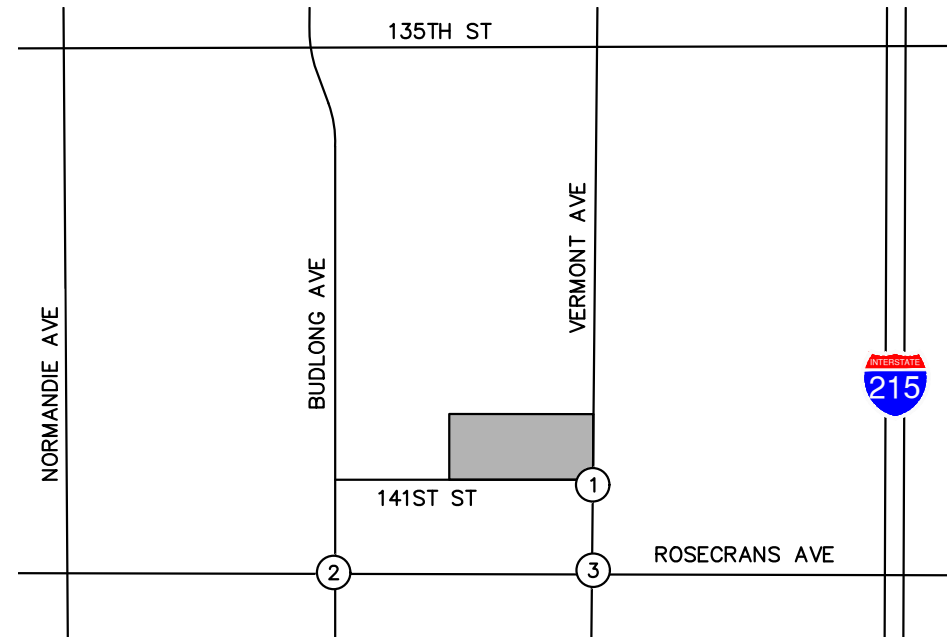


FIGURE 10
BUILD-OUT 2035 WITHOUT PROJECT
PEAK HOUR TRAFFIC VOLUMES

LEGEND:

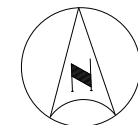
- = Project Site
- = Study Intersection
- XX/YY = AM / PM Peak Hour Turning Movement Volumes

TABLE 7
SUMMARY OF INTERSECTION OPERATION
BUILD-OUT YEAR 2035 WITHOUT PROJECT

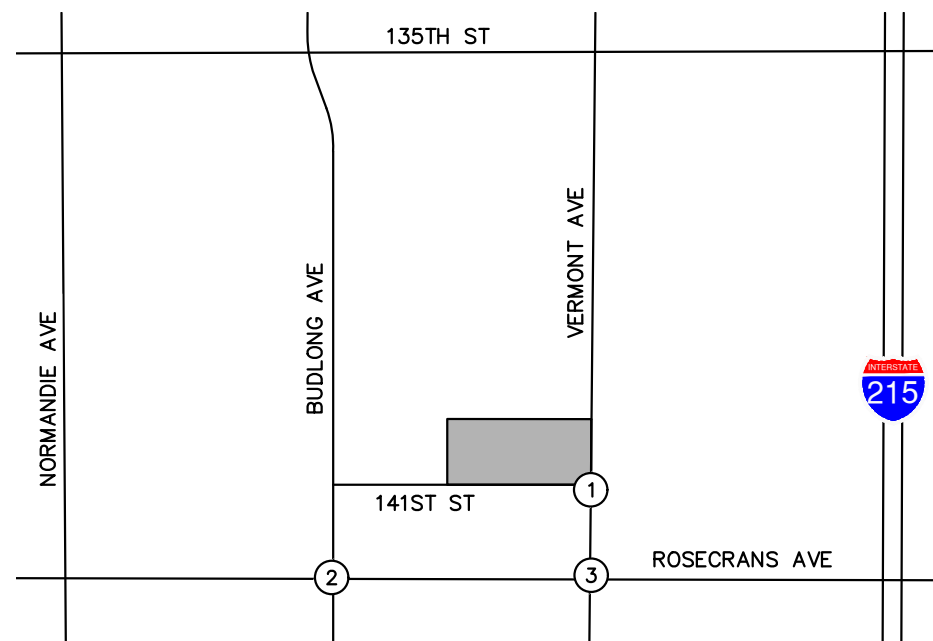
Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			V/C /Delay	LOS	V/C /Delay	LOS
1	141st Street at Vermont Ave	U	10.3	B	10.6	B
2	Rosecrans Ave at Budlong Ave	S	0.609	B	0.631	B
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.703	C	0.809	D
	Rosecrans Ave at Vermont Ave (CMA)	S	0.702	B	0.825	D

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.

	1. 141st St at Vermont Ave 37 / 40 1059 / 1169 37 / 34
2. Rosecrans Ave at Budlong Ave 34 / 40 151 / 169 140 / 125 251 / 143 1173 / 1123 35 / 81 28 / 56 1024 / 1282 31 / 87 17 / 45 110 / 142 65 / 47	3. Rosecrans Ave at Vermont Ave 105 / 120 622 / 724 228 / 294 171 / 187 1265 / 1083 177 / 168 109 / 125 1041 / 1216 81 / 77 129 / 163 481 / 746 91 / 237



NOT TO SCALE



**FIGURE 11
BUILD-OUT 2035 WITH PROJECT
PEAK HOUR TRAFFIC VOLUMES**

LEGEND:

-  = Project Site
-  = Study Intersection
- XX/YY = AM / PM Peak Hour
Turning Movement
Volumes

TABLE 8
SUMMARY OF INTERSECTION OPERATION
BUILD-OUT YEAR 2035 WITH PROJECT

Int. #	Intersection	Traffic Control	AM Peak Hour						PM Peak Hour					
			Without Project		With Project		Project Impact	Impact Sig?	Without Project		With Project		Project Impact	Impact Sig?
			V/C /Delay	LOS	V/C /Delay	LOS			V/C /Delay	LOS	V/C /Delay	LOS		
1	141st Street at Vermont Ave	U	10.3	B	10.5	B	0.2	No	10.6	B	10.7	B	0.1	No
2	Rosecrans Ave at Budlong Ave	S	0.609	B	0.610	B	0.001	No	0.631	B	0.632	B	0.001	No
3	Rosecrans Ave at Vermont Ave (ICU)	S	0.703	C	0.710	C	0.007	No	0.809	D	0.813	D	0.004	No
	Rosecrans Ave at Vermont Ave (CMA)	S	0.702	B	0.711	C	0.009	No	0.825	D	0.832	D	0.007	No

- S = Signalized intersection; U = Unsignalized intersection
- ICU = Intersection Capacity Utilization; CMA = Critical Movement Analysis; LOS = Level of Service
- ICU and CMA values are expressed as volume-to-capacity (v/c) ratio.
- Delay is expressed in average seconds of delay per peak hour vehicle.
- LOS shown in Bold indicates unacceptable Level of Service.

Site Access and Circulation

The project access would consist of a two-lane driveway that would connect to the end of the 141st Street easterly cul-de-sac, which in turn, connects to Vermont Avenue. The project site plan shows that the project entry would provide one inbound lane and one outbound lane, each controlled by lift gate arms.

The on-site circulation consists of the main entry drive, connecting at the southeast corner of the site. The main on-site drive aisle would be 26 feet wide; the movement of emergency vehicles would be accommodated throughout the site.

A total of 160 parking spaces, including resident and guest parking, are proposed. Gardena Municipal Code (GMC) § 18.40.040: *Number of Parking Spaces Required*, specifies multiple-family dwelling units (DU) require two spaces in a garage or enclosed parking facility per DU, resulting in a total resident parking requirement of 126 spaces. The project proposes two garage spaces per DU, or a total of 126 resident parking spaces, thus, meeting the City's resident parking standard. GMC § 18.40.070: *Additional Standards for Residential Parking Areas*, requires that guest parking be provided for residential developments of more than one unit at 0.5 spaces per DU, resulting in a total guest parking demand of 32 spaces. The project proposes a total of 34 guest parking spaces, thus, meeting the City's guest parking standard.

SUMMARY OF FINDINGS AND CONCLUSIONS

- The applicant proposes the development of 63 mid-rise, multi-family dwelling units on the site of an existing asphalt surface parking lot, used for vehicle storage by South Bay Auto Auction.
- Morning and evening peak hour operating conditions were evaluated at three study intersections for the following study scenarios:
 - o Existing,
 - o Existing Plus Project,
 - o Opening Year without Project,
 - o Opening Year with Project,
 - o Build-out without Project, and
 - o Build-out with Project.
- Under Existing Conditions, all study intersections are currently operating at LOS C or better in both peak hours.
- The proposed project would generate 343 daily trips, with 23 trips in the morning peak hour and 28 trips in the evening peak hours.
- All project trips would enter and exit the site via the intersection of 141st Street at Vermont Avenue, which is restricted to right-in/right-out only movements, due to the raised median on Vermont Avenue.

- Project traffic was added to Existing Conditions to establish Existing Plus Project forecasts.
- Under Existing Plus Project Conditions, all study intersections would continue to operate at LOS C or better.
- Ambient traffic growth and traffic from cumulative projects were added to Existing Conditions to establish Opening Year without Project Conditions.
- Under Opening Year without Project Conditions, all study intersections would operate at LOS C or better.
- Project traffic was added to Opening Year without Project Conditions to establish Opening Year with Project Conditions.
- Under Opening Year with Project Conditions, all study intersections would continue to operate at LOS C or better.
- The proposed project would require a General Plan Amendment, therefore, an analysis of peak hour operating conditions for General Plan Build-out conditions has been conducted.
- Under Build-out without Project Conditions, all study intersections would operate at LOS D or better.
- Project traffic was added to Build-out without Project Conditions to establish Build-out with Project Conditions.
- Under Build-out with Project Conditions, all study intersections would continue to operate at LOS D or better.
- The proposed parking meets the City's parking standards per GMC §§ 18.40.040 and 18.40.070.

APPENDIX A

EXISTING PEAK HOUR TRAFFIC DATA COLLECTION SHEETS

National Data & Surveying Services

Intersection Turning Movement Count

Location: Vermont Ave & 141st St
City: Gardena
Control: 1-Way Stop (EB)

Project ID: 18-05614-001
Date: 9/18/2018

Total

NS/EW Streets:	Vermont Ave				Vermont Ave				141st St				141st St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	3 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	151	4	0	0	0	1	0	0	0	0	0	156
7:15 AM	0	0	0	0	0	218	4	0	0	0	3	0	0	0	0	0	225
7:30 AM	0	0	0	0	0	334	8	0	0	0	7	0	0	0	0	0	349
7:45 AM	0	0	0	0	0	252	13	0	0	0	2	0	0	0	0	0	267
8:00 AM	0	0	0	0	0	190	4	0	0	0	7	0	0	0	0	0	201
8:15 AM	0	0	0	0	0	203	14	0	0	0	6	0	0	0	0	0	223
8:30 AM	0	0	0	0	0	152	6	0	0	0	3	0	0	0	0	0	161
8:45 AM	0	0	0	0	0	160	5	0	0	0	6	0	0	0	0	0	171
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	1660	58	0	0	0	35	0	0	0	0	0	1753
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	994	29	0	0	0	19	0	0	0	0	0	1042
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.744	0.558	0.000	0.000	0.000	0.679	0.000	0.000	0.000	0.000	0.000	0.746
							0.748				0.679						

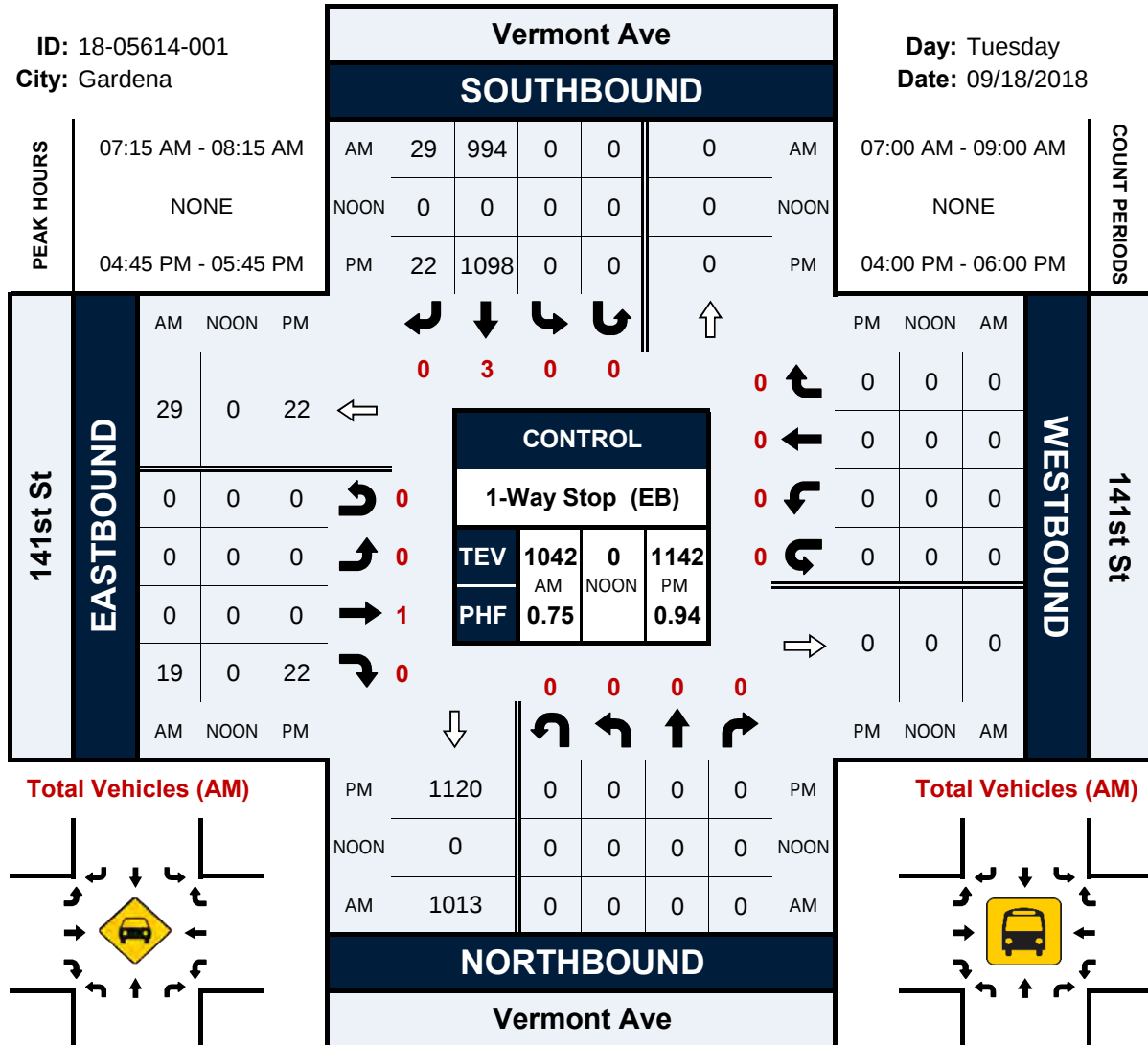
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	3 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	252	0	0	0	0	11	0	0	0	0	0	263
4:15 PM	0	0	0	0	0	256	3	0	0	0	5	0	0	0	0	0	264
4:30 PM	0	0	0	0	0	275	1	0	0	0	1	0	0	0	0	0	277
4:45 PM	0	0	0	0	0	296	5	0	0	0	3	0	0	0	0	0	304
5:00 PM	0	0	0	0	0	265	4	0	0	0	10	0	0	0	0	0	279
5:15 PM	0	0	0	0	0	249	1	0	0	0	5	0	0	0	0	0	255
5:30 PM	0	0	0	0	0	288	12	0	0	0	4	0	0	0	0	0	304
5:45 PM	0	0	0	0	0	230	16	0	0	0	6	0	0	0	0	0	252
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	2111	42	0	0	0	45	0	0	0	0	0	2198
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1098	22	0	0	0	22	0	0	0	0	0	1142
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.927	0.458	0.000	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.939
							0.930				0.550						

Vermont Ave & 141st St

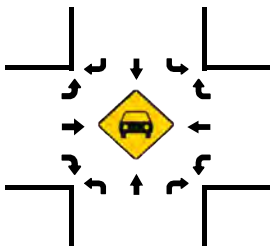
Peak Hour Turning Movement Count

ID: 18-05614-001
City: Gardena

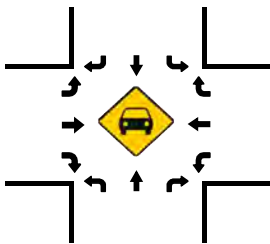
Day: Tuesday
Date: 09/18/2018



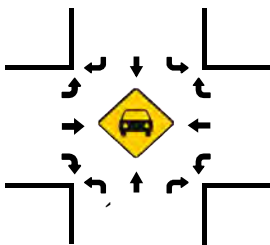
Total Vehicles (AM)



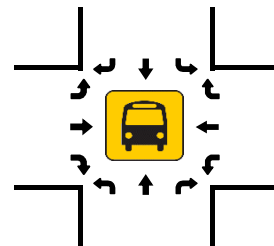
Total Vehicles (NOON)



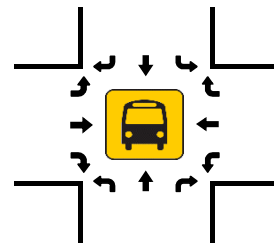
Total Vehicles (PM)



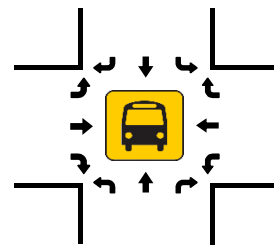
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



INTERSECTION TURNING MOVEMENT COUNTS

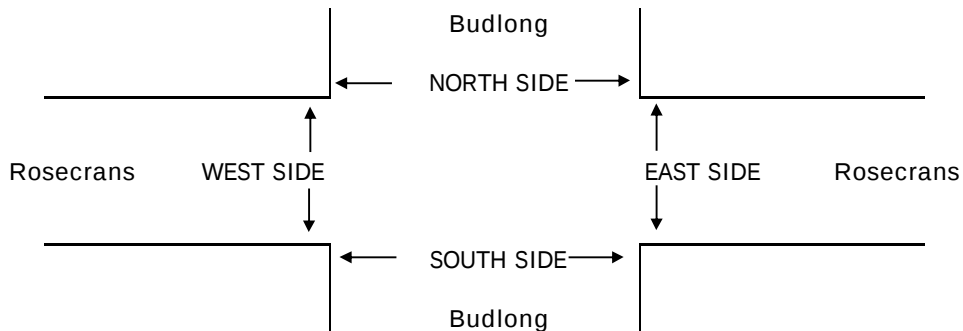
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 4, 18	LOCATION: NORTH & SOUTH: EAST & WEST:	Gardena Budlong Rosecrans	PROJECT #: LOCATION #: CONTROL:	SC1675 2 SIGNAL
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NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
Queue WB AM; queue EB PM		

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Budlong			Budlong			Rosecrans			Rosecrans			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	0	1	1	0	1	3	0	1	3	0	

AM	7:00 AM	5	17	11	18	12	9	4	199	5	16	305	37	638
	7:15 AM	6	17	16	25	25	7	3	234	3	7	287	34	664
	7:30 AM	2	19	21	38	47	4	3	241	5	6	280	61	727
	7:45 AM	3	42	14	30	40	13	7	252	12	14	275	76	778
	8:00 AM	5	25	10	38	30	8	13	233	9	6	255	65	697
	8:15 AM	6	17	12	22	16	7	7	195	5	8	245	37	577
	8:30 AM	6	16	9	22	25	10	5	211	7	10	285	47	653
	8:45 AM	6	16	4	15	25	11	8	223	5	11	253	19	596
	VOLUMES	39	169	97	208	220	69	50	1,788	51	78	2,185	376	5,330
	APPROACH %	13%	55%	32%	42%	44%	14%	3%	95%	3%	3%	83%	14%	
	APP/DEPART	305	/	586	497	/	324	1,889	/	2,118	2,639	/	2,302	0
PM	BEGIN PEAK HR	7:15 AM												
	VOLUMES	16	103	61	131	142	32	26	960	29	33	1,097	236	2,866
	APPROACH %	9%	57%	34%	43%	47%	10%	3%	95%	3%	2%	80%	17%	
	PEAK HR FACTOR	0.763			0.857			0.936			0.936			0.921
	APP/DEPART	180	/	361	305	/	193	1,015	/	1,163	1,366	/	1,149	0
	4:00 PM	12	28	13	17	28	7	10	305	14	12	221	25	692
	4:15 PM	4	35	7	18	26	10	7	322	13	19	239	22	722
	4:30 PM	9	37	12	38	35	6	15	295	13	23	241	29	753
	4:45 PM	10	31	14	31	47	10	14	295	24	13	253	40	782
	5:00 PM	9	34	8	29	40	9	10	295	21	21	254	26	756
	5:15 PM	14	31	10	19	37	13	14	314	24	19	304	39	838
	5:30 PM	10	26	17	19	44	10	10	275	14	20	219	29	693
	5:45 PM	11	36	11	13	30	11	15	354	15	15	269	39	819
	VOLUMES	79	258	92	184	287	76	95	2,455	138	142	2,000	249	6,055
	APPROACH %	18%	60%	21%	34%	52%	14%	4%	91%	5%	6%	84%	10%	
	APP/DEPART	429	/	595	547	/	555	2,688	/	2,742	2,391	/	2,163	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	42	133	44	117	159	38	53	1,199	82	76	1,052	134	3,129
	APPROACH %	19%	61%	20%	37%	51%	12%	4%	90%	6%	6%	83%	11%	
	PEAK HR FACTOR	0.944			0.892			0.947			0.872			0.933
	APP/DEPART	219	/	316	314	/	310	1,334	/	1,367	1,262	/	1,136	0



INTERSECTION TURNING MOVEMENT COUNTS

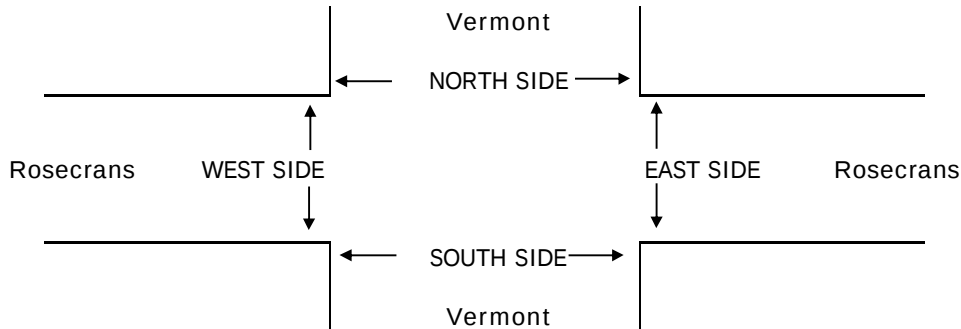
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 4, 18	LOCATION: NORTH & SOUTH: EAST & WEST:	Gardena Vermont Rosecrans	PROJECT #: LOCATION #: CONTROL:	SC1675 3 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W	S	E ▶
	OTHER			
	OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Vermont			Vermont			Rosecrans			Rosecrans			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	4	0	1	3	0	1	3	0	1	3	0	

AM	7:00 AM	27	87	14	52	95	20	17	205	8	28	291	26	870
	7:15 AM	24	98	22	55	110	19	20	198	12	44	297	41	940
	7:30 AM	29	98	14	54	161	27	28	266	19	57	302	40	1,095
	7:45 AM	40	124	29	55	178	28	23	262	23	37	306	40	1,145
	8:00 AM	28	131	20	42	132	20	29	251	22	28	283	38	1,024
	8:15 AM	28	113	28	47	108	24	21	181	13	26	231	34	854
	8:30 AM	28	88	26	58	106	28	15	209	14	37	260	41	910
	8:45 AM	26	89	16	31	84	16	19	208	18	43	258	54	862
	VOLUMES	230	828	169	394	974	182	172	1,780	129	300	2,228	314	7,700
	APPROACH %	19%	67%	14%	25%	63%	12%	8%	86%	6%	11%	78%	11%	
PM	APP/DEPART	1,227	/	1,332	1,550	/	1,451	2,081	/	2,323	2,842	/	2,594	0
	BEGIN PEAK HR	7:15 AM												
	VOLUMES	121	451	85	206	581	94	100	977	76	166	1,188	159	4,204
	APPROACH %	18%	69%	13%	23%	66%	11%	9%	85%	7%	11%	79%	11%	
	PEAK HR FACTOR	0.851			0.844			0.921			0.948			0.918
	APP/DEPART	657	/	718	881	/	849	1,153	/	1,259	1,513	/	1,378	0
	4:00 PM	30	140	37	55	150	31	32	308	12	30	220	39	1,084
	4:15 PM	33	153	58	60	140	19	40	259	19	44	225	45	1,095
	4:30 PM	37	173	50	54	154	24	29	285	12	39	241	33	1,131
	4:45 PM	42	190	60	69	181	35	30	274	16	37	248	38	1,220
PM	5:00 PM	39	166	55	65	162	28	25	304	19	36	258	36	1,193
	5:15 PM	38	173	46	67	159	22	23	271	19	44	260	46	1,168
	5:30 PM	34	169	62	69	176	25	35	293	18	41	251	50	1,223
	5:45 PM	30	155	64	64	155	31	36	313	19	35	252	38	1,192
	VOLUMES	283	1,319	432	503	1,277	215	250	2,307	134	306	1,955	325	9,306
	APPROACH %	14%	65%	21%	25%	64%	11%	9%	86%	5%	12%	76%	13%	
	APP/DEPART	2,034	/	1,934	1,995	/	1,798	2,691	/	3,202	2,586	/	2,372	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	153	698	223	270	678	110	113	1,142	72	158	1,017	170	4,804
	APPROACH %	14%	65%	21%	26%	64%	10%	9%	86%	5%	12%	76%	13%	
PM	PEAK HR FACTOR	0.920			0.928			0.953			0.961			0.982
	APP/DEPART	1,074	/	1,005	1,058	/	955	1,327	/	1,611	1,345	/	1,233	0



APPENDIX B

INTERSECTION ANALYSIS WORKSHEETS

Scenario Report

Scenario: EX AM

Command: EX AM

Volume: EX AM

Geometry: Default Geometry

Impact Fee: Default Impact Fee

Trip Generation: None

Trip Distribution: Project

Paths: Default Path

Routes: Default Route

Configuration: EX AM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.2	0.027	B	10.2	0.027	+ 0.000 D/V
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx	0.578	A	xxxxx	0.578	+ 0.000 V/C
# 3 Rosecrans Ave at Vermont Ave	B	xxxxx	0.666	B	xxxxx	0.666	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.2      Worst Case Level Of Service: B[ 10.2]
*****

Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0      0      0      0 994      29      0      0      19      0      0      0
Growth Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
Initial Bse:      0      0      0      0 994      29      0      0      19      0      0      0
Added Vol:      0      0      0      0      0      0      0      0      0      0      0      0
PasserByVol:      0      0      0      0      0      0      0      0      0      0      0      0
Initial Fut:      0      0      0      0 994      29      0      0      19      0      0      0
User Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Volume:      0      0      0      0 994      29      0      0      19      0      0      0
Reduct Vol:      0      0      0      0      0      0      0      0      0      0      0      0
FinalVolume:      0      0      0      0 994      29      0      0      19      0      0      0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      331 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      715 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      715 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.03 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.1 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.2 xxxxx xxxx xxxxx
LOS by Move:      *      *      *      *      *      *      *      *      B
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *      *      *      *      *      *      *      *      *      *      *      *
ApproachDel:      xxxxxx      xxxxxx      10.2      xxxxxx
ApproachLOS:      *      *      B      *
*****
Note: Queue reported is the number of cars per lane.
*****
```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.578
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	A

Street Name:	Budlong Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Permitted	Permitted	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0		
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0		
Lanes:	1 0 0 1 0	1 0 0 1 0	1 0 2 1 0	1 0 2 1 0		

Volume Module:												
Base Vol:	16	103	61	131	142	32	26	960	29	33	1097	236
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	103	61	131	142	32	26	960	29	33	1097	236
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	103	61	131	142	32	26	960	29	33	1097	236
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	16	103	61	131	142	32	26	960	29	33	1097	236
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	103	61	131	142	32	26	960	29	33	1097	236
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	103	61	131	142	32	26	960	29	33	1097	236

Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.63	0.37	1.00	0.82	0.18	1.00	2.91	0.09	1.00	2.47	0.53
Final Sat.:	1600	1005	595	1600	1306	294	1600	4659	141	1600	3950	850

Capacity Analysis Module:												
Vol/Sat:	0.01	0.10	0.10	0.08	0.11	0.11	0.02	0.21	0.21	0.02	0.28	0.28
Crit Moves:	****			****			****			****		

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.666
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	B

Street Name:	Vermont Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Protected	Protected	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0		
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0		
Lanes:	1 0 3 0 1	1 0 3 0 1	1 0 2 1 0	1 0 2 1 0		

Volume Module:												
Base Vol:	121	451	85	206	581	94	100	977	76	166	1188	159
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	121	451	85	206	581	94	100	977	76	166	1188	159
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	121	451	85	206	581	94	100	977	76	166	1188	159
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	121	451	85	206	581	94	100	977	76	166	1188	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	451	85	206	581	94	100	977	76	166	1188	159
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	451	85	206	581	94	100	977	76	166	1188	159

Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	2.78	0.22	1.00	2.65	0.35
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	4454	346	1600	4233	567

Capacity Analysis Module:												
Vol/Sat:	0.08	0.09	0.05	0.13	0.12	0.06	0.06	0.22	0.22	0.10	0.28	0.28
Crit Moves:	****			****			****			****		

Scenario:EX PM

Scenario Report

Command:EX PM

Volume:EX PM

Geometry:Default Geometry

Impact Fee:Default Impact Fee

Trip Generation:None

Trip Distribution:Project

Paths:Default Path

Routes:Default Route

Configuration:EX PM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.4	0.032	B	10.4	0.032	+ 0.000 D/V
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx	0.598	A	xxxxx	0.598	+ 0.000 V/C
# 3 Rosecrans Ave at Vermont Ave	C	xxxxx	0.766	C	xxxxx	0.766	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.2      Worst Case Level Of Service: B[ 10.4]
*****

Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0 0 0      0 1098 22      0 0 22      0 0 0
Growth Adj:      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
Initial Bse:      0 0 0      0 1098 22      0 0 22      0 0 0
Added Vol:      0 0 0      0 0 0      0 0 0      0 0 0
PasserByVol:      0 0 0      0 0 0      0 0 0      0 0 0
Initial Fut:      0 0 0      0 1098 22      0 0 22      0 0 0
User Adj:      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Volume:      0 0 0      0 1098 22      0 0 22      0 0 0
Reduct Vol:      0 0 0      0 0 0      0 0 0      0 0 0
FinalVolume:      0 0 0      0 1098 22      0 0 22      0 0 0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      366 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      684 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      684 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.03 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.1 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.4 xxxxx xxxx xxxxx
LOS by Move: * * * * * * * * * * * * * * * * * * * * *
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shared LOS:      * * * * * * * * * * * * * * * * * * * * *
ApproachDel:      xxxxxx      xxxxxx      10.4      xxxxxx
ApproachLOS:      * * * * *
*****
Note: Queue reported is the number of cars per lane.
*****
```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.598

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 40 Level Of Service: A

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 42 133 44 117 159 38 53 1199 82 76 1052 134

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 42 133 44 117 159 38 53 1199 82 76 1052 134

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 42 133 44 117 159 38 53 1199 82 76 1052 134

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 42 133 44 117 159 38 53 1199 82 76 1052 134

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 42 133 44 117 159 38 53 1199 82 76 1052 134

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 42 133 44 117 159 38 53 1199 82 76 1052 134

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.75 0.25 1.00 0.81 0.19 1.00 2.81 0.19 1.00 2.66 0.34

Final Sat.: 1600 1202 398 1600 1291 309 1600 4493 307 1600 4258 542

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.03 0.11 0.11 0.07 0.12 0.12 0.03 0.27 0.27 0.05 0.25 0.25

Crit Moves: ****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.766

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 60 Level Of Service: C

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 153 698 223 270 678 110 113 1142 72 158 1017 170

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 153 698 223 270 678 110 113 1142 72 158 1017 170

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 153 698 223 270 678 110 113 1142 72 158 1017 170

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 153 698 223 270 678 110 113 1142 72 158 1017 170

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 153 698 223 270 678 110 113 1142 72 158 1017 170

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 153 698 223 270 678 110 113 1142 72 158 1017 170

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.82 0.18 1.00 2.57 0.43

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4515 285 1600 4113 687

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.10 0.15 0.14 0.17 0.14 0.07 0.07 0.25 0.25 0.10 0.25 0.25

Crit Moves: ****

Scenario: EX WP AM

Scenario Report

Command: EX WP AM

Volume: EX AM

Geometry: Default Geometry

Impact Fee: Default Impact Fee

Trip Generation: Project AM

Trip Distribution: Project

Paths: Default Path

Routes: Default Route

Configuration: EX WP AM

Trip Generation Report

Forecast for Project AM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Stonfield 63	1.00	Multifamily Ho	6.00	17.00	6	17	23	100.0
	Zone 1 Subtotal					6	17	23	100.0

TOTAL						6	17	23	100.0

Trip Distribution Report					
Percent Of Trips Project					
Zone	To Gates				
	1	2	3	5	
1	20.0	35.0	15.0	30.0	

Impact Analysis Report						
Level Of Service						
Intersection	Base			Future		
	LOS	Del/Veh	V/C	LOS	Del/Veh	V/C
# 1 141st St at Vermont Ave	B	10.2	0.027	B	10.3	0.050
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx	0.578	A	xxxxx	0.579
# 3 Rosecrans Ave at Vermont Ave	B	xxxxx	0.666	B	xxxxx	0.673

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[10.3]

Street Name: Vermont Ave 141st St

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 0 0 0 0 0 3 0 1 0 0 0 0 1 0 0 0 0 0

Volume Module:

Base Vol: 0 0 0 0 994 29 0 0 19 0 0 0

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 0 0 0 994 29 0 0 19 0 0 0

Added Vol: 0 0 0 0 0 6 0 0 17 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 0 0 0 994 35 0 0 36 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 0 0 0 0 994 35 0 0 36 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 0 0 0 0 994 35 0 0 36 0 0 0

Critical Gap Module:

Critical Gp:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 6.2 xxxxx xxxx xxxxx

FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 3.3 xxxxx xxxx xxxxx

Capacity Module:

Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 331 xxxxx xxxx xxxxx

Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 715 xxxxx xxxx xxxxx

Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 715 xxxxx xxxx xxxxx

Volume/Cap: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.05 xxxxx xxxx xxxxx

Level Of Service Module:

2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.2 xxxxx xxxx xxxxx

Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.3 xxxxx xxxx xxxxx

LOS by Move: *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx

SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxxx

Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxxx

Shared LOS: *

ApproachDel: xxxxxx xxxxxx 10.3 xxxxxx

ApproachLOS: *

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.579

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 38 Level Of Service: A

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 16 103 61 131 142 32 26 960 29 33 1097 236

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 16 103 61 131 142 32 26 960 29 33 1097 236

Added Vol: 0 0 0 0 0 0 0 2 0 0 5 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 16 103 61 131 142 32 26 962 29 33 1102 236

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 16 103 61 131 142 32 26 962 29 33 1102 236

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 16 103 61 131 142 32 26 962 29 33 1102 236

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 16 103 61 131 142 32 26 962 29 33 1102 236

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.63 0.37 1.00 0.82 0.18 1.00 2.91 0.09 1.00 2.47 0.53

Final Sat.: 1600 1005 595 1600 1306 294 1600 4660 140 1600 3953 847

Capacity Analysis Module:

Vol/Sat: 0.01 0.10 0.10 0.08 0.11 0.11 0.02 0.21 0.21 0.02 0.28 0.28

Crit Moves: **** *

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.673

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 47 Level Of Service: B

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 121 451 85 206 581 94 100 977 76 166 1188 159

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 121 451 85 206 581 94 100 977 76 166 1188 159

Added Vol: 0 1 0 9 3 5 2 0 0 0 0 2

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 121 452 85 215 584 99 102 977 76 166 1188 161

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 121 452 85 215 584 99 102 977 76 166 1188 161

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 121 452 85 215 584 99 102 977 76 166 1188 161

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 121 452 85 215 584 99 102 977 76 166 1188 161

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.78 0.22 1.00 2.64 0.36

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4454 346 1600 4227 573

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.08 0.09 0.05 0.13 0.12 0.06 0.06 0.22 0.22 0.10 0.28 0.28

Crit Moves: **** **** **** ****

Scenario Report

Scenario:EX WP PM

Command:EX WP PM

Volume:EX PM

Geometry:Default Geometry

Impact Fee:Default Impact Fee

Trip Generation:Project PM

Trip Distribution:Project

Paths:Default Path

Routes:Default Route

Configuration:EX WP PM

Trip Generation Report

Forecast for Project PM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips		Total % Of	
						In	Out	Trips	Total
1	Stonfield 63	1.00	Multifamily Ho	17.00	11.00	17	11	28	100.0
	Zone 1 Subtotal					17	11	28	100.0
TOTAL						17	11	28	100.0

Trip Distribution Report					
Percent Of Trips Project					
Zone	To Gates				
	1	2	3	5	
1	20.0	35.0	15.0	30.0	

Impact Analysis Report						
Level Of Service						
Intersection	Base		Future		Change	
	Del/	V/	Del/	V/	in	
	LOS	Veh	LOS	Veh		
# 1 141st St at Vermont Ave	B	10.4 0.032	B	10.5 0.048	+ 0.092	D/V
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx 0.598	A	xxxxx 0.599	+ 0.001	V/C
# 3 Rosecrans Ave at Vermont Ave	C	xxxxx 0.766	C	xxxxx 0.770	+ 0.004	V/C

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[10.5]

Street Name: Vermont Ave 141st St

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 0 0 0 0 0 3 0 1 0 0 0 0 1 0 0 0 0 0

Volume Module:

Base Vol: 0 0 0 0 1098 22 0 0 22 0 0 0

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 0 0 0 1098 22 0 0 22 0 0 0

Added Vol: 0 0 0 0 0 17 0 0 11 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 0 0 0 1098 39 0 0 33 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 0 0 0 0 1098 39 0 0 33 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 0 0 0 0 1098 39 0 0 33 0 0 0

Critical Gap Module:

Critical Gp:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 6.2 xxxxx xxxx xxxxx

FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 3.3 xxxxx xxxx xxxxx

Capacity Module:

Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 366 xxxxx xxxx xxxxx

Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 684 xxxxx xxxx xxxxx

Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 684 xxxxx xxxx xxxxx

Volume/Cap: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.05 xxxxx xxxx xxxxx

Level Of Service Module:

2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.2 xxxxx xxxx xxxxx

Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.5 xxxxx xxxx xxxxx

LOS by Move: * * * * * B * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx

SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shared LOS: * * * * * * * * *

ApproachDel: xxxxxx xxxxxx 10.5 xxxxxx

ApproachLOS: * * * B *

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.599

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 40 Level Of Service: A

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 42 133 44 117 159 38 53 1199 82 76 1052 134

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 42 133 44 117 159 38 53 1199 82 76 1052 134

Added Vol: 0 0 0 0 0 0 0 5 0 0 3 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 42 133 44 117 159 38 53 1204 82 76 1055 134

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 42 133 44 117 159 38 53 1204 82 76 1055 134

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 42 133 44 117 159 38 53 1204 82 76 1055 134

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 42 133 44 117 159 38 53 1204 82 76 1055 134

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.75 0.25 1.00 0.81 0.19 1.00 2.81 0.19 1.00 2.66 0.34

Final Sat.: 1600 1202 398 1600 1291 309 1600 4494 306 1600 4259 541

Capacity Analysis Module:

Vol/Sat: 0.03 0.11 0.11 0.07 0.12 0.12 0.03 0.27 0.27 0.05 0.25 0.25

Crit Moves: **** **** **** ****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.770

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 61 Level Of Service: C

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 153 698 223 270 678 110 113 1142 72 158 1017 170

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 153 698 223 270 678 110 113 1142 72 158 1017 170

Added Vol: 0 3 0 6 2 3 5 0 0 0 0 6

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 153 701 223 276 680 113 118 1142 72 158 1017 176

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 153 701 223 276 680 113 118 1142 72 158 1017 176

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 153 701 223 276 680 113 118 1142 72 158 1017 176

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 153 701 223 276 680 113 118 1142 72 158 1017 176

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.82 0.18 1.00 2.56 0.44

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4515 285 1600 4092 708

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.10 0.15 0.14 0.17 0.14 0.07 0.07 0.25 0.25 0.10 0.25 0.25

Crit Moves: **** **** **** ****

Scenario:OY AM

Command:OY AM

Volume:OY AM

Geometry:Default Geometry

Impact Fee:Default Impact Fee

Trip Generation:None

Trip Distribution:Project

Paths:Default Path

Routes:Default Route

Configuration:OY AM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.2	0.027	B	10.4	0.069	+ 0.249 D/V
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx	0.582	A	xxxxx	0.586	+ 0.004 V/C
# 3 Rosecrans Ave at Vermont Ave	B	xxxxx	0.670	B	xxxxx	0.691	+ 0.022 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```

*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.5      Worst Case Level Of Service: B[ 10.4]
*****

Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0      0      0      0 994      29      0      0      19      0      0      0
Growth Adj:      1.01 1.01      1.01      1.01 1.01      1.01      1.01 1.01      1.01      1.01 1.01      1.01
Initial Bse:      0      0      0      0 1001      29      0      0      19      0      0      0
Added Vol:      0      0      0      0      0      0      0      0      0      0      0      0
Cum Proj:      0      6      0      0      6      31      0      0      30      0      0      0
Initial Fut:      0      6      0      0 1007      60      0      0      49      0      0      0
User Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Volume:      0      6      0      0 1007      60      0      0      49      0      0      0
Reduct Vol:      0      0      0      0      0      0      0      0      0      0      0      0
FinalVolume:      0      6      0      0 1007      60      0      0      49      0      0      0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      336 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      711 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      711 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.07 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.2 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.4 xxxxx xxxx xxxxx
LOS by Move:      *      *      *      *      *      *      *      *      *      *      *      *
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shared LOS:      *      *      *      *      *      *      *      *      *      *      *      *
ApproachDel: xxxxxx      xxxxxx      10.4      xxxxxx
ApproachLOS:      *      *      B      *
*****
Note: Queue reported is the number of cars per lane.
*****

```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.586
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	39	Level Of Service:	A

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 16 103 61 131 142 32 26 960 29 33 1097 236

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 16 104 61 132 143 32 26 967 29 33 1105 238

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Cum Proj: 0 0 0 0 0 0 0 0 43 0 0 19 0

Initial Fut: 16 104 61 132 143 32 26 1010 29 33 1124 238

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 16 104 61 132 143 32 26 1010 29 33 1124 238

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 16 104 61 132 143 32 26 1010 29 33 1124 238

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 16 104 61 132 143 32 26 1010 29 33 1124 238

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.63 0.37 1.00 0.82 0.18 1.00 2.92 0.08 1.00 2.48 0.52

Final Sat.: 1600 1005 595 1600 1306 294 1600 4665 135 1600 3962 838

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.01 0.10 0.10 0.08 0.11 0.11 0.02 0.22 0.22 0.02 0.28 0.28

Crit Moves: ****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.691
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	49	Level Of Service:	B

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 121 451 85 206 581 94 100 977 76 166 1188 159

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 122 454 86 207 585 95 101 984 77 167 1196 160

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Cum Proj: 0 13 3 15 14 8 9 35 1 1 11 8

Initial Fut: 122 467 89 222 599 103 110 1019 78 168 1207 168

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 122 467 89 222 599 103 110 1019 78 168 1207 168

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 122 467 89 222 599 103 110 1019 78 168 1207 168

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 122 467 89 222 599 103 110 1019 78 168 1207 168

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.79 0.21 1.00 2.63 0.37

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4461 339 1600 4213 587

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.08 0.10 0.06 0.14 0.12 0.06 0.07 0.23 0.23 0.11 0.29 0.29

Crit Moves: ****

Scenario:OY PM

Command:OY PM

Volume:OY PM

Geometry:Default Geometry

Impact Fee:Default Impact Fee

Trip Generation:None

Trip Distribution:Project

Paths:Default Path

Routes:Default Route

Configuration:OY PM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.5	0.033	B	10.7	0.068	+ 0.224 D/V
# 2 Rosecrans Ave at Budlong Ave	B	xxxxx	0.602	B	xxxxx	0.607	+ 0.006 V/C
# 3 Rosecrans Ave at Vermont Ave	C	xxxxx	0.770	C	xxxxx	0.787	+ 0.016 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```

*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.4      Worst Case Level Of Service: B[ 10.7]
*****
Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0      0      0      0 1098      22      0      0      22      0      0      0
Growth Adj:      1.01 1.01      1.01      1.01 1.01      1.01      1.01 1.01      1.01      1.01 1.01      1.01
Initial Bse:      0      0      0      0 1106      22      0      0      22      0      0      0
Added Vol:      0      0      0      0      0      0      0      0      0      0      0      0
Cum Proj:      0      7      0      0      7      25      0      0      24      0      0      0
Initial Fut:      0      7      0      0 1113      47      0      0      46      0      0      0
User Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Volume:      0      7      0      0 1113      47      0      0      46      0      0      0
Reduct Vol:      0      0      0      0      0      0      0      0      0      0      0      0
FinalVolume:      0      7      0      0 1113      47      0      0      46      0      0      0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      371 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      679 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      679 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.07 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.2 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.7 xxxxx xxxx xxxxx
LOS by Move:      *      *      *      *      *      *      *      *      *      *      *      *
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shared LOS:      *      *      *      *      *      *      *      *      *      *      *      *
ApproachDel:      xxxxxx      xxxxxx      10.7      xxxxxx
ApproachLOS:      *      *      B      *
*****
Note: Queue reported is the number of cars per lane.
*****

```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.607
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	41	Level Of Service:	B

Street Name:	Budlong Ave	Rosecrans Ave
Approach:	North Bound	South Bound
Movement:	L - T - R	L - T - R

Control:	Permitted	Permitted	Protected	Protected
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	1 0 0 1 0	1 0 0 1 0	1 0 2 1 0	1 0 2 1 0

-----|-----|-----|-----|-----|

Volume Module:

Base Vol:	42	133	44	117	159	38	53	1199	82	76	1052	134
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	42	134	44	118	160	38	53	1207	83	77	1059	135
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Cum Proj:	0	0	0	0	0	0	0	27	0	0	42	0
Initial Fut:	42	134	44	118	160	38	53	1234	83	77	1101	135
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	42	134	44	118	160	38	53	1234	83	77	1101	135
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	42	134	44	118	160	38	53	1234	83	77	1101	135
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	42	134	44	118	160	38	53	1234	83	77	1101	135

-----|-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.75	0.25	1.00	0.81	0.19	1.00	2.81	0.19	1.00	2.67	0.33
Final Sat.:	1600	1202	398	1600	1291	309	1600	4499	301	1600	4276	524

-----|-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat:	0.03	0.11	0.11	0.07	0.12	0.12	0.03	0.27	0.27	0.05	0.26	0.26
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.787
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	64	Level Of Service:	C

Street Name:	Vermont Ave	Rosecrans Ave
Approach:	North Bound	South Bound
Movement:	L - T - R	L - T - R

Control:	Protected	Protected	Protected	Protected
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	1 0 3 0 1	1 0 3 0 1	1 0 2 1 0	1 0 2 1 0

-----|-----|-----|-----|-----|

Volume Module:

Base Vol:	153	698	223	270	678	110	113	1142	72	158	1017	170
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	154	703	225	272	683	111	114	1150	72	159	1024	171
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Cum Proj:	1	13	2	12	12	7	6	21	0	3	36	6
Initial Fut:	155	716	227	284	695	118	120	1171	72	162	1060	177
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	155	716	227	284	695	118	120	1171	72	162	1060	177
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	716	227	284	695	118	120	1171	72	162	1060	177
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	155	716	227	284	695	118	120	1171	72	162	1060	177

-----|-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	2.83	0.17	1.00	2.57	0.43
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	4520	280	1600	4113	687

-----|-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat:	0.10	0.15	0.14	0.18	0.14	0.07	0.07	0.26	0.26	0.10	0.26	0.26
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****

Scenario Report

Scenario: OY WP AM
 Command: OY WP AM
 Volume: OY AM
 Geometry: Default Geometry
 Impact Fee: Default Impact Fee
 Trip Generation: Project AM
 Trip Distribution: Project
 Paths: Default Path
 Routes: Default Route
 Configuration: OY WP AM

Trip Generation Report

Forecast for Project AM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Stonfield 63	1.00	Multifamily Ho	6.00	17.00	6	17	23	100.0
	Zone 1 Subtotal					6	17	23	100.0
TOTAL						6	17	23	100.0

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report						
Level Of Service						
Intersection	Base			Future		
	LOS	Del/Veh	V/C	LOS	Del/Veh	V/C
# 1 141st St at Vermont Ave	B	10.2	0.027	B	10.6	0.093
# 2 Rosecrans Ave at Budlong Ave	A	xxxxx	0.582	A	xxxxx	0.587
# 3 Rosecrans Ave at Vermont Ave	B	xxxxx	0.670	B	xxxxx	0.699

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[10.6]

Street Name:	Vermont Ave			141st St		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		

Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign		
Rights:	Include	Include	Include	Include		
Lanes:	0 0 0 0 0	0 0 3 0 1	0 0 0 0 1	0 0 0 0 0		

Volume Module:	Vermont Ave			141st St		
Base Vol:	0	0	0	0	994	29
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	0	0	0	1001	29
Added Vol:	0	0	0	0	0	6
Cum Proj:	0	6	0	0	6	31
Initial Fut:	0	6	0	0	1007	66
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	6	0	0	1007	66
Reduct Vol:	0	0	0	0	0	0
FinalVolume:	0	6	0	0	1007	66

Critical Gap Module:	Vermont Ave			141st St		
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx

Capacity Module:	Vermont Ave			141st St		
Cnflct Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

Level Of Service Module:	Vermont Ave			141st St		
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LQS by Move:	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxx	xxxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxx	xxxxx	xxxxx
Shared LQS:	*	*	*	*	*	*
ApproachDel:	xxxxxx	xxxxxx	10.6	xxxxxx		
ApproachLQS:	*	*	B	*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.587

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 39 Level Of Service: A

Street Name:	Budlong Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		

Control:	Permitted	Permitted	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0	0	0	0	0	0

Y+R:	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	1

Volume Module:	Budlong Ave			Rosecrans Ave		
Base Vol:	16	103	61	131	142	32
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	16	104	61	132	143	32
Added Vol:	0	0	0	0	0	0
Cum Proj:	0	0	0	0	0	0
Initial Fut:	16	104	61	132	143	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	16	104	61	132	143	32
Reduct Vol:	0	0	0	0	0	0
Reduced Vol:	16	104	61	132	143	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	104	61	132	143	32

Saturation Flow Module:	Budlong Ave			Rosecrans Ave		
Sat/Lane:	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.63	0.37	1.00	0.82	0.18
Final Sat.:	1600	1005	595	1600	1306	294

Capacity Analysis Module:	Budlong Ave			Rosecrans Ave		
Vol/Sat:	0.01	0.10	0.10	0.08	0.11	0.11
Crit Moves:	****	****	****	****	****	****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.699

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 50 Level Of Service: B

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 121 451 85 206 581 94 100 977 76 166 1188 159

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 122 454 86 207 585 95 101 984 77 167 1196 160

Added Vol: 0 1 0 9 3 5 2 0 0 0 0 2

Cum Proj: 0 13 3 15 14 8 9 35 1 1 11 8

Initial Fut: 122 468 89 231 602 108 112 1019 78 168 1207 170

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 122 468 89 231 602 108 112 1019 78 168 1207 170

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 122 468 89 231 602 108 112 1019 78 168 1207 170

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 122 468 89 231 602 108 112 1019 78 168 1207 170

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.79 0.21 1.00 2.63 0.37

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4461 339 1600 4207 593

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.08 0.10 0.06 0.14 0.13 0.07 0.07 0.23 0.23 0.11 0.29 0.29

Crit Moves: **** **** **** ****

Scenario Report

Scenario: OY WP PM
 Command: OY WP PM
 Volume: OY PM
 Geometry: Default Geometry
 Impact Fee: Default Impact Fee
 Trip Generation: Project PM
 Trip Distribution: Project
 Paths: Default Path
 Routes: Default Route
 Configuration: OY WP PM

Trip Generation Report

Forecast for Project PM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Stonfield 63	1.00	Multifamily Ho	17.00	11.00	17	11	28	100.0
	Zone 1 Subtotal					17	11	28	100.0
TOTAL						17	11	28	100.0

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report										
Level Of Service										
Intersection				Base			Future			Change in
				Del/	V/		Del/	V/		
#	1	141st St at Vermont Ave	LOS	Veh	C	LOS	Veh	C		
			B	10.5	0.033	B	10.8	0.084	+	0.325 D/V
#	2	Rosecrans Ave at Budlong Ave	B	xxxxx	0.602	B	xxxxx	0.608	+	0.007 V/C
#	3	Rosecrans Ave at Vermont Ave	C	xxxxx	0.770	C	xxxxx	0.791	+	0.021 V/C

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[10.8]

Street Name: Vermont Ave 141st St

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 0 0 0 0 0 3 0 1 0 0 0 0 1 0 0 0 0 0

Volume Module:

Base Vol: 0 0 0 0 1098 22 0 0 22 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 0 0 0 1106 22 0 0 22 0 0 0

Added Vol: 0 0 0 0 0 17 0 0 11 0 0 0

Cum Proj: 0 7 0 0 7 25 0 0 24 0 0 0

Initial Fut: 0 7 0 0 1113 64 0 0 57 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 0 7 0 0 1113 64 0 0 57 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 0 7 0 0 1113 64 0 0 57 0 0 0

Critical Gap Module:

Critical Gp:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 6.2 xxxxx xxxx xxxxx

FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 3.3 xxxxx xxxx xxxxx

Capacity Module:

Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 371 xxxxx xxxx xxxxx

Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 679 xxxxx xxxx xxxxx

Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 679 xxxxx xxxx xxxxx

Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx 0.08 xxxxx xxxx xxxxx

Level Of Service Module:

2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.3 xxxxx xxxx xxxxx

Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.8 xxxxx xxxx xxxxx

LOS by Move: * * * * * B * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx

SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shared LOS: * * * * * * * * *

ApproachDel: xxxxxx xxxxxx 10.8 xxxxxx

ApproachLOS: * * * * * B * *

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.608

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 41 Level Of Service: B

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 42 133 44 117 159 38 53 1199 82 76 1052 134

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 42 134 44 118 160 38 53 1207 83 77 1059 135

Added Vol: 0 0 0 0 0 0 0 5 0 0 3 0

Cum Proj: 0 0 0 0 0 0 0 27 0 0 42 0

Initial Fut: 42 134 44 118 160 38 53 1239 83 77 1104 135

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 42 134 44 118 160 38 53 1239 83 77 1104 135

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 42 134 44 118 160 38 53 1239 83 77 1104 135

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 42 134 44 118 160 38 53 1239 83 77 1104 135

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.75 0.25 1.00 0.81 0.19 1.00 2.81 0.19 1.00 2.67 0.33

Final Sat.: 1600 1202 398 1600 1291 309 1600 4500 300 1600 4277 523

Capacity Analysis Module:

Vol/Sat: 0.03 0.11 0.11 0.07 0.12 0.12 0.03 0.28 0.28 0.05 0.26 0.26

Crit Moves: **** **** **** ****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.791

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 65 Level Of Service: C

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 153 698 223 270 678 110 113 1142 72 158 1017 170

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 154 703 225 272 683 111 114 1150 72 159 1024 171

Added Vol: 0 3 0 6 2 3 5 0 0 0 0 6

Cum Proj: 1 13 2 12 12 7 6 21 0 3 36 6

Initial Fut: 155 719 227 290 697 121 125 1171 72 162 1060 183

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 155 719 227 290 697 121 125 1171 72 162 1060 183

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 155 719 227 290 697 121 125 1171 72 162 1060 183

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 155 719 227 290 697 121 125 1171 72 162 1060 183

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Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.83 0.17 1.00 2.56 0.44

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4520 280 1600 4093 707

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.10 0.15 0.14 0.18 0.15 0.08 0.08 0.26 0.26 0.10 0.26 0.26

Crit Moves: **** **** **** ****

Scenario Report

Scenario: BO AM

Command: BO AM

Volume: BO AM

Geometry: Default Geometry

Impact Fee: Default Impact Fee

Trip Generation: None

Trip Distribution: Project

Paths: Default Path

Routes: Default Route

Configuration: BO AM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.3	0.029	B	10.3	0.029	+ 0.000 D/V
# 2 Rosecrans Ave at Budlong Ave	B	xxxxx	0.609	B	xxxxx	0.609	+ 0.000 V/C
# 3 Rosecrans Ave at Vermont Ave	C	xxxxx	0.703	C	xxxxx	0.703	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```

*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.2      Worst Case Level Of Service: B[ 10.3]
*****
Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0 0 0      0 994 29      0 0 19      0 0 0
Growth Adj:      1.07 1.07 1.07      1.07 1.07 1.07      1.07 1.07 1.07      1.07 1.07 1.07
Initial Bse:      0 0 0      0 1059 31      0 0 20      0 0 0
Added Vol:      0 0 0      0 0 0      0 0 0      0 0 0
PasserByVol:      0 0 0      0 0 0      0 0 0      0 0 0
Initial Fut:      0 0 0      0 1059 31      0 0 20      0 0 0
User Adj:      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Volume:      0 0 0      0 1059 31      0 0 20      0 0 0
Reduct Vol:      0 0 0      0 0 0      0 0 0      0 0 0
FinalVolume:      0 0 0      0 1059 31      0 0 20      0 0 0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      353 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      695 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      695 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.03 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.1 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.3 xxxxx xxxx xxxxx
LOS by Move:      * * *      * * *      * * *      * * *
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shared LOS:      * * *      * * *      * * *      * * *
ApproachDel:      xxxxxx      xxxxxx      10.3      xxxxxx
ApproachLOS:      *      *      B      *
*****
Note: Queue reported is the number of cars per lane.
*****

```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.609
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	41	Level Of Service:	B

Street Name:	Budlong Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Permitted	Permitted	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0		
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0		
Lanes:	1 0 0 1 0	1 0 0 1 0	1 0 2 1 0	1 0 2 1 0		

Volume Module:												
Base Vol:	16	103	61	131	142	32	26	960	29	33	1097	236
Growth Adj:	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Initial Bse:	17	110	65	140	151	34	28	1022	31	35	1168	251
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	110	65	140	151	34	28	1022	31	35	1168	251
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	17	110	65	140	151	34	28	1022	31	35	1168	251
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	110	65	140	151	34	28	1022	31	35	1168	251
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	17	110	65	140	151	34	28	1022	31	35	1168	251

Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.63	0.37	1.00	0.82	0.18	1.00	2.91	0.09	1.00	2.47	0.53
Final Sat.:	1600	1005	595	1600	1306	294	1600	4659	141	1600	3950	850

Capacity Analysis Module:												
Vol/Sat:	0.01	0.11	0.11	0.09	0.12	0.12	0.02	0.22	0.22	0.02	0.30	0.30
Crit Moves:	****			****			****			****		

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.703
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	Level Of Service:	C

Street Name:	Vermont Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Protected	Protected	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0		
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0		
Lanes:	1 0 3 0 1	1 0 3 0 1	1 0 2 1 0	1 0 2 1 0		

Volume Module:												
Base Vol:	121	451	85	206	581	94	100	977	76	166	1188	159
Growth Adj:	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Initial Bse:	129	480	91	219	619	100	107	1041	81	177	1265	169
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	129	480	91	219	619	100	107	1041	81	177	1265	169
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	129	480	91	219	619	100	107	1041	81	177	1265	169
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	129	480	91	219	619	100	107	1041	81	177	1265	169
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	129	480	91	219	619	100	107	1041	81	177	1265	169

Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	2.78	0.22	1.00	2.65	0.35
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	4454	346	1600	4233	567

Capacity Analysis Module:												
Vol/Sat:	0.08	0.10	0.06	0.14	0.13	0.06	0.07	0.23	0.23	0.11	0.30	0.30
Crit Moves:	****			****			****			****		

Scenario Report

Scenario: BO PM

Command: BO PM

Volume: BO PM

Geometry: Default Geometry

Impact Fee: Default Impact Fee

Trip Generation: None

Trip Distribution: Project

Paths: Default Path

Routes: Default Route

Configuration: BO PM

Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.6	0.035	B	10.6	0.035	+ 0.000 D/V
# 2 Rosecrans Ave at Budlong Ave	B	xxxxx	0.631	B	xxxxx	0.631	+ 0.000 V/C
# 3 Rosecrans Ave at Vermont Ave	D	xxxxx	0.809	D	xxxxx	0.809	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```

*****
Intersection #1 141st St at Vermont Ave
*****
Average Delay (sec/veh):      0.2      Worst Case Level Of Service: B[ 10.6]
*****
Street Name:      Vermont Ave      141st St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
Control:      Uncontrolled      Uncontrolled      Stop Sign      Stop Sign
Rights:      Include      Include      Include      Include
Lanes:      0 0 0 0 0      0 0 3 0 1      0 0 0 0 1      0 0 0 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      0      0      0      0 1098      22      0      0      22      0      0      0
Growth Adj:      1.07 1.07      1.07      1.07 1.07      1.07      1.07 1.07      1.07      1.07 1.07      1.07
Initial Bse:      0      0      0      0 1169      23      0      0      23      0      0      0
Added Vol:      0      0      0      0      0      0      0      0      0      0      0      0
PasserByVol:      0      0      0      0      0      0      0      0      0      0      0      0
Initial Fut:      0      0      0      0 1169      23      0      0      23      0      0      0
User Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Adj:      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00      1.00 1.00      1.00
PHF Volume:      0      0      0      0 1169      23      0      0      23      0      0      0
Reduct Vol:      0      0      0      0      0      0      0      0      0      0      0      0
FinalVolume:      0      0      0      0 1169      23      0      0      23      0      0      0
-----|-----|-----|-----|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      3.3 xxxxx xxxx xxxxx
-----|-----|-----|-----|
Capacity Module:
Cnflct Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      390 xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      663 xxxx xxxx xxxxx
Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      663 xxxx xxxx xxxxx
Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx      0.04 xxxx xxxx xxxxx
-----|-----|-----|-----|
Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      0.1 xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      10.6 xxxxx xxxx xxxxx
LOS by Move:      *      *      *      *      *      *      *      *      *      *      *      *
Movement:      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT      LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx      xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx      xxxxx xxxxx xxxxx
Shared LOS:      *      *      *      *      *      *      *      *      *      *      *      *
ApproachDel:      xxxxxx      xxxxxx      10.6      xxxxxx
ApproachLOS:      *      *      B      *
*****
Note: Queue reported is the number of cars per lane.
*****

```

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.631
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 43 Level Of Service: B

Street Name:	Budlong Ave			Rosecrans Ave		
Approach:	North Bound		South Bound	East Bound		West Bound
Movement:	L	T	R	L	T	R
Control:	Permitted		Permitted	Protected		Protected
Rights:	Include		Include	Include		Include
Min. Green:	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	2	1

Volume Module:

Base Vol:	42	133	44	117	159	38	53	1199	82	76	1052	134
Growth Adj:	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Initial Bse:	45	142	47	125	169	40	56	1277	87	81	1120	143
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	142	47	125	169	40	56	1277	87	81	1120	143
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	45	142	47	125	169	40	56	1277	87	81	1120	143
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	45	142	47	125	169	40	56	1277	87	81	1120	143
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	45	142	47	125	169	40	56	1277	87	81	1120	143

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.75	0.25	1.00	0.81	0.19	1.00	2.81	0.19	1.00	2.66	0.34
Final Sat.:	1600	1202	398	1600	1291	309	1600	4493	307	1600	4258	542

Capacity Analysis Module:

Vol/Sat:	0.03	0.12	0.12	0.08	0.13	0.13	0.04	0.28	0.28	0.05	0.26	0.26
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.809
 Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 69 Level Of Service: D

Street Name:	Vermont Ave			Rosecrans Ave		
Approach:	North Bound		South Bound	East Bound		West Bound
Movement:	L	T	R	L	T	R
Control:	Protected		Protected	Protected		Protected
Rights:	Include		Include	Include		Include
Min. Green:	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	0

Volume Module:

Base Vol:	153	698	223	270	678	110	113	1142	72	158	1017	170
Growth Adj:	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Initial Bse:	163	743	237	288	722	117	120	1216	77	168	1083	181
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	163	743	237	288	722	117	120	1216	77	168	1083	181
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	163	743	237	288	722	117	120	1216	77	168	1083	181
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	163	743	237	288	722	117	120	1216	77	168	1083	181
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	163	743	237	288	722	117	120	1216	77	168	1083	181

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	2.82	0.18	1.00	2.57	0.43
Final Sat.:	1600	4800	1600	1600	4800	1600	1600	4515	285	1600	4113	687

Capacity Analysis Module:

Vol/Sat:	0.10	0.15	0.15	0.18	0.15	0.07	0.08	0.27	0.27	0.11	0.26	0.26
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****

Scenario Report

Scenario: BO WP AM
 Command: BO WP AM
 Volume: BO AM
 Geometry: Default Geometry
 Impact Fee: Default Impact Fee
 Trip Generation: Project AM
 Trip Distribution: Project
 Paths: Default Path
 Routes: Default Route
 Configuration: BO WP AM

Trip Generation Report

Forecast for Project AM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Stonfield 63	1.00	Multifamily Ho	6.00	17.00	6	17	23	100.0
	Zone 1 Subtotal					6	17	23	100.0
TOTAL						6	17	23	100.0

 Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

 Impact Analysis Report
 Level Of Service

Intersection	Base		Future		Change in
	LOS	Del/ Veh C	LOS	Del/ Veh C	
# 1 141st St at Vermont Ave	B	10.3 0.029	B	10.5 0.054	+ 0.138 D/V
# 2 Rosecrans Ave at Budlong Ave	B	xxxxx 0.609	B	xxxxx 0.610	+ 0.001 V/C
# 3 Rosecrans Ave at Vermont Ave	C	xxxxx 0.703	C	xxxxx 0.710	+ 0.007 V/C

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[10.5]

Street Name:	Vermont Ave			141st St		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign		
Rights:	Include	Include	Include	Include		
Lanes:	0 0 0 0 0	0 0 3 0 1	0 0 0 0 1	0 0 0 0 0		
Volume Module:						
Base Vol:	0 0 0	0 994 29	0 0 19	0 0 0		
Growth Adj:	1.07 1.07 1.07	1.07 1.07 1.07	1.07 1.07 1.07	1.07 1.07 1.07		
Initial Bse:	0 0 0	0 1059 31	0 0 20	0 0 0		
Added Vol:	0 0 0	0 0 6	0 0 17	0 0 0		
PasserByVol:	0 0 0	0 0 0	0 0 0	0 0 0		
Initial Fut:	0 0 0	0 1059 37	0 0 37	0 0 0		
User Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00		
PHF Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00		
PHF Volume:	0 0 0	0 1059 37	0 0 37	0 0 0		
Reduct Vol:	0 0 0	0 0 0	0 0 0	0 0 0		
FinalVolume:	0 0 0	0 1059 37	0 0 37	0 0 0		

Critical Gap Module:

Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxxx	3.3	xxxxx	xxxx	xxxxx

Capacity Module:

Cnflct Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	353	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	695	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	695	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxxx

Level Of Service Module:

2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.2	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx
LQS by Move:	*	*	*	*	*	*	*	*	B	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT								
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LQS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx	xxxxxx							10.5	xxxxxx		
ApproachLQS:	*	*							B	*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.610
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	41	Level Of Service:	B

Street Name:	Budlong Ave			Rosecrans Ave		
Approach:	North Bound	South Bound	East Bound	West Bound		
Movement:	L - T - R	L - T - R	L - T - R	L - T - R		
Control:	Permitted	Permitted	Protected	Protected		
Rights:	Include	Include	Include	Include		
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0		
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0		
Lanes:	1 0 0 1 0	1 0 0 1 0	1 0 2 1 0	1 0 2 1 0		
Volume Module:						
Base Vol:	16 103	61 131 142	32 26 960	29 33 1097		236
Growth Adj:	1.07 1.07	1.07 1.07 1.07	1.07 1.07	1.07 1.07		1.07
Initial Bse:	17 110	65 140 151	34 28 1022	31 35 1168		251
Added Vol:	0 0 0	0 0 0	0 2 0	0 5 0		0
PasserByVol:	0 0 0	0 0 0	0 0 0	0 0 0		0
Initial Fut:	17 110	65 140 151	34 28 1024	31 35 1173		251
User Adj:	1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00 1.00		1.00
PHF Adj:	1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00 1.00		1.00
PHF Volume:	17 110	65 140 151	34 28 1024	31 35 1173		251
Reduct Vol:	0 0 0	0 0 0	0 0 0	0 0 0		0
Reduced Vol:	17 110	65 140 151	34 28 1024	31 35 1173		251
PCE Adj:	1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00 1.00		1.00
MLF Adj:	1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00 1.00		1.00
FinalVolume:	17 110	65 140 151	34 28 1024	31 35 1173		251

Saturation Flow Module:

Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.63	0.37	1.00	0.82	0.18	1.00	2.91	0.09
Final Sat.:	1600	1005	595	1600	1306	294	1600	4660	140

Capacity Analysis Module:

Vol/Sat:	0.01	0.11	0.11	0.09	0.12	0.12	0.02	0.22	0.22	0.02	0.30	0.30
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.710

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 51 Level Of Service: C

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 121 451 85 206 581 94 100 977 76 166 1188 159

Growth Adj: 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07

Initial Bse: 129 480 91 219 619 100 107 1041 81 177 1265 169

Added Vol: 0 1 0 9 3 5 2 0 0 0 0 2

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 129 481 91 228 622 105 109 1041 81 177 1265 171

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 129 481 91 228 622 105 109 1041 81 177 1265 171

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 129 481 91 228 622 105 109 1041 81 177 1265 171

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 129 481 91 228 622 105 109 1041 81 177 1265 171

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.78 0.22 1.00 2.64 0.36

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4454 346 1600 4228 572

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.08 0.10 0.06 0.14 0.13 0.07 0.07 0.23 0.23 0.11 0.30 0.30

Crit Moves: **** **** **** ****

Scenario Report

Scenario:BO WP PM

Command:BO WP PM

Volume:BO PM

Geometry:Default Geometry

Impact Fee:Default Impact Fee

Trip Generation:Project PM

Trip Distribution:Project

Paths:Default Path

Routes:Default Route

Configuration:BO WP PM

Trip Generation Report

Forecast for Project PM

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips		Total % Of	
						In	Out	Trips	Total
1	Stonfield 63	1.00	Multifamily Ho	17.00	11.00	17	11	28	100.0
	Zone 1 Subtotal					17	11	28	100.0
TOTAL						17	11	28	100.0

 Trip Distribution Report

Percent Of Trips Project

Zone	To Gates			
	1	2	3	5
1	20.0	35.0	15.0	30.0

 Impact Analysis Report
 Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 141st St at Vermont Ave	B	10.6	0.035	B	10.7	0.052	+ 0.098 D/V
# 2 Rosecrans Ave at Budlong Ave	B	xxxxx	0.631	B	xxxxx	0.632	+ 0.001 V/C
# 3 Rosecrans Ave at Vermont Ave	D	xxxxx	0.809	D	xxxxx	0.813	+ 0.004 V/C

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 141st St at Vermont Ave

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[10.7]

Street Name: Vermont Ave 141st St

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 0 0 0 0 0 3 0 1 0 0 0 0 1 0 0 0 0 0

Volume Module:

Base Vol: 0 0 0 0 1098 22 0 0 22 0 0 0

Growth Adj: 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07

Initial Bse: 0 0 0 0 1169 23 0 0 23 0 0 0

Added Vol: 0 0 0 0 0 17 0 0 11 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 0 0 0 1169 40 0 0 34 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 0 0 0 0 1169 40 0 0 34 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 0 0 0 0 1169 40 0 0 34 0 0 0

Critical Gap Module:

Critical Gap:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 6.2 xxxxx xxxx xxxxx

FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 3.3 xxxxx xxxx xxxxx

Capacity Module:

Conflict Vol: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 390 xxxxx xxxx xxxxx

Potent Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 663 xxxxx xxxx xxxxx

Move Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 663 xxxxx xxxx xxxxx

Volume/Cap: xxxx xxxx xxxx xxxx xxxx xxxxx xxxx xxxx 0.05 xxxxx xxxx xxxxx

Level Of Service Module:

2Way95thQ: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx 0.2 xxxxx xxxx xxxxx

Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.7 xxxxx xxxx xxxxx

LOS by Move: *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx

SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx

Shared LOS: *

ApproachDel: xxxxxx xxxxxx 10.7 xxxxxx

ApproachLOS: * * * * * B * *

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Rosecrans Ave at Budlong Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.632

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 43 Level Of Service: B

Street Name: Budlong Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 42 133 44 117 159 38 53 1199 82 76 1052 134

Growth Adj: 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07

Initial Bse: 45 142 47 125 169 40 56 1277 87 81 1120 143

Added Vol: 0 0 0 0 0 0 0 5 0 0 3 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 45 142 47 125 169 40 56 1282 87 81 1123 143

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 45 142 47 125 169 40 56 1282 87 81 1123 143

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 45 142 47 125 169 40 56 1282 87 81 1123 143

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 45 142 47 125 169 40 56 1282 87 81 1123 143

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.75 0.25 1.00 0.81 0.19 1.00 2.81 0.19 1.00 2.66 0.34

Final Sat.: 1600 1202 398 1600 1291 309 1600 4494 306 1600 4259 541

Capacity Analysis Module:

Vol/Sat: 0.03 0.12 0.12 0.08 0.13 0.13 0.04 0.29 0.29 0.05 0.26 0.26

Crit Moves: **** **** **** ****

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Rosecrans Ave at Vermont Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.813

Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 70 Level Of Service: D

Street Name: Vermont Ave Rosecrans Ave

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

-----|-----|-----|-----|

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 3 0 1 1 0 3 0 1 1 0 2 1 0 1 0 2 1 0

-----|-----|-----|-----|

Volume Module:

Base Vol: 153 698 223 270 678 110 113 1142 72 158 1017 170

Growth Adj: 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07

Initial Bse: 163 743 237 288 722 117 120 1216 77 168 1083 181

Added Vol: 0 3 0 6 2 3 5 0 0 0 0 6

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 163 746 237 294 724 120 125 1216 77 168 1083 187

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 163 746 237 294 724 120 125 1216 77 168 1083 187

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 163 746 237 294 724 120 125 1216 77 168 1083 187

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 163 746 237 294 724 120 125 1216 77 168 1083 187

-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane: 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 3.00 1.00 1.00 3.00 1.00 1.00 2.82 0.18 1.00 2.56 0.44

Final Sat.: 1600 4800 1600 1600 4800 1600 1600 4515 285 1600 4093 707

-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat: 0.10 0.16 0.15 0.18 0.15 0.08 0.08 0.27 0.27 0.11 0.26 0.26

Crit Moves: **** **** **** ****

LADOT CMA Spreadsheet Aug 2011 (VER 2).xls

Level of Service Worksheet (Circular 212 Method)



I/S #:	North-South Street:	Vermont Avenue	Year of Count:	2018	Ambient Growth: (%):	0.38	Conducted by:	SN	Date:	10/22/2018		
3	East-West Street:	Rosecrans Avenue	Projection Year:	2035	Peak Hour:	AM	Reviewed by:		Project:	Stonefield 63 Project		
No. of Phases					4				4			
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?					0				0			
Right Turns: FREE-1, NRTOR-2 or OLA-3?					0				0			
ATSAC-1 or ATSAC+ATCS-2?					0				0			
Override Capacity					0				0			
MOVEMENT					BUILD-OUT W/OUT PROJECT				BUILD-OUT WITH PROJECT			
					Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left				0	129	1	129	0	129	1	129
	Left-Through				0	481	3	160	1	482	3	161
	Through				0	91	1	3	0	91	1	3
	Through-Right				0		0		0		0	
	Right				0		0		0		0	
SOUTHBOUND	Left-Through-Right				0		0		0		0	
	Left-Right				0		0		0		0	
	Left				0	220	1	220	9	229	1	229
	Left-Through				0	619	3	206	3	622	3	207
	Through				0	100	1	47	5	105	1	51
EASTBOUND	Through-Right				0		0		0		0	
	Right				0		0		0		0	
	Left-Through-Right				0		0		0		0	
	Left-Right				0		0		0		0	
	Left				0	107	1	107	2	109	1	109
WESTBOUND	Left-Through				0		0		0		0	
	Through				0	1041	2	374	0	1041	2	374
	Through-Right				0	81	0	81	0	81	0	81
	Right				0		0		0		0	
	Left-Through-Right				0		0		0		0	
CRITICAL VOLUMES	Left-Right				0		0		0		0	
	Left				0	177	1	177	0	177	1	177
	Left-Through				0	1266	2	478	0	1266	2	479
	Through				0	169	0	169	2	171	0	171
	Through-Right				0		0		0		0	
CRITICAL VOLUMES					North-South: 380		North-South: 390		East-West: 588		East-West: 588	
VOLUME/CAPACITY (V/C) RATIO:					SUM: 965		SUM: 978		SUM: 978		SUM: 978	
V/C LESS ATSAC/ATCS ADJUSTMENT:					0.702		0.711		0.711		0.711	
LEVEL OF SERVICE (LOS):					0.702		0.711		0.711		0.711	
					C		C		C		C	

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.009	Δv/c after mitigation:	0.009
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet (Circular 212 Method)



I/S #:	North-South Street:	Vermont Avenue	Year of Count:	2018	Ambient Growth: (%):	0.233	Conducted by:	SN	Date:	10/22/2018					
3	East-West Street:	Rosecrans Avenue	Projection Year:	2021	Peak Hour:	PM	Reviewed by:		Project:	Stonefield 63 Project					
No. of Phases		4	4		4		4		4						
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?		0	0		0		0		0						
Right Turns: FREE-1, NRTOR-2 or OLA-3?		NB-- 0 SB-- 0	NB-- 0 SB-- 0		NB-- 0 SB-- 0		NB-- 0 SB-- 0		NB-- 0 SB-- 0						
ATSAC-1 or ATSAC+ATCS-2?		EB-- 0 WB-- 0	EB-- 0 WB-- 0		EB-- 0 WB-- 0		EB-- 0 WB-- 0		EB-- 0 WB-- 0						
Override Capacity		0	0		0		0		0						
MOVEMENT		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT			FUTURE CONDITION W/ PROJECT				
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	153	1	153	0	153	153	1	155	1	155	0	155	1	155
	Left-Through		0							0				0	
	Through	698	3	233	3	701	234	13	716	3	239	3	719	3	240
	Through-Right		0							0				0	
	Right	223	1	144	0	223	144	2	227	1	146	0	227	1	146
	Left-Through-Right		0							0				0	
	Left-Right		0							0				0	
SOUTHBOUND	Left	270	1	270	6	276	276	12	284	1	284	6	290	1	290
	Left-Through		0							0				0	
	Through	678	3	226	2	680	227	12	695	3	232	2	697	3	232
	Through-Right		0							0				0	
	Right	110	1	54	3	113	54	7	118	1	58	3	121	1	59
	Left-Through-Right		0							0				0	
	Left-Right		0							0				0	
EASTBOUND	Left	113	1	113	5	118	118	6	120	1	120	5	125	1	125
	Left-Through		0							0				0	
	Through	1142	2	405	0	1142	405	21	1171	2	415	0	1171	2	415
	Through-Right		1							1				1	
	Right	72	0	72	0	72	72	0	73	0	73	0	73	0	73
	Left-Through-Right		0							0				0	
	Left-Right		0							0				0	
WESTBOUND	Left	158	1	158	0	158	158	3	162	1	162	0	162	1	162
	Left-Through		0							0				0	
	Through	1017	2	396	0	1017	398	36	1060	2	412	0	1060	2	414
	Through-Right		1							1				1	
	Right	170	0	170	6	176	176	6	177	0	177	6	183	0	183
	Left-Through-Right		0							0				0	
	Left-Right		0							0				0	
CRITICAL VOLUMES		North-South: 503 East-West: 563 SUM: 1066	North-South: 510 East-West: 563 SUM: 1073		North-South: 523 East-West: 577 SUM: 1100		North-South: 530 East-West: 577 SUM: 1107								
VOLUME/CAPACITY (V/C) RATIO:		0.775	0.780		0.800		0.805								
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.775	0.780		0.800		0.805								
LEVEL OF SERVICE (LOS):		C	C		C		D								

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.005	Δv/c after mitigation:	0.005
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet (Circular 212 Method)



I/S #:	North-South Street:	Vermont Avenue	Year of Count:	2018	Ambient Growth: (%):	0.38	Conducted by:	SN	Date:	10/22/2018			
3	East-West Street:	Rosecrans Avenue	Projection Year:	2035	Peak Hour:	PM	Reviewed by:		Project:	Stonefield 63 Project			
No. of Phases						4			4				
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?						0			0				
Right Turns: FREE-1, NRTOR-2 or OLA-3?						NB-- 0 SB-- 0			NB-- 0 SB-- 0				
ATSAC-1 or ATSAC+ATCS-2?						EB-- 0 WB-- 0			EB-- 0 WB-- 0				
Override Capacity						0			0				
MOVEMENT						BUILD-OUT W/OUT PROJECT				BUILD-OUT WITH PROJECT			
						Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left					0	163	1	163	0	163	1	163
	Left-Through					0	744	0	248	1	745	0	248
	Through					0	238	3	154	0	238	3	154
	Through-Right					0		0		0		0	
	Right					0		0		0		0	
SOUTHBOUND	Left-Through-Right					0		0		0		0	
	Left-Right					0		0		0		0	
	Left					0	288	1	288	9	297	1	297
	Left-Through					0	723	0	241	3	726	0	242
	Through					0	117	3	57	5	122	3	61
EASTBOUND	Through-Right					0		0		0		0	
	Right					0		0		0		0	
	Left-Through-Right					0	120	1	120	2	122	1	122
	Left-Right					0	1217	0	431	0	1217	0	431
	Through					0	77	2	77	0	77	2	77
WESTBOUND	Through-Right					0		0		0		0	
	Right					0		0		0		0	
	Left-Through-Right					0	168	1	168	0	168	1	168
	Left-Right					0	1084	0	422	0	1084	0	422
	Through					0	181	2	181	2	183	1	183
CRITICAL VOLUMES						North-South: 536 East-West: 599 SUM: 1135				North-South: 545 East-West: 599 SUM: 1144			
VOLUME/CAPACITY (V/C) RATIO:						0.825				0.832			
V/C LESS ATSAC/ATCS ADJUSTMENT:						0.825				0.832			
LEVEL OF SERVICE (LOS):						D				D			

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.007	Δv/c after mitigation:	0.007
Significant impacted?	NO	Fully mitigated?	N/A

APPENDIX C

CUMULATIVE PROJECT INFORMATION

City of Gardena Projects					
Proj #	Project Type	Address	Project Description	Status	# of Units
1	Residential	1333 W. 168th Street	New 4-unit Condominium development	Planning Review	4
2	Residential	1348 W. 168th Street	New 10-Unit Small Lot Development	Planning Review	10
3	Residential	1112 Gardena Blvd.	12-Unit Mixed Use Building	Planning Review	12
4	Residential	1417 W. 141st St.	63 Three-story attached townhome development	Planning Review	63
5	Residential	13919 Normandie Ave.	Single Room Occupancy	Building and Safety Plan Check	20
6	Residential	1715 W. 149th St.	New 5-Unit Townhouse Development	Building and Safety Plan Check	5
7	Residential	1341 W. Gardena Blvd.	14-Unit Mixed Use Project	Building and Safety Plan Check	14
8	Residential	16819 Normandie Ave.	Single Room Occupancy	Building and Safety Plan Check	63
9	Commercial	15930 S. Western Avenue	New 2-story medical and professional office building	Building and Safety Plan Check	N/A
10	Commercial	14105 S. Vermont Ave.	Construction of a new 1,500 sq. ft. restaurant	Under Construction	1
11	Commercial	1201 W. 155th Ave.	11,550 square foot Dialysis Health Facility	Under Construction	N/A
12	Commercial	15106 S. Western Ave.	Refacade of an existing building and change of use from automotive repair to retail commercial	Under Construction	N/A
13	Commercial	1420 Redondo Beach Blvd.	New 4,053 square foot single story restaurant	Under Construction	2
14	Commercial	16210 Crenshaw Blvd	New 4,860 square-foot drive-thru restaurant	Under Construction	1
15	Residential	14504 S. Normandie Ave.	96 Townhome Units	Under Construction	96
16	Residential	15350 Van Ness Ave.	42 Townhome Units	Under Construction	42
17	Residential	16809 S. Normandie Ave.	21 Detached Single Family Homes	Under Construction	21
18	Residential	1147 W. Gardena Blvd.	4-Unit Apartment Complex	Under Construction	4
19	Residential	16958 S. Western Ave.	46 Townhome Units	Under Construction	46
20	Residential	15927 S. Brighton Ave.	2-Unit Apartment Complex	Under Construction	2
21	Residential	14321 Van Ness Ave.	40 Townhome/Live-Work Units	Under Construction	40
22	Residential	2315 Marine Avenue	New Mixed-Use Project	Potential Project	66
23	Residential	1515 W. 178th St.	New multi-family residential community	Potential Project	63

CLATS

Case Logging and Tracking System

Welcome **pedro!** | [Log Out](#) | [Profile](#) | [Admin](#)

RELATED PROJECTS

Centroid Info:

PROJ ID: 47558

Address: 1017 W 141st St
GARDENA, CA 90247

Lat/Long: 33.9032, -118.292

Include NULL "Trip info": ☐

Include NULL "FirstStudySubmittalDate" (latest) ☐

Include "Inactive" projects: ☐

Include "Do not show in Related Project": ☐

Net_AM_Trips - Select -

Net_PM_Trips - Select -

Net_Daily_Trips - Select -

Buffer Radius: mile

Record Count: 11 | Record Per Page: All Records

Results generated since: (9/19/2018 9:48:58 AM)

Proj ID	Office	Area	CD	Year	Project Title	Project Desc	Address	First Study Submittal Date	Inactive	Do not show in Related Project	Distance (mile)	Trip Info																																								
13477	Westchester	HRB	15	2009	Gardena High School Joint Occupancy Project	High School	1302 W 177th ST	12/28/2009	☐	☐	2.3	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Apartments</td><td>Total Units</td><td>131</td><td>67</td><td>81</td><td>872</td><td></td><td></td><td></td><td></td></tr><tr><td>Other</td><td>S.F. Gross Area</td><td>3500</td><td>6</td><td>5</td><td>80</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>73</td><td>86</td><td>952</td><td></td><td>0</td><td>0</td><td>0</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Apartments	Total Units	131	67	81	872					Other	S.F. Gross Area	3500	6	5	80								73	86	952		0	0	0
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
Apartments	Total Units	131	67	81	872																																															
Other	S.F. Gross Area	3500	6	5	80																																															
			73	86	952		0	0	0																																											
13687	Westchester	HRB	15	2011	Environmental Charter Middle School	Public Charter Middle School	812 W 165TH PL	09/26/2011	☐	☐	1.6	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>School</td><td>Enrollment</td><td>360</td><td>194</td><td>58</td><td>583</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>194</td><td>58</td><td>583</td><td></td><td>0</td><td>0</td><td>0</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	School	Enrollment	360	194	58	583								194	58	583		0	0	0										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
School	Enrollment	360	194	58	583																																															
			194	58	583		0	0	0																																											
42869	Westchester	HRB	15	2015	COU Laudromat to 7 Eleven	COU 7 Eleven replaces laundromat	600 E IMPERIAL HWY	04/03/2015	☐	☐	2.5	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Retail</td><td>S.F. Gross Area</td><td>2600</td><td>85</td><td>59</td><td>849</td><td>42</td><td>43</td><td>30</td><td>29</td></tr><tr><td></td><td></td><td></td><td>85</td><td>59</td><td>849</td><td></td><td>42</td><td>43</td><td>30</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Retail	S.F. Gross Area	2600	85	59	849	42	43	30	29				85	59	849		42	43	30										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
Retail	S.F. Gross Area	2600	85	59	849	42	43	30	29																																											
			85	59	849		42	43	30																																											
45306	Westchester	HRB	15	2017	Warehouse-Distribution Center	new 322,315 sf Warehouse for South Bay Distribution Ctr. on vacant lot	15134 S Vermont Av	05/03/2017	☐	☐	0.7	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Other</td><td>S.F. Gross Area</td><td>322315</td><td>125</td><td>134</td><td>1503</td><td>100</td><td>25</td><td>34</td><td>100</td></tr><tr><td></td><td></td><td></td><td>125</td><td>134</td><td>1503</td><td></td><td>100</td><td>25</td><td>34</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Other	S.F. Gross Area	322315	125	134	1503	100	25	34	100				125	134	1503		100	25	34										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
Other	S.F. Gross Area	322315	125	134	1503	100	25	34	100																																											
			125	134	1503		100	25	34																																											
45832	Metro	MTR	8	2017	Gas Station W/Convenience Store	6 Vehicle Fueling Positions	505 W Century bl	08/02/2017	☐	☐	3.0	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Gas Station</td><td>Fueling Positions</td><td>6</td><td>30</td><td>40</td><td>489</td><td>15</td><td>15</td><td>20</td><td>20</td></tr><tr><td></td><td></td><td></td><td>30</td><td>40</td><td>489</td><td></td><td>15</td><td>15</td><td>20</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Gas Station	Fueling Positions	6	30	40	489	15	15	20	20				30	40	489		15	15	20										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
Gas Station	Fueling Positions	6	30	40	489	15	15	20	20																																											
			30	40	489		15	15	20																																											
44207	Metro	MTR	8	2016	Gas Station	8 fuel positions & 2,830 sf convenience store	10000 S Vermont Ave	05/05/2016	☐	☐	2.9	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Gas Station</td><td>Fueling Positions</td><td>8</td><td>39</td><td>52</td><td>631</td><td>19</td><td>20</td><td>26</td><td>26</td></tr><tr><td></td><td></td><td></td><td>39</td><td>52</td><td>631</td><td></td><td>19</td><td>20</td><td>26</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Gas Station	Fueling Positions	8	39	52	631	19	20	26	26				39	52	631		19	20	26										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
Gas Station	Fueling Positions	8	39	52	631	19	20	26	26																																											
			39	52	631		19	20	26																																											
35754	Metro	MTR	8	2011	Mixed-Use	49 Senior Housing, 25 KSF Market	9402 S Broadway	08/05/2011	☐	☐	3.4	<table><thead><tr><th>Land Use</th><th>Unit ID</th><th>size</th><th>Net_AM_Trips</th><th>Net_PM_Trips</th><th>Net_Daily_Trips</th><th>NetAMIn</th><th>NetAMOut</th><th>NetPMIn</th><th>NetPMOut</th></tr></thead><tbody><tr><td>Other</td><td>Total Units</td><td>49</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Retail</td><td>S.F. Gross</td><td>25000</td><td>60</td><td>165</td><td>1705</td><td>35</td><td>25</td><td>85</td><td>80</td></tr></tbody></table>	Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut	Other	Total Units	49								Retail	S.F. Gross	25000	60	165	1705	35	25	85	80										
Land Use	Unit ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut																																											
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Retail	S.F. Gross	25000	60	165	1705	35	25	85	80																																											

http://dotplanning.dot.ci.la.ca.us/CLATS/FormViews/RelProjView.aspx?LAT=33.9031944&LON=-118.2921771&PROJ_ID=47558

1/2

												Area									
														60	165	1705		35	25	85	
42840	Metro	MTR	8	2015	Charter Middle School	275 Student Middle School	10045 S Western av	03/10/2015	☐	☐	3.0	Land_Use	Unit_ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut
												School	Enrollment	275	149	44	446	82	67	22	22
															149	44	446		82	67	22
35440	Metro	MTR	8	2010	Alliance Heritage Middle School	400 Students	9719 S MAIN ST	08/09/2010	☐	☐	3.3	Land_Use	Unit_ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut
												School	Seats	400	316	68	992				
															316	68	992		0	0	0
32976	Metro	SP	15	2006	Home Depot	143159 SF Home Improvement Store	661 W Redondo Beach Blvd	10/04/2006	☐	☐	0.8	Land_Use	Unit_ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut
												Other	S.F. Gross Area	143159	-13	114	2040	-50	37	87	27
															-13	114	2040		-50	37	87
33979	Metro	SP	15	2007	Office	61500 SF Office	19210 S Vermont Av	11/13/2006	☐	☐	3.1	Land_Use	Unit_ID	size	Net_AM_Trips	Net_PM_Trips	Net_Daily_Trips	NetAMIn	NetAMOut	NetPMIn	NetPMOut
												Office	S.F. Gross Area	61500	95	92	677				
															95	92	677		0	0	0

Sewer Area Studies



Sewer Area Study

Tract 082263
Stonefield
In the City of Gardena

Prepared for:

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Prepared by:



Telephone: (818) 832-1710

Prepared under the supervision of

Aret Binatli
R.C.E. 64448 (Exp. 30 Jun 19)

Date



October 5, 2018

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1. INTRODUCTION

Tract 082263 is located within the City of Gardena, and includes the addresses 14031 S. Vermont Avenue & 1017 W. 141st Street, 90247. The site is bound by Vermont Ave. to the east, West 141st Street to the southeast, Commercial property to the north and southwest and residential tracts, tracts 28241 and Mesalita Tract to the west. 63 attached condominiums are proposed to be constructed on the site. The general area is shown in Figure 1.

The study area is delineated by the existing sewer system in an urbanized area, which is roughly bound at the upstream end by W. El Segundo Blvd. to the north, Vermont Ave. to the east, Budlong Ave. to the west, and Rosecrans Ave. to the south. The study area terminates where the City of Gardena sewer main empties into the existing 15" Los Angeles County Sanitation District trunk sewer, in Rosecrans Ave. at Normandie Ave.

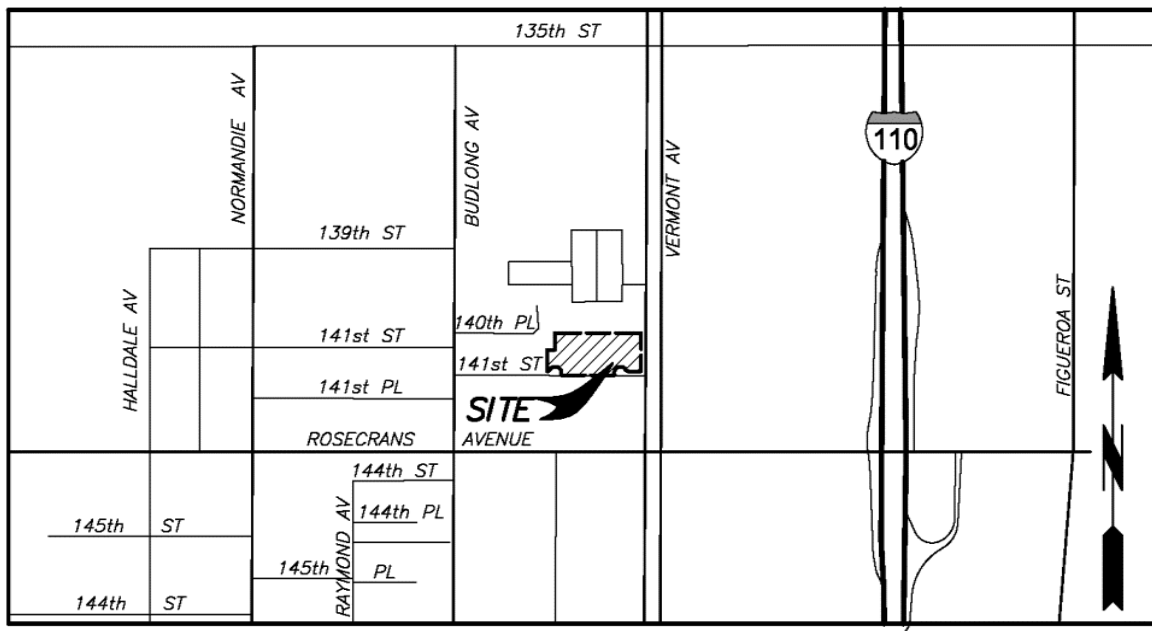


Figure 1. Vicinity map.

This report determines the adequacy of the existing public sewer system from the project to the trunk sewer connection at the intersection of Rosecrans Ave. and Normandie Ave.

2. SITE DESCRIPTION

The 2.56-acre site was previously zoned as commercial/light industrial. There are two existing commercial buildings onsite, the remainder of the site is a parking lot. All existing buildings and parking will be razed, for the proposed development.

3. PROJECT DESCRIPTION

The subject project will construct 63 attached condominium and open space area. The residences are three stories in height and of wood and stucco construction.

4. PROPOSED SEWER SYSTEM

The project site will be served by its own private sewer. A new line will be constructed from the project to an existing City of Gardena public sewer system in 141st Street, west of the project site. The point of connection will be made to the existing terminal manhole per City of Gardena Plan No. 7-117, Sewer Wall Map line B-8, MH 8. No new public sewer improvements are proposed onsite or offsite.

5. EXISTING SEWER SYSTEM

The existing sewer system serving the site is under the local jurisdiction of the City of Gardena. The City sewer main empties in to the Los Angeles County Sanitation District 15th trunk sewer in Rosecrans Ave. at Normandie Ave. The Sanitation Districts of Los Angeles County have reviewed the capacity of the existing trunk sewer and issued a will serve letter for the proposed project. A copy of the will serve letter for the proposed project is located in Appendix G.

The local sewer main is owned and maintained by the City of Gardena. The City sewer maintenance map, referred to as ‘wall map’, was used to identify specific reaches within this report. The wall map does not include MH ID numbers; therefore, the MH ID numbers referenced here in were assigned for this study only and are not applicable for any other purpose. The locations and labels of referenced MH ID’s have been added to the City of Gardena’s wall map located in Appendix L and Sewer Area Study Exhibit, Figure 2, located in Appendix M at the end of this report.

The upstream end of the study area is the City of Gardena limits at W. El Segundo Blvd., between Budlong Ave. and S. Vermont Ave. Reach 2, as shown in Figure 2, flows from the upstream limits of the study area south towards Rosecrans Ave. to MH 6 located on Rosecrans Ave. at Budlong Ave. Reach 3 flows parallel to Reach 2 and flows from W. 135th St. south towards Rosecrans Ave. and combines with the flow from Reach 2 at MH 6. Reach 1 begins at MH 6 and flows west along Rosecrans Ave to MH 0 located at the intersection of Rosecrans Ave. and Normandie Ave. MH 0 is the downstream end of the study area where the local sewer main empties into the Los Angeles County Sanitation Districts trunk sewer.

Reach 3 begins 135th St., extends south to Rosecrans Ave., and includes the project site. However, only the capacities of existing sewer mains downstream of the proposed development, between MH 10 and MH 6, were analyzed. A new sewer connection will connect the site to the existing system at existing MH 10. From MH 10, sewer flow is conveyed by an existing 8” VCP west along 141st St. to MH 8 located at the intersection of Budlong Ave. From MH 8, additional upstream flow combines with the flow from 141st St. and an existing 8” VCP flows south along Budlong Ave. to existing MH 6. The local sewer main between MH 8 and MH 6 is the critical portion of Reach 3 as it is the same size as the between MH 8 and MH10, but is flatter and has a higher flow.

Reach 2 runs parallel to the proposed development, receives no flow from the site; therefore the capacity of the existing sewer within Reach 2 is not analyzed.

Reach 1 consists of existing City sewer mains that convey the combined flows from Reaches 1, 2, and 3 from MH 6 to MH 0. Reach 1 is comprised of existing 10" VCP from MH 6 to MH 5, and from MH 5 to MH 0 the main is existing 8" VCP with an existing 12" VCP relief main running parallel. The critical section of Reach 1 is the existing 10" VCP. For analysis, 100% of the flow from Reach 1 is assumed to enter at the upstream end of the reach.

6. METHODOLOGY USED

6.1 Sewer Flow Determination

The study area is almost entirely developed; allowing for the use of direct counts of residential units, land area and building square footage. Therefore, the tributary flow rates for the sewer mains were based on County of Los Angeles and Sanitation District guidelines for occupancy rather than zones and lot area.

A combination of resources was used in determining the variables used to calculate flow generation. Tract and Parcel maps available online at the Los Angeles County Department of Public Works website were used to determine land area, and number of parcels when available. The Los Angeles County Assessor's website was used to determine land use, land area, dwelling units, occupancy, and gross floor areas. Areas were drawn against GIS data provided by Los Angeles County in AutoCAD format to verify areas.

6.1.1 Average Daily Flow

The Sanitation Districts of Los Angeles County has issued a Will Serve Letter dated May 3, 2018, which refers to "Table 1, Loadings for Each Class of Land Use" for determining the average wastewater flow expected from the proposed site. A copy of "Table 1, Loadings for Each Class of Land Use" is given in Appendix A of this report.

"Table 1" was also used to determine the average flow rate for the remaining study area. The Sanitation Districts loading table is used in favor of the Los Angeles County loading table because the County does not maintain the existing sewer, and the existing sewer connects directly to the Sanitation District's Trunk Sewer without any County systems in between. "Table 1" does not indicate if inflow and infiltration are included. No additional factor for inflow has been added because the system is not combined with storm, and covers a relatively small geographic area. Geotechnical reports for the proposed developed indicate groundwater is below 30' so infiltration is also not ignored. However, as this table is provided by the The calculated average sewer flow was determined by summing the products of number of units and flow rate factor for each property within each reach per "Table 1".

$$Q_{ADF} = U \times F$$

Where:

Q_{ADF} = Average Daily Flow (Gallons per day, GPD)

U = Land Use Unit of Measure as described in section 6.1.2

F = Average Daily Flow Factor (Gallons per day, GPD)

6.1.2 Land Use: Zoning, Dwelling Units & Building Floor Area

The unit of measure used for calculating the average daily flow for a particular piece of property were primarily dwelling units and building floor area based on “Table 1, Loadings for Each Class of Land Use”. In most circumstances, zoning was not used for calculation of flow generation because the study area is nearly completely developed. A copy of the City of Gardena zoning map is available in Appendix K at the end of this report as reference only.

The website for the Los Angeles County Assessor’s Office frequently lists the number of dwelling units on a property, including multi-family and condominium. The Assessor’s office also lists number of rooms within motels and hotels, and the number of spaces in a mobile home park. Where these data were available, they were used.

In portions of the study area, particularly in commercial and industrial zones, dwelling units or occupancy were not available, so the flow rate was determined by gross building floor area of the existing structure area. Building floor area was used to calculate flow generation based on a per 1000 ft² basis, with flows per day varying based on building use.

Parcels that are currently occupied by parking areas and contain no structures, including the parking adjacent to the Lady Luck Casino and The Church of the Holy Communion do not generate any flow in the current developed condition and were not included in the study. Similarly, several vacant and open space lots containing no buildings exist within the study area were assumed to not generate sewer flows.

6.1.3 Peak Flow Rate

The Los Angeles County Sanitation Districts “Table 1, Loadings for Each Class of Land Use” returns average daily flow in gallons per day, however to determine the capacity of the existing sewer mains the daily peak flow, or the largest flow anticipated during a given day, is utilized. The County of Los Angeles method for calculating the peak flow is to multiply the average daily flow by 2.5 as is noted on the County’s sewer flow loading table. A copy of the County’s loading table is given in Appendix K for reference to the peak flow factor only; the coefficients in this table are required for County maintained systems only. The peak flow factor is then converted to cubic feet per second (CFS) because it describes the above average flow during a relatively short period of time; does not have any effect on the average flow during the day; is used to calculate the capacity of a pipe.

$$Q_{PDF} = \frac{Q_{ADF} \times 2.5}{\left(7.48 \text{ ft}^3/\text{gal}\right) \times \left(86,400 \text{ sec}/\text{day}\right)}$$

Where:

Q_{PDF} = Peak Daily Flow (Cubic feet per second, CFS)

Q_{ADF} = Average Daily Flow (Gallons per day, GPD)

Average and peak flow rate calculations using the method described are located in Appendices B and C for existing and proposed conditions, respectively.

6.2 Flow Depth Calculation Determination

The County of Los Angeles uses Kutter's formula for pipe flow, with a roughness coefficient "n=0.013" per Los Angeles County Standard S-C4, Flow Diagram for Design of Circular Sanitary Sewers, see Appendix H. Bentley FlowMaster software was used, specifying Kutter's formula, to calculate the flow depth for each critical pipe segment within each reach downstream of the project site. Bentley FlowMaster reports for flow depth are located in Appendices D and E for existing and proposed conditions, respectively.

7. SEWER CAPACITY ANALYSIS

7.1 Capacity Analysis Methodology

The capacities of existing sewer pipes was analyzed per Los Angeles County Standard S-C4, whereby maximum design depth, 100% capacity, is half full ($d/D < 0.5$) for pipes less than 15 inches and three-quarters full ($d/D < 0.75$) for pipes equal to and greater than 15 inches.

$$< 15'' \text{ diameter} \quad \%Full = \frac{d}{0.5 \times D}$$

$$\geq 15'' \text{ diameter} \quad \%Full = \frac{d}{0.75 \times D} \rightarrow \text{Not used for this study}$$

Where:

D=Diameter of Pipe

d=depth of flow

Measurement and mitigation requirements are based on County of Los Angeles policy for sewage discharge in excess of design capacity; see Appendix I. Flows in excess of the maximum design capacity, 101 percent to 150 percent, do not immediately warrant measurements or mitigation. Flows in a study area that indicate conditions are between 151 percent to 200 percent capacity require flow measurements. If flow test indicates that the actual flow condition is below 151 percent, no mitigation is required. In addition, the City of Gardena required the monitoring of existing sewer flow downstream of the project site.

Table 7.1.a below summarizes the sewer flow rates, depths and capacities for the existing sewer downstream of the project site before the proposed development. The predevelopment analysis assumes no flow is generated by the existing site.

Table 7.1.b below summarizes the sewer flow rates, depths and capacities for the existing sewer downstream of the project site, same as predeveloped with the additional flow generated by the proposed 63 condominiums.

Refer to Sewer Area Study Exhibit, Figure 2 located in Appendix M of this report for the tributary areas, MH Numbers, and streets locations listed in tables 7.1.a and 7.1.b.

Sewer Area Study Table (TR082263) - Existing Condition

REACH ○	STREET NAME	SEGMENT		PIPE		CAPACITY ^a (ft ³ /s)		Area ^d (Acres)	Zoning	Flow Coeff. See Appendix C	TOTAL FLOW						TOTAL FLOW	
		M.H. #	M.H. #	Size (in.)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")				Calculated Flow ^b		Cumulative Calculated Flow ^b		Depth of Cumulative Flow (in)	City of Gardena Construc- tion Plan #	% Full	
											Avg Daily (gpd)	Peak (cfs)	Avg (gpd)	Peak (cfs)			Flow Depth ^c / (0.5 x Pipe Dia.)	Cumulative Flow/ Capacity (cfs)
3	Budlong Ave	6	8	8	0.24	0.27	0.00	55	Varies		123,267	0.477	123,267	0.477	5.76	7-117	144	1.77
2	Rosecrans Ave	6	11	10	0.60	0.80	0.00	120	Varies		221,065	0.855	221,065	0.855	5.28	7-474	106	1.08
1	Rosecrans Ave	5	6	10	0.60	0.80	0.00	8	Varies		38,630	0.149	382,961	1.481	7.56	7-474	151	1.86

^a Calculated using Kutter's Formula with n = 0.013 (as in S-C4 graph in PC Procedural Manual)

^b Based on current land use and coefficients per LA County Sanitation Districts. (Attach supporting calculations)

^c For pipes > 15", % Full should be calculated by taking the flow depth divided by 0.75 times the pipe diameter

^d The areas shown in this column are those delivering flow to the system. Un-buildable areas are not included. The sum of this column does not equal that of the study area.

^e The current system ends at MH 0 in Rosecrans Avenue at Normandie

Table 7.1.a Existing sewage flow results summary.

Sewer Area Study Table (TR082263) - Proposed Condition

REACH ○	STREET NAME	SEGMENT		PIPE		CAPACITY ^a (ft ³ /s)		Area ^d (Acres)	Zoning	Flow Coeff.	See Appendix C	TOTAL FLOW						TOTAL FLOW	
		M.H. #	M.H. #	Size (in.)	Slope (%)	1/2 Full (^{<} 15")	3/4 Full ([≥] 15")					Calculated Flow ^b		Cumulative Calculated Flow ^b		Depth of Cumulative Flow (in)	City of Gardena Construc- tion Plan #	% Full	
												Avg Daily (gpd)	Peak (cfs)	Avg (gpd)	Peak (cfs)			Flow Depth ^c / (0.5 x Pipe Dia.)	Cumulative Flow/ Capacity (cfs)
3	Budlong Ave	6	8	8	0.24	0.27	0.00	55	Varies			135,552	0.524	135,552	0.524	6.24	7-117	156	1.95
2	Rosecrans Ave	6	11	10	0.60	0.80	0.00	120	Varies			221,065	0.855	221,065	0.855	5.28	7-474	106	1.08
1	Rosecrans Ave	5	6	10	0.60	0.80	0.00	8	Varies			38,630	0.149	395,246	1.529	7.80	7-474	156	1.92

^a Calculated using Kutter's Formula with n = 0.013 (as in S-C4 graph in PC Procedural Manual)

^b Based on current land use and coefficients per LA County Sanitation Districts. (Attach supporting calculations)

^c For pipes > 15", % Full should be calculated by taking the flow depth divided by 0.75 times the pipe diameter

^d The areas shown in this column are those delivering flow to the system. Un-buildable areas are not included. The sum of this column does not equal that of the study area.

^e The current system ends at MH 0 in Rosecrans Avenue at Normandie

Table 7.1.b Proposed sewage flow results summary.

7.2 Existing Capacity Analysis

From the existing flow rate and depth calculations summarized in Table 7.1.a, the existing flow within Reach 3 is determined to be less than 150 percent capacity, and Reach 1 is greater than 150 percent capacity. Monitoring of the existing flow was performed downstream of the proposed site to verify the calculation results.

MH 7 was selected for flow monitoring because it is located within the critical portion of Reach 3, and is downstream of the project site. Monitoring took place over the course of 1 week from the afternoon of Thursday, June 7th to the morning of Thursday, June 14th. The monitoring recorded flow rates, depths and velocities. A copy of the sewer monitoring report for MH 7 is located in Appendix F. The largest average daily flow measured in Reach 3 was 39.96 gpm, or 57,542 gpd, which is 65,725 gpd less than the average sewer flow calculated and summarized in Table 7.1.a. Similarly, the measured maximum flow depth in Reach 3 over the course of the week was 2.47 inches within an 8" pipe, vs the calculated peak flow depth of 5.68 inches. This illustrates the conservative nature of the Sanitation District's flow factors.

Flow within Reach 2 was not monitored because it is not downstream of the site so is therefore not analyzed. Reach 1 was not monitored because flows within Roscrans Ave. were too turbulent due to the numerous main connections being made at this location. However, the existing flow depth calculated to be 151% within Reach 1 for the existing condition is considered conservative based on flow monitoring of Reach 3.

7.3 Proposed Capacity Analysis

The proposed development adds the flow from 63 condominiums to the existing flows within Reaches 3 and 1. 63 condominium will add an additional 12,285 gpd (63units x 195 gpd/unit) to the average daily flow within Reaches 3 and 1. Applying a peaking factor of 2.5 and converting to cfs yields an increase of 0.048 cfs to the peak flow within Reaches 3 and 1. The proposed flow and depth calculations are available in Appendices C and D, respectively, and summarized in Table 7.1.b.

The calculated average daily flow within Reach 3 is calculated at 135,552 gpd. The calculated peak flow in Reach 3 is 0.524 cfs, which results in a flow depth of 6.24 inches and 156% pipe capacity. 156% is more than 150%, which according to the Los Angeles County design policy require flow measurements.

The calculated average daily flow within Reach 1 is calculated at 395,246 gpd. The calculated peak flow in Reach 1 is 1.529 cfs, which results in a flow depth of 7.80 inches and 156% pipe capacity. 156% is more than 150%, which according to the Los Angeles County design policy require flow measurements.

Flow measurements within Reach 3 indicate that the actual average daily flow in Reach 1 and 3 is 65,725 gpd less than calculated, as a result the flow capacities for Reach 1 and 3 were recalculated and summarized in Table 7.4. Revised FlowMaster depth calculations for these reaches are available in Appendix E.

Reach 2 is not downstream of the proposed development so is therefore the capacity is not analyzed.

7.4 Impacts to Existing Sewer System

The proposed development contributes an additional 12,285 gpd to the average daily flow to the sewer downstream of the project. Calculations show that the peak flows in Reaches 3 and 1 will increase and are in excess of 150%. However, flow measurements performed within Reach 3 indicated that the actual daily flow within Reach 1 and 3 are 65,725 gpd less than calculated. As a result, while the flow is increased within the downstream reaches, the flow depths in Reach 1 and 3 will after the will only increase to 134% and 100% of capacity, respectively.

Per table 7.3, all existing sewer within the study area have been reduced to less than 150% of the pipes capacity, and according to the the County of Los Angeles policy for sewage discharge in excess of design capacity located in Appendix I, no additional measurement is required.

Sewer Area Study Table (TR082263) - Proposed Condition with Reduced Flow within Reaches 3 and 1

REACH ○	STREET NAME	SEGMENT		PIPE		CAPACITY ^a (ft ³ /s)		Area ^d (Acres)	Zoning	Flow Coeff.	TOTAL FLOW						TOTAL FLOW		Jurisdiction
		M.H. #	M.H. #	Size (in.)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")				Calculated Flow ^b		Cumulative Calculated Flow ^{b, f}		Depth of Cumulative Flow (in)	City of Gardena Construc- tion Plan #	% Full		
											Avg Daily (gpd)	Peak (cfs)	Avg (gpd)	Peak (cfs)			Flow Depth ^c / (0.5 x Pipe Dia.)	Cumulative Flow/ Capacity (cfs)	
3	Budlong Ave	6	8	8	0.24	0.27	0.00	55	Varies	See Appendix C	69,827	0.270	69,827	0.270	4.00	7-117	100	1.00	Gardena
2	Rosecrans Ave	6	11	10	0.60	0.80	0.00	120	Varies		221,065	0.855	221,065	0.855	5.28	7-474	106	1.08	Gardena
1	Rosecrans Ave	5	6	10	0.60	0.80	0.00	8	Varies		38,630	0.149	329,521	1.275	6.72	7-474	134	1.60	Gardena

^a Calculated using Kutter's Formula with n = 0.013 (as in S-C4 graph in PC Procedural Manual)

^b Based on current land use and coefficients per LA County Sanitation Districts. (Attach supporting calculations)

^c For pipes > 15", % Full should be calculated by taking the flow depth divided by 0.75 times the pipe diameter

^d The areas shown in this column are those delivering flow to the system. Un-buildable areas are not included. The sum of this column does not equal that of the study area.

^e The current system ends at MH 0 in Rosecrans Avenue at Normandie

^f Avg daily flow for Reach 3 and Reach 1 are reduced by 65,725 gpd according to Measurements taken during MH 7 Monitoring.

Table 7.4. Proposed sewage flow results summary with reduced flow

8. CONCLUSION

No mitigation is necessary for the construction of this project's 63 dwelling unit development. The poorest performing downstream pipe is within Reach 1 (MH 6 - MH 5), and Reach 3 (MH 8 – MH 6), which were initially calculated to be at 156% capacity during peak flows. However, monitoring at MH 7 determined that the flow within Reach 3 is in actuality significantly less than was calculated, justifying a reduction of flow within Reaches 3 and 1 to flows less than 150% of the main capacity in all reaches.

The flow produced by the proposed project is equal to the allowable flow cited in the LACSD Will Serve Letter for the Trunk Sewer. The results of this study are within limits established by the County of Los Angeles, Sanitation Districts of Los Angeles County, and the City of Gardena, therefore the system is adequate to accept the project flows.

Appendix A

Sewage Flow Factors

TABLE 1
LOADINGS FOR EACH CLASS OF LAND USE

<u>DESCRIPTION</u>	<u>UNIT OF MEASURE</u>	<u>FLOW (Gallons Per Day)</u>	<u>COD (Pounds Per Day)</u>	<u>SUSPENDED SOLIDS (Pounds Per Day)</u>
RESIDENTIAL				
Single Family Home	Parcel	260	1.22	0.59
Duplex	Parcel	312	1.46	0.70
Triplex	Parcel	468	2.19	1.05
Fourplex	Parcel	624	2.92	1.40
Condominiums	Parcel	195	0.92	0.44
Single Family Home (reduced rate)	Parcel	156	0.73	0.35
Five Units or More	No. of Dwlg. Units	156	0.73	0.35
Mobile Home Parks	No. of Spaces	156	0.73	0.35
COMMERCIAL				
Hotel/Motel/Rooming House	Room	125	0.54	0.28
Store	1000 ft ²	100	0.43	0.23
Supermarket	1000 ft ²	150	2.00	1.00
Shopping Center	1000 ft ²	325	3.00	1.17
Regional Mall	1000 ft ²	150	2.10	0.77
Office Building	1000 ft ²	200	0.86	0.45
Professional Building	1000 ft ²	300	1.29	0.68
Restaurant	1000 ft ²	1,000	16.68	5.00
Indoor Theatre	1000 ft ²	125	0.54	0.28
Car Wash				
Tunnel - No Recycling	1000 ft ²	3,700	15.86	8.33
Tunnel - Recycling	1000 ft ²	2,700	11.74	6.16
Wand	1000 ft ²	700	3.00	1.58
Financial Institution	1000 ft ²	100	0.43	0.23
Service Shop	1000 ft ²	100	0.43	0.23
Animal Kennels	1000 ft ²	100	0.43	0.23
Service Station	1000 ft ²	100	0.43	0.23
Auto Sales/Repair	1000 ft ²	100	0.43	0.23
Wholesale Outlet	1000 ft ²	100	0.43	0.23
Nursery/Greenhouse	1000 ft ²	25	0.11	0.06
Manufacturing	1000 ft ²	200	1.86	0.70
Dry Manufacturing	1000 ft ²	25	0.23	0.09
Lumber Yard	1000 ft ²	25	0.23	0.09
Warehousing	1000 ft ²	25	0.23	0.09
Open Storage	1000 ft ²	25	0.23	0.09
Drive-in Theatre	1000 ft ²	20	0.09	0.05

From Sanitation Districts of Los Angeles County

TABLE 1
(continued)
LOADINGS FOR EACH CLASS OF LAND USE

<u>DESCRIPTION</u>	<u>UNIT OF MEASURE</u>	<u>FLOW (Gallons Per Day)</u>	<u>COD (Pounds Per Day)</u>	<u>SUSPENDED SOLIDS (Pounds Per Day)</u>
COMMERCIAL				
Night Club	1000 ft ²	350	1.50	0.79
Bowling/Skating	1000 ft ²	150	1.76	0.55
Club	1000 ft ²	125	0.54	0.27
Auditorium, Amusement	1000 ft ²	350	1.50	0.79
Golf Course, Camp, and Park (Structures and Improvements	1000 ft ²	100	0.43	0.23
Recreational Vehicle Park	No. of Spaces	55	0.34	0.14
Convalescent Home	Bed	125	0.54	0.28
Laundry	1000 ft ²	3,825	16.40	8.61
Mortuary/Cemetery	1000 ft ²	100	1.33	0.67
Health Spa, Gymnasium				
With Showers	1000 ft ²	600	2.58	1.35
Without Showers	1000 ft ²	300	1.29	0.68
Convention Center, Fairground, Racetrack, Sports Stadium/Arena	Average Daily Attendance	10	0.04	0.02
INSTITUTIONAL				
College/University	Student	20	0.09	0.05
Private School	1000 ft ²	200	0.86	0.45
Church	1000 ft ²	50	0.21	0.11

From Sanitation Districts of Los Angeles County

Appendix B

Existing Flow Calculations

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cumulative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 3								END OF LINE	
Commercial - 6115-020-006	C3	0.87				0	0.000	0	0.000
laundry portion				8450	3.825	32321	0.125	32321	0.125
other				10000	0.200	2000	0.008	2000	0.008
Commercial/Industrial - 6115-020-014	C3	1.01		19280	0.200	3856	0.015	36177	0.140
Commercial/Industrial - 6115-020-008	C3	1.21		20175	0.200	4035	0.016	40212	0.156
Commercial/Industrial - 6115-020-013	C3	0.28		6015	0.200	1203	0.005	41415	0.160
Commercial/Industrial - 6115-020-012	C3	0.75		19920	0.200	3984	0.015	45399	0.176
Commercial/Industrial - 6115-020-009	C3	0.42		12900	0.200	2580	0.010	47979	0.186
Trailer Park - 6115-008-028	C2	0.80	10		156	1560	0.006	49539	0.192
<u>Tract 16449 MB 442-14-15:</u>									
Single Family Residence, Lot 3 - 6115-008-003	C2	0.18	1		260	260	0.001	49799	0.193
Single Family Residence, Lot 2 - 6115-008-002	C2	0.18	1		260	260	0.001	50059	0.194
Commercial/supermarket, Lot 1 - 6115-008-029	C2	0.18		2475	0.150	371	0.001	50431	0.195
Single Family Residences, Lots 4-27	R1		24		260	6240	0.024	56671	0.219
TR 17950 M.B. 442-40-41	R1		58		260	15080	0.058	71751	0.278
TR 22007 M.B. 601-46-47	R1		24		260	6240	0.024	77991	0.302
<u>Strawberry Park Tract MB 4-27-28:</u>									
Single Family Residence - 6115-010-006 & 028	R2		2		260	520	0.002	78511	0.304
<u>Tract 64812 MB 1372-1-2 Condominiums:</u>									
APN 6115-010-033 - 050 Inclusive	R2		19		195	3705	0.014	82216	0.318
<u>Strawberry Park Tract MB 4-27-28:</u>									
Single Family Residence - 6115-010-009 thru 016	R2		8		260	2080	0.008	84296	0.326
<u>PM 107-77-78:</u>									
Multi-Family Residence - 6115-011-032	R3		4		260	1040	0.004	85336	0.330
Single Family Residence - 6115-011-013, & 014	R3		2		260	520	0.002	85856	0.332
Apartments - 6115-011-030	R3		16		156	2496	0.010	88352	0.342
<u>Strawberry Park Tract MB 9-17:</u>									
Apartments - 6115-012-029	R3		20		156	3120	0.012	91472	0.354
Apartments - 6115-012-025	R3		20		156	3120	0.012	94592	0.366
Single Family Residence - 6115-012-009 thru 014	R1		11		260	2860	0.011	97452	0.377
<u>Chrisman Tract MB 10-66:</u>									
Single Family Residence- 6115-012-015,016,017,026	R1		4		260	1040	0.004	98492	0.381
Multi-Family Residence - 6115-012-019	R1		3		260	780	0.003	99272	0.384
PM 205-83 - 6115-043-066 thru 069	R1		5		260	1300	0.005	100572	0.389

TR 30059 M.B. 732-62-63									
Single Family Residence- 6115-018-031 thru 035	R3		5		260	1300	0.005	101872	0.394
<u>Strawberry Park Tract MB 4-27-28:</u>									
Apartments - 6115-018-008	R3	0.48	14		156	2184	0.008	104056	0.402
Apartments - 6115-018-043	R3	1.38	25		156	3900	0.015	107956	0.418
Single Family Residence - 6115-018-007	R3		1		260	260	0.001	108216	0.419
Apartments - 6115-018-014	R3		30		156	4680	0.018	112896	0.437
TR 44767 M.B. 1091-80-81	R1		22		260	5720	0.022	118616	0.459
TR 082263 PROJECT SITE - EX. NO FLOW	R4	3.44	63		0	0	0.000	118616	0.459
<u>Mesalita Tract M.B. 17-132:</u>									
Residence - 6115-017-013	R2		2		260	520	0.002	119136	0.461
Residence - 6115-017-014	R2		1		260	260	0.001	119396	0.462
Residence - 6115-017-015	R2		1		260	260	0.001	119656	0.463
Residence - 6115-017-016	R2		1		260	260	0.001	119916	0.464
Residence - 6115-017-017	R2		1		260	260	0.001	120176	0.465
Residence - 6115-017-018	R2		1		260	260	0.001	120436	0.466
Residence - 6115-017-019	R2		1		260	260	0.001	120696	0.467
Residence - 6115-017-020	R2		1		260	260	0.001	120956	0.468
Residence - 6115-017-021	R2		2		260	520	0.002	121476	0.470
Residence - 6115-017-022	R2		3		260	780	0.003	122256	0.473
Residence - 6115-017-023	R2		2		260	520	0.002	122776	0.475
<u>Church of the Holy Communion</u>									
Parking Lot - 6115-015-018	R3	0.16			0	0	0.000	122776	0.475
Parsonage - 6115-015-019	R3		1		260	260	0.001	123036	0.476
Sanctuary - 6115-015-019	R3	1.31		4628	0.050	231	0.001	123267	0.477
									MH 6

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cummu- lative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 2							END OF LINE, Q=0		
Industrial - 6115-001-011	M1	0.59		15826	0.200	3165	0.012	3165	0.012
Industrial - 6115-001-012	M1	0.52		5900	0.200	1180	0.005	4345	0.017
Industrial - 6115-001-013	M1	0.22		4830	0.200	966	0.004	5311	0.021
Industrial - 6115-001-031	M1	0.92		21952	0.200	4390	0.017	9702	0.038
Industrial - 6115-002-032	M1	1.14		25650	0.200	5130	0.020	14832	0.057
Industrial - 6115-002-023/water delivery service	M1	2.06		29640	0.200	5928	0.023	20760	0.080
Hotel/Motel (H) - 6115-039-005	C3	1.29	68		125	8500	0.033	29260	0.113
Commercial (Vacant)- 6115-039-001	C3	0.43			0	0	0.000	29260	0.113
Apartments (Apt) - 6115-039-004	R3	4.37	104		156	16224	0.063	45484	0.176
Vacant Land/Utilities - 6115-039-270	O	2.60			0	0	0.000	45484	0.176
TR 16419 M.B. 379-48-50	R1		94		260	24440	0.095	69924	0.270
TR 15995 M.B. 361-33-35	R1		68		260	17680	0.068	87604	0.339
TR 13847 M.B. 276-39-40 (Lots 1-174)	R1		174		260	45240	0.175	132844	0.514
TR 13847 M.B. 276-39-40 (Lots 175-188)	R3		14		260	3640	0.014	136484	0.528
TR 21303 M.B. 616-68-69	R1		10		260	2600	0.010	139084	0.538
Strawberry Park Tract MB 4-27-28:									
Adult Institute/School - 6115-019-800	C3	0.91		429	0.200	86	0.000	139169	0.538
Adult Institute/School- 6115-019-039	C3	1.03		7200	0.200	1440	0.006	140609	0.544
Multi-Family Residential - 6115-019-005	C3	0.35	2		260	520	0.002	141129	0.546
Mobile Home Park - 6115-019-040	C3	1.37	38		156	5928	0.023	147057	0.569
Apartments - 6115-019-041	C3	1.41	66		156	10296	0.040	157353	0.609
Motel - 6115-019-042	C3	0.22	11		125	1375	0.005	158728	0.614
Nursery - 6115-019-043	C3	1.15		400	0.025	10	0.000	158738	0.614
Nursery - 6115-019-044	C3	1.39		8863	0.025	222	0.001	158960	0.615
Nursery - 6115-019-045	C3	1.39		10700	0.025	268	0.001	159227	0.616
Mobile Home Park (Apt)- 6115-019-046	C3	1.38	35		156	5460	0.021	164687	0.637
Mobile Home Park (Apt) - 6115-019-047	C3	1.38	40		156	6240	0.024	170927	0.661
Motel (M) - 6115-019-048	C3	1.39	26		125	3250	0.013	174177	0.674
TR 54434 M.B. 1302-38-50	R2	11.40	101		260	26260	0.102	200437	0.775
Commercial Space(Quigley's Mrkt) - 6115-018-003	C3	1.39		4200	0.150	630	0.002	201067	0.778
Single Family Resid. (Quigley's Mrkt) - 6115-018-003	C3		1		260	260	0.001	201327	0.779
Restuarant (Tacos Y Comida) (C3)- 6115-016-030	C3	0.28		861	1.000	861	0.003	201928	0.781
Commercial Space (Med Clinic/prof bldg) - 6115-016-0	C3	0.21		3709	0.300	1113	0.004	203041	0.785
Commercial Space (Pharmacy/store) - 6115-016-017	C3	0.13		2488	0.100	249	0.001	203290	0.786
Commercial Space (store) - 6115-016-018	C3	0.05		1050	0.100	105	0.000	203395	0.787
Commercial Space (store) - 6115-016-019	C3	0.08		1750	0.100	175	0.001	203570	0.787
Commercial Space (Pawn Shop/store) - 6115-016-027	C3	0.16		2340	0.100	234	0.001	203804	0.788
Commercial Space (Parking)- 6115-016-028	C3	0.10		4000	0.100	400	0.002	204204	0.790
Commercial Space (Yoshi/Nails-Spa)- 6115-016-025	C3	0.28		3125	1.000	3125	0.012	207329	0.802
Lady Luck Casino (Parking)- 6115-015-023	R4	4.59			0	0	0.000	207329	0.802
Lady Luck Casino (Amusement/Club) - 6115-016-041	C3	4.22		39245	0.350	13736	0.053	221065	0.855
								23	MH 6

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cumulative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 1									MH 6
<u>TR 40710 M.B. 977-13-14:</u>									
Condominiums - 6115-014-100 thru 109	R4	0.39	9		195	1755	0.007	346087	1.339
<u>TR 34884 M.B. 907-39-40:</u>									
Condominiums - 6115-014-050 thru 097	R4	1.58	48		195	9360	0.036	355447	1.375
<u>Chrisman Tract MB 10-066b (base map):</u>									
Apartments - Lots 57 & 58, 6115-014-110	R4	0.79	35		156	5460	0.021	360907	1.396
Apartments - Lots 50 & 51, 6115-014-048	R4	0.79	42		156	6552	0.025	367459	1.421
Apartments - Lots 48 & 49, 6115-014-047	R4	0.80	42		156	6552	0.025	374011	1.447
Apartments - Lots 41 & 47, 6115-014-045	R4	2.86	52		156	8112	0.031	382123	1.478
Commercial/Stores - Lots 39 & 40, 6115-014-026	C3	0.56		8385	0.100	839	0.003	382961	1.481

Appendix C

Proposed Flow Calculations

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cummulative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 3								END OF LINE	
Commercial - 6115-020-006	C3	0.87				0	0.000	0	0.000
laundry portion				8450	3.825	32321	0.125	32321	0.125
other				10000	0.200	2000	0.008	2000	0.008
Commercial/Industrial - 6115-020-014	C3	1.01		19280	0.200	3856	0.015	36177	0.140
Commercial/Industrial - 6115-020-008	C3	1.21		20175	0.200	4035	0.016	40212	0.156
Commercial/Industrial - 6115-020-013	C3	0.28		6015	0.200	1203	0.005	41415	0.160
Commercial/Industrial - 6115-020-012	C3	0.75		19920	0.200	3984	0.015	45399	0.176
Commercial/Industrial - 6115-020-009	C3	0.42		12900	0.200	2580	0.010	47979	0.186
Trailer Park - 6115-008-028	C2	0.80	10		156	1560	0.006	49539	0.192
<u>Tract 16449 MB 442-14-15:</u>									
Single Family Residence, Lot 3 - 6115-008-003	C2	0.18	1		260	260	0.001	49799	0.193
Single Family Residence, Lot 2 - 6115-008-002	C2	0.18	1		260	260	0.001	50059	0.194
Commercial/supermarket, Lot 1 - 6115-008-029	C2	0.18		2475	0.150	371	0.001	50431	0.195
Single Family Residences, Lots 4-27	R1		24		260	6240	0.024	56671	0.219
TR 17950 M.B. 442-40-41	R1		58		260	15080	0.058	71751	0.278
TR 22007 M.B. 601-46-47	R1		24		260	6240	0.024	77991	0.302
<u>Strawberry Park Tract MB 4-27-28:</u>									
Single Family Residence - 6115-010-006 & 028	R2		2		260	520	0.002	78511	0.304
<u>Tract 64812 MB 1372-1-2 Condominiums:</u>									
APN 6115-010-033 - 050 Inclusive	R2		19		195	3705	0.014	82216	0.318
<u>Strawberry Park Tract MB 4-27-28:</u>									
Single Family Residence - 6115-010-009 thru 016	R2		8		260	2080	0.008	84296	0.326
<u>PM 107-77-78:</u>									
Multi-Family Residence - 6115-011-032	R3		4		260	1040	0.004	85336	0.330
Single Family Residence - 6115-011-013, & 014	R3		2		260	520	0.002	85856	0.332
Apartments - 6115-011-030	R3		16		156	2496	0.010	88352	0.342
<u>Strawberry Park Tract MB 9-17:</u>									
Apartments - 6115-012-029	R3		20		156	3120	0.012	91472	0.354
Apartments - 6115-012-025	R3		20		156	3120	0.012	94592	0.366
Single Family Residence - 6115-012-009 thru 014	R1		11		260	2860	0.011	97452	0.377
<u>Chrisman Tract MB 10-66:</u>									
Single Family Residence- 6115-012-015,016,017,026	R1		4		260	1040	0.004	98492	0.381
Multi-Family Residence - 6115-012-019	R1		3		260	780	0.003	99272	0.384
PM 205-83 - 6115-043-066 thru 069	R1		5		260	1300	0.005	100572	0.389

TR 30059 M.B. 732-62-63									
Single Family Residence- 6115-018-031 thru 035	R3		5		260	1300	0.005	101872	0.394
<u>Strawberry Park Tract MB 4-27-28:</u>									
Apartments - 6115-018-008	R3	0.48	14		156	2184	0.008	104056	0.402
Apartments - 6115-018-043	R3	1.38	25		156	3900	0.015	107956	0.418
Single Family Residence - 6115-018-007	R3		1		260	260	0.001	108216	0.419
Apartments - 6115-018-014	R3		30		156	4680	0.018	112896	0.437
TR 44767 M.B. 1091-80-81	R1		22		260	5720	0.022	118616	0.459
TR 082263 PROJECT SITE/Condominiums	R4	3.44	63		195	12285	0.048	130901	0.506
<u>Mesalita Tract M.B. 17-132:</u>									
Residence - 6115-017-013	R2		2		260	520	0.002	131421	0.508
Residence - 6115-017-014	R2		1		260	260	0.001	131681	0.509
Residence - 6115-017-015	R2		1		260	260	0.001	131941	0.510
Residence - 6115-017-016	R2		1		260	260	0.001	132201	0.511
Residence - 6115-017-017	R2		1		260	260	0.001	132461	0.512
Residence - 6115-017-018	R2		1		260	260	0.001	132721	0.513
Residence - 6115-017-019	R2		1		260	260	0.001	132981	0.514
Residence - 6115-017-020	R2		1		260	260	0.001	133241	0.515
Residence - 6115-017-021	R2		2		260	520	0.002	133761	0.517
Residence - 6115-017-022	R2		3		260	780	0.003	134541	0.520
Residence - 6115-017-023	R2		2		260	520	0.002	135061	0.522
<u>Church of the Holy Communion</u>									
Parking Lot - 6115-015-018	R3	0.16			0	0	0.000	135061	0.522
Parsonage - 6115-015-019	R3		1		260	260	0.001	135321	0.523
Sanctuary - 6115-015-019	R3	1.31		4628	0.050	231	0.001	135552	0.524
									MH 6

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cummu- lative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 2							END OF LINE, Q=0		
Industrial - 6115-001-011	M1	0.59		15826	0.200	3165	0.012	3165	0.012
Industrial - 6115-001-012	M1	0.52		5900	0.200	1180	0.005	4345	0.017
Industrial - 6115-001-013	M1	0.22		4830	0.200	966	0.004	5311	0.021
Industrial - 6115-001-031	M1	0.92		21952	0.200	4390	0.017	9702	0.038
Industrial - 6115-002-032	M1	1.14		25650	0.200	5130	0.020	14832	0.057
Industrial - 6115-002-023/water delivery service	M1	2.06		29640	0.200	5928	0.023	20760	0.080
Hotel/Motel (H) - 6115-039-005	C3	1.29	68		125	8500	0.033	29260	0.113
Commercial (Vacant)- 6115-039-001	C3	0.43			0	0	0.000	29260	0.113
Apartments (Apt) - 6115-039-004	R3	4.37	104		156	16224	0.063	45484	0.176
Vacant Land/Utilities - 6115-039-270	O	2.60			0	0	0.000	45484	0.176
TR 16419 M.B. 379-48-50	R1		94		260	24440	0.095	69924	0.270
TR 15995 M.B. 361-33-35	R1		68		260	17680	0.068	87604	0.339
TR 13847 M.B. 276-39-40 (Lots 1-174)	R1		174		260	45240	0.175	132844	0.514
TR 13847 M.B. 276-39-40 (Lots 175-188)	R3		14		260	3640	0.014	136484	0.528
TR 21303 M.B. 616-68-69	R1		10		260	2600	0.010	139084	0.538
Strawberry Park Tract MB 4-27-28;									
Adult Institute/School - 6115-019-800	C3	0.91		429	0.200	86	0.000	139169	0.538
Adult Institute/School- 6115-019-039	C3	1.03		7200	0.200	1440	0.006	140609	0.544
Multi-Family Residential - 6115-019-005	C3	0.35	2		260	520	0.002	141129	0.546
Mobile Home Park - 6115-019-040	C3	1.37	38		156	5928	0.023	147057	0.569
Apartments - 6115-019-041	C3	1.41	66		156	10296	0.040	157353	0.609
Motel - 6115-019-042	C3	0.22	11		125	1375	0.005	158728	0.614
Nursery - 6115-019-043	C3	1.15		400	0.025	10	0.000	158738	0.614
Nursery - 6115-019-044	C3	1.39		8863	0.025	222	0.001	158960	0.615
Nursery - 6115-019-045	C3	1.39		10700	0.025	268	0.001	159227	0.616
Mobile Home Park (Apt)- 6115-019-046	C3	1.38	35		156	5460	0.021	164687	0.637
Mobile Home Park (Apt) - 6115-019-047	C3	1.38	40		156	6240	0.024	170927	0.661
Motel (M) - 6115-019-048	C3	1.39	26		125	3250	0.013	174177	0.674
TR 54434 M.B. 1302-38-50	R2	11.40	101		260	26260	0.102	200437	0.775
Commercial Space(Quigley's Mrkt) - 6115-018-003	C3	1.39		4200	0.150	630	0.002	201067	0.778
Single Family Resid. (Quigley's Mrkt) - 6115-018-003	C3		1		260	260	0.001	201327	0.779
Restuarant (Tacos Y Comida) (C3)- 6115-016-030	C3	0.28		861	1.000	861	0.003	201928	0.781
Commercial Space (Med Clinic/prof bldg) - 6115-016-0	C3	0.21		3709	0.300	1113	0.004	203041	0.785
Commercial Space (Pharmacy/store) - 6115-016-017	C3	0.13		2488	0.100	249	0.001	203290	0.786
Commercial Space (store) - 6115-016-018	C3	0.05		1050	0.100	105	0.000	203395	0.787
Commercial Space (store) - 6115-016-019	C3	0.08		1750	0.100	175	0.001	203570	0.787
Commercial Space (Pawn Shop/store) - 6115-016-027	C3	0.16		2340	0.100	234	0.001	203804	0.788
Commercial Space (Parking)- 6115-016-028	C3	0.10		4000	0.100	400	0.002	204204	0.790
Commercial Space (Yoshi/Nails-Spa)- 6115-016-025	C3	0.28		3125	1.000	3125	0.012	207329	0.802
Lady Luck Casino (Parking)- 6115-015-023	R4	4.59			0	0	0.000	207329	0.802
Lady Luck Casino (Amusement/Club) - 6115-016-041	C3	4.22		39245	0.350	13736	0.053	221065	0.855
								29	MH 6

TR 082263 Description	Zoning	Land Area (Ac)	Total Lots or DU	Gross Floor Area (ft ²)	GPD Flow Factor	Avg Flow (gpd)	Peak Flow (ft ³ /s)	Cumulative Flow	
								Avg (gpd)	Peak (ft ³ /s)
Main Line Reach 1									MH 6
<u>TR 40710 M.B. 977-13-14:</u>									
Condominiums - 6115-014-100 thru 109	R4	0.39	9		195	1755	0.007	358372	1.386
<u>TR 34884 M.B. 907-39-40:</u>									
Condominiums - 6115-014-050 thru 097	R4	1.58	48		195	9360	0.036	367732	1.422
<u>Chrisman Tract MB 10-066b (base map):</u>									
Apartments - Lots 57 & 58, 6115-014-110	R4	0.79	35		156	5460	0.021	373192	1.444
Apartments - Lots 50 & 51, 6115-014-048	R4	0.79	42		156	6552	0.025	379744	1.469
Apartments - Lots 48 & 49, 6115-014-047	R4	0.80	42		156	6552	0.025	386296	1.494
Apartments - Lots 41 & 47, 6115-014-045	R4	2.86	52		156	8112	0.031	394408	1.526
Commercial/Stores - Lots 39 & 40, 6115-014-026	C3	0.56		8385	0.100	839	0.003	395246	1.529

Appendix D

Bentley FlowMaster Existing Peak Flow Depth Calculations (without proposed project tributary)

Existing Flow Depth Reach 3 - 8" @ 0.24%

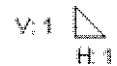
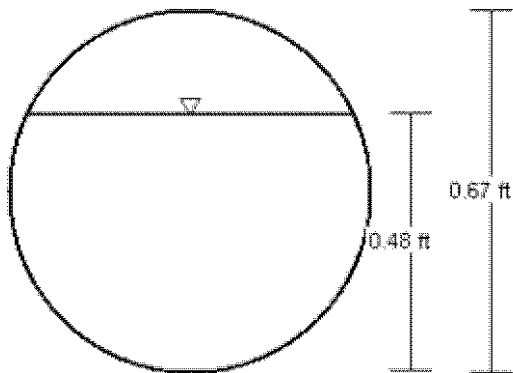
Project Description

Friction Method	Kutter Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00240 ft/ft
Normal Depth	0.48 ft
Diameter	0.67 ft
Discharge	0.48 ft ³ /s

Cross Section Image



Existing Flow Depth Reach 2 - 10" @ 0.60%

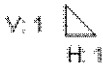
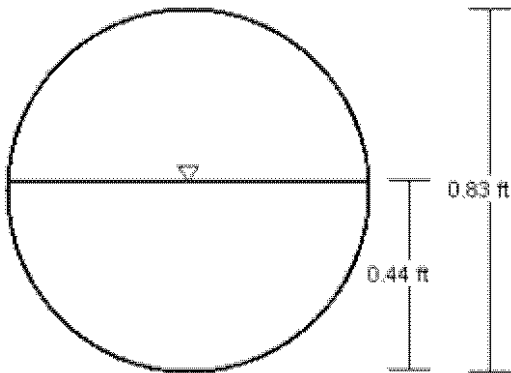
Project Description

Friction Method	Kutter Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00600 ft/ft
Normal Depth	0.44 ft
Diameter	0.83 ft
Discharge	0.86 ft ³ /s

Cross Section Image



Existing Flow Depth Reach 1 - 10" @ 0.60%

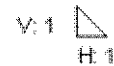
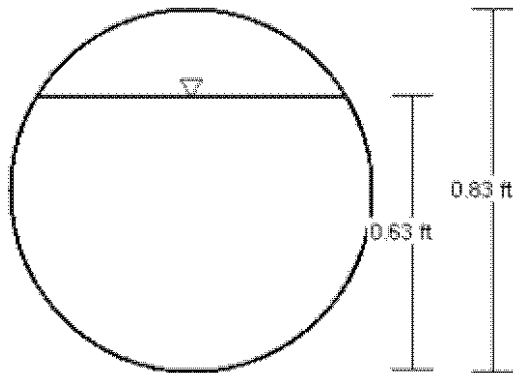
Project Description

Friction Method	Kutter Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00600 ft/ft
Normal Depth	0.63 ft
Diameter	0.83 ft
Discharge	1.48 ft ³ /s

Cross Section Image



Appendix E

Bentley FlowMaster Proposed Peak Flow Depth Calculations (with proposed project tributary)

Proposed Flow Depth Reach 3 - 8" @ 0.24%

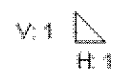
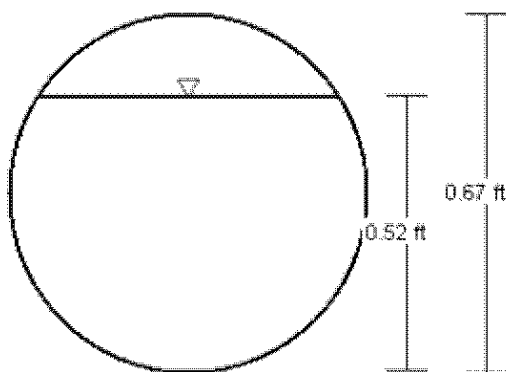
Project Description

Friction Method	Kutter Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00240 ft/ft
Normal Depth	0.52 ft
Diameter	0.67 ft
Discharge	0.52 ft ³ /s

Cross Section Image



Proposed Flow Depth Reach 1 - 10" @ 0.60%

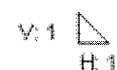
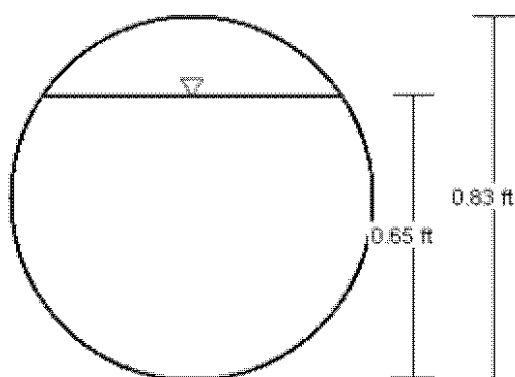
Project Description

Friction Method Kutter Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Normal Depth	0.65	ft
Diameter	0.83	ft
Discharge	1.53	ft ³ /s

Cross Section Image



Based on reduced flow per sewer monitoring data, see section 7

Reduced Proposed Peak Flow Depth Reach 3 - 8" @ 0.24%

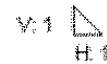
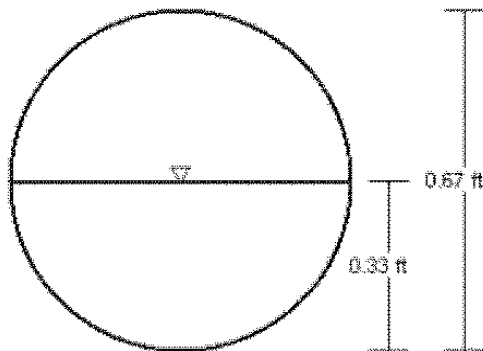
Project Description

Friction Method	Kutter Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00240 ft/ft
Normal Depth	0.33 ft
Diameter	0.67 ft
Discharge	0.27 ft ³ /s

Cross Section Image



Based on reduced flow per sewer monitoring data, see section 7

Reduced Proposed Peak Flow Depth Reach 1 - 10" @ 0.60%

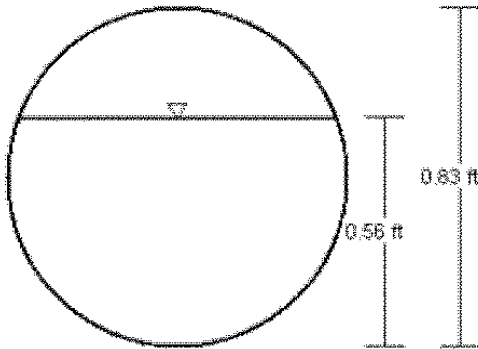
Project Description

Friction Method Kutter Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Normal Depth	0.56	ft
Diameter	0.83	ft
Discharge	1.28	ft ³ /s

Cross Section Image



V: 1
H: 1

Appendix F

Sewer Monitoring Report



Site Report

National Plant Services
1461 Harbor Ave.
Long Beach, Ca, 90813
562-436-7600

Project / Phase: JFJ

Address / Location: ONE MANHOLE NORTH OF ROSECRANS & BUDLONG

Installed: 06.07.18

Customer: JFJ

Meter ID: 44

Access Map



Gas Investigation:

O₂ - 20.9 %
H₂S - 0 PPM
CO - 0 PPM
LEL - 0 %

Traffic:

LIGHT TRAFFIC

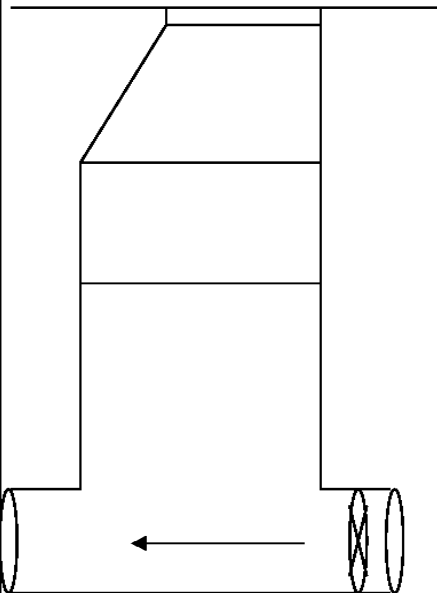
Pipe Material:

CLAY

Manhole Depth:

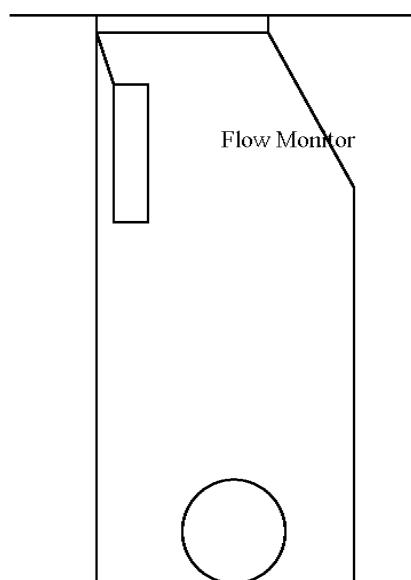
10 FEET

Manhole Cross Section



Pipe Diameter = 8"
M.H. Depth 10'

Manhole Profile



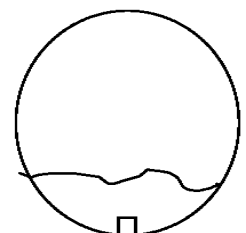
Not to Scale

Pipe Size:

8

Comments

Pipe Profile



Sensor Location

GARDENA Summary Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

	Sunday 06/03/18			Monday 06/04/18			Tuesday 06/05/18			Wednesday 06/06/18			Thursday 06/07/18			Friday 06/08/18			Saturday 06/09/18		
	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
AM																					
Total:																	2310.23e1			2001.91e1	
Max:																2.34	2.41	75.90	2.36	2.44	78.00
Min:																0.00	0.87	0.00	0.00	0.71	0.00
Avg:																1.48	1.59	32.09	1.29	1.48	27.80
PM																					
Total:												3582.27e1					3030.38e1			3351.76e1	
Max:												2.21	2.26	65.88	2.26	2.41	73.31	2.35	2.18	61.78	
Min:												1.83	1.58	31.37	1.48	1.48	27.23	1.73	1.62	30.35	
Avg:												2.05	1.98	49.75	1.98	1.82	42.09	2.02	1.92	46.55	
Daily																					
Total:																	5340.61e1			5353.67e1	
Max:																2.34	2.41	75.90	2.36	2.44	78.00
Min:																0.00	0.87	0.00	0.00	0.71	0.00
Avg:																1.73	1.71	37.09	1.65	1.70	37.18
Weekly																					
Total:																					
Max:																					
Min:																					
Avg:																					

GARDENA Summary Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

	Sunday 06/10/18			Monday 06/11/18			Tuesday 06/12/18			Wednesday 06/13/18			Thursday 06/14/18			Friday 06/15/18			Saturday 06/16/18		
	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
AM																					
Total:			7311.66			1789.02e1			2033.24e1			2007.49e1			1304.45e1						
Max:	2.00	1.96	45.01	2.19	2.19	61.38	2.31	2.29	65.65	2.26	2.22	64.67	2.14	2.07	54.99						
Min:	0.00	0.73	0.00	0.00	0.41	0.00	0.00	0.86	0.00	0.00	0.97	0.00	0.00	0.87	0.00						
Avg:	0.64	1.29	10.16	1.06	1.34	24.85	1.27	1.53	28.24	1.48	1.52	27.88	1.11	1.40	21.92						
PM																					
Total:			7328.67			3380.51e1			3433.28e1			3295.83e1									
Max:	0.70	2.03	16.46	2.44	2.47	82.15	2.22	2.36	68.18	2.26	2.29	67.22									
Min:	0.22	1.40	4.46	1.81	1.48	28.60	1.63	1.64	30.94	1.74	1.30	21.56									
Avg:	0.51	1.75	10.18	2.03	1.91	46.95	1.99	1.97	47.68	2.07	1.86	45.78									
Daily																					
Total:			1464.03e1			5169.53e1			5466.52e1			5303.32e1			1304.45e1						
Max:	2.00	2.03	45.01	2.44	2.47	82.15	2.31	2.36	68.18	2.26	2.29	67.22	2.14	2.07	54.99						
Min:	0.00	0.73	0.00	0.00	0.41	0.00	0.00	0.86	0.00	0.00	0.97	0.00	0.00	0.87	0.00						
Avg:	0.57	1.52	10.17	1.55	1.63	35.90	1.63	1.75	37.96	1.77	1.69	36.83	1.11	1.40	21.92						
Weekly																					
Total:			1,870.79e2																		
Max:	2.44	2.47	82.15																		
Min:	0.00	0.41	0.00																		
Avg:	1.35	1.62	29.44																		

2.47 Inches = largest
measured flow depth

39.96 gpm = Largest
measured 'average
daily flow'

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

Summary Report

Total:			2310.23e1			2001.91e1
Max:	2.34	2.41	75.90	2.36	2.44	78.00
Min:	0.00	0.87	0.00	0.00	0.71	0.00
Avg:	1.48	1.59	32.09	1.29	1.48	27.80

Total:				3582.27e1			3030.38e1			3351.76e1
Max:	2.21	2.28	65.88	2.26	2.41	73.31	2.35	2.18	61.78	
Min:	1.83	1.58	31.37	1.48	1.48	27.23	1.73	1.62	30.35	
Avg:	2.05	1.98	49.75	1.98	1.82	42.09	2.02	1.92	46.55	

Total					5340.61e1	5353.67e1
Max:	2.34	2.41	75.90	2.36	2.44	78.00
Min:	0.00	0.87	0.00	0.00	0.71	0.00
Avg:	1.73	1.71	37.09	1.65	1.70	37.18

Total
Max:
Min:
Avg:

GARDENA 15 Minute AM Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

	Sunday 06/03/18			Monday 06/04/18			Tuesday 06/05/18			Wednesday 06/06/18			Thursday 06/07/18			Friday 06/08/18			Saturday 06/09/18		
	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
00:00																1.85	1.57	30.95	1.68	1.48	25.52
00:15																1.70	1.52	27.14	1.65	1.32	20.87
00:30																1.66	1.45	24.37	1.71	1.31	21.37
00:45																1.66	1.38	22.52	1.69	1.30	21.05
01:00																1.58	1.25	18.40	1.65	1.21	18.29
01:15																1.02	1.14	10.51	1.62	1.15	16.60
01:30																0.00	1.08	0.00	0.00	0.98	0.00
01:45																1.43	1.12	13.95	0.00	1.00	0.00
02:00																1.38	1.16	14.18	0.00	1.04	0.00
02:15																1.38	1.23	15.70	0.00	0.99	0.00
02:30																1.30	1.20	14.23	0.00	0.95	0.00
02:45																0.00	1.09	0.00	0.00	0.87	0.00
03:00																0.00	1.04	0.00	0.00	0.86	0.00
03:15																0.91	1.12	9.12	0.00	0.84	0.00
03:30																0.93	1.11	9.32	0.00	0.95	0.00
03:45																0.00	1.04	0.00	0.00	0.84	0.00
04:00																0.00	0.94	0.00	0.00	0.71	0.00
04:15																0.00	0.88	0.00	0.00	0.82	0.00
04:30																0.00	0.87	0.00	0.00	0.92	0.00
04:45																0.00	0.90	0.00	0.00	0.93	0.00
05:00																0.00	0.92	0.00	0.00	0.94	0.00
05:15																0.00	0.97	0.00	0.00	1.04	0.00
05:30																1.51	1.25	17.69	0.98	1.12	9.89
05:45																1.74	1.39	24.01	1.50	1.17	15.71
06:00																1.80	1.53	28.91	1.59	1.23	17.96
06:15																1.82	1.64	32.50	1.61	1.24	18.55
06:30																1.72	1.76	34.31	1.61	1.31	20.19
06:45																1.92	1.92	44.01	1.69	1.46	25.30
07:00																2.14	2.00	51.94	1.80	1.60	30.88
07:15																2.18	2.14	58.76	1.94	1.77	39.15
07:30																2.23	2.23	64.35	2.01	1.75	39.87
07:45																2.26	2.15	61.73	1.99	1.73	38.76
08:00																2.19	2.04	55.02	2.04	1.81	42.41
08:15																2.24	2.11	59.17	2.05	1.90	46.26
08:30																2.28	2.27	67.44	2.05	1.93	47.27
08:45													1.03	1.09	28.06	2.25	2.26	66.45	2.19	2.14	59.50
09:00													1.81	2.07	46.53	2.15	2.12	57.32	2.32	2.40	74.96
09:15													1.69	1.97	40.19	2.14	2.05	54.19	2.19	2.34	67.92
09:30													1.82	1.90	41.03	2.14	1.88	47.51	2.24	2.41	72.41
09:45													1.90	1.92	43.57	2.12	1.96	50.28	2.22	2.29	66.75
10:00													1.84	1.93	42.54	2.13	2.23	61.37	2.16	2.15	58.75
10:15													1.89	1.91	42.96	2.19	2.11	57.88	2.18	2.16	59.72
10:30													1.93	1.87	42.45	2.21	2.23	63.77	2.26	2.15	61.81
10:45													1.98	1.78	40.25	2.09	2.08	54.50	2.22	2.08	57.45
11:00													2.02	1.90	45.41	2.01	1.81	41.95	2.21	2.03	55.02
11:15													2.00	1.94	46.55	2.09	1.90	47.11	2.23	2.12	59.43
11:30													1.94	1.90	43.73	2.26	2.07	58.08	2.30	2.18	63.77
11:45													2.08	1.97	49.38	2.34	2.27	69.54	2.25	2.15	61.21

GARDENA 15 Minute AM Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

Sunday 06/10/18			Monday 06/11/18			Tuesday 06/12/18			Wednesday 06/13/18			Thursday 06/14/18			Friday 06/15/18			Saturday 06/16/18		
vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
00:00	1.71	1.54	27.72	0.56	1.47	8.43	1.61	1.44	23.43	1.71	1.53	27.43	1.77	1.45	26.22					
00:15	1.67	1.38	22.76	0.56	1.38	7.63	1.58	1.42	22.48	1.56	1.49	24.04	1.72	1.43	24.83					
00:30	1.71	1.35	22.54	0.49	1.19	5.32	1.55	1.39	21.40	1.52	1.48	23.21	1.65	1.34	21.64					
00:45	1.70	1.32	21.60	0.00	0.98	0.00	1.56	1.30	19.25	1.48	1.26	17.42	1.52	1.19	16.38					
01:00	1.58	1.14	16.01	0.00	0.82	0.00	1.54	1.19	16.70	1.42	1.23	16.15	0.97	1.09	9.45					
01:15	1.04	1.12	10.17	0.00	0.79	0.00	0.00	1.00	0.00	0.45	1.08	4.53	0.00	1.03	0.00					
01:30	0.00	1.03	0.00	0.00	0.77	0.00	0.00	0.96	0.00	0.00	1.04	0.00	0.00	1.07	0.00					
01:45	0.00	1.03	0.00	0.00	0.62	0.00	0.00	0.95	0.00	0.76	1.16	8.29	0.98	1.09	9.61					
02:00	0.49	1.10	5.03	0.00	0.59	0.00	0.00	0.97	0.00	1.00	1.33	12.85	0.00	0.98	0.00					
02:15	0.00	1.05	0.00	0.00	0.57	0.00	0.00	0.94	0.00	0.86	1.32	10.96	0.00	0.96	0.00					
02:30	0.00	0.97	0.00	0.00	0.49	0.00	0.00	0.96	0.00	0.00	1.00	0.00	0.00	0.94	0.00					
02:45	0.00	0.90	0.00	0.00	0.46	0.00	0.00	0.94	0.00	0.00	0.98	0.00	0.00	0.95	0.00					
03:00	0.00	0.95	0.00	0.00	0.44	0.00	0.00	0.90	0.00	0.00	0.98	0.00	0.00	0.91	0.00					
03:15	0.00	1.01	0.00	0.00	0.45	0.00	0.00	0.87	0.00	0.00	0.98	0.00	0.00	0.90	0.00					
03:30	0.00	0.93	0.00	0.00	0.41	0.00	0.00	0.90	0.00	0.00	1.06	0.00	0.00	0.90	0.00					
03:45	0.00	0.91	0.00	0.00	0.52	0.00	0.00	0.88	0.00	0.00	1.09	0.00	0.00	0.90	0.00					
04:00	0.00	0.77	0.00	0.00	0.53	0.00	0.00	0.89	0.00	0.50	1.11	4.89	0.00	0.89	0.00					
04:15	0.00	0.73	0.00	0.00	0.49	0.00	0.00	0.90	0.00	1.52	1.12	14.86	0.00	0.88	0.00					
04:30	0.00	0.75	0.00	0.00	0.51	0.00	0.00	0.88	0.00	1.54	1.17	16.04	0.00	0.95	0.00					
04:45	0.00	0.78	0.00	0.00	0.59	0.00	0.00	0.90	0.00	1.55	1.22	17.36	0.00	0.92	0.00					
05:00	0.00	0.76	0.00	0.00	0.64	0.00	0.00	0.95	0.00	1.49	1.21	16.39	0.00	1.00	0.00					
05:15	0.00	0.76	0.00	0.00	0.60	0.00	0.96	1.11	10.13	1.49	1.15	15.30	1.05	1.17	11.54					
05:30	0.00	0.87	0.00	0.00	0.78	0.00	1.52	1.24	17.52	1.54	1.22	17.36	1.67	1.27	19.90					
05:45	0.00	1.04	0.00	0.38	1.21	4.85	1.66	1.49	25.51	1.61	1.29	19.68	1.77	1.38	24.09					
06:00	0.00	1.09	0.00	1.66	1.65	30.08	1.82	1.63	32.31	1.79	1.43	25.92	1.97	1.61	34.18					
06:15	0.00	1.04	0.00	1.80	1.68	33.48	1.89	1.79	38.69	1.80	1.65	32.31	2.10	1.83	44.58					
06:30	0.44	1.11	5.49	1.96	1.77	39.40	1.88	1.83	39.80	1.81	1.78	36.96	2.02	1.87	44.23					
06:45	1.57	1.34	20.41	2.01	1.92	45.91	1.89	1.84	40.39	2.07	1.91	46.91	1.87	1.77	37.75					
07:00	1.65	1.36	22.00	2.03	2.00	49.47	2.02	1.96	47.91	2.09	1.96	49.33	1.88	1.80	39.07					
07:15	1.63	1.41	22.93	2.05	2.12	54.57	2.09	2.06	53.42	2.16	2.02	53.55	2.05	1.93	47.37					
07:30	1.85	1.46	27.50	2.09	2.07	53.58	2.07	2.14	56.29	2.25	2.20	63.60	1.95	2.00	47.61					
07:45	1.87	1.60	32.23	2.07	2.02	51.32	2.26	2.22	64.52	2.16	2.16	59.29	2.12	2.04	53.32					
08:00	1.90	1.69	35.61	2.05	1.93	47.15	2.15	2.06	54.96	2.05	2.01	50.38	2.11	2.06	53.75					
08:15	1.95	1.66	35.48	2.02	1.93	46.65	2.06	2.00	50.12	1.97	1.96	46.67	1.94	1.97	46.38					
08:30	1.99	1.84	42.67	2.12	2.04	53.56	2.03	2.00	49.35	1.95	1.83	41.28	1.89	1.87	41.66					
08:45	0.69	1.71	14.10	2.17	2.07	55.99	2.02	1.86	43.91	1.98	1.80	40.96	1.90	1.82	39.93					
09:00	0.40	1.75	8.00	2.16	2.00	52.64	2.06	2.01	50.50	1.99	1.74	38.86	1.99	1.91	45.04					
09:15	0.43	1.82	9.12	2.09	2.01	51.52	1.97	1.96	46.65	1.99	1.70	37.51	2.02	2.02	50.12					
09:30	0.46	1.80	9.59	2.10	2.03	52.50	2.03	2.02	50.26	2.07	1.90	46.71	2.00	2.02	49.72					
09:45	0.51	1.79	10.36	2.11	1.98	50.58	2.10	2.12	56.12	2.15	2.04	54.10	1.31	1.97	46.89					
10:00	0.53	1.88	11.81	2.11	1.97	50.10	2.07	2.09	54.08	2.16	1.91	49.01								
10:15	0.55	1.94	12.78	2.16	2.12	57.70	2.09	2.03	52.20	2.16	1.96	50.88								
10:30	0.54	1.88	11.99	2.08	2.17	57.54	2.17	2.20	61.26	2.10	1.97	49.99								
10:45	0.54	1.79	11.07	1.99	1.94	46.21	2.15	2.29	64.62	2.03	1.85	44.18								
11:00	0.34	1.66	6.44	1.81	1.86	39.52	2.09	2.17	57.82	1.94	1.68	36.09								
11:15	0.27	1.40	3.78	2.06	1.91	46.82	1.91	1.97	45.52	1.96	1.68	36.52								
11:30	0.29	1.38	3.98	2.08	1.91	47.19	1.94	1.86	42.36	2.04	1.76	40.75								
11:45	0.31	1.40	4.27	2.13	2.02	52.99	2.05	1.90	46.01	2.12	1.69	39.80								

GARDENA 15 Minute PM Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

Sunday 06/03/18			Monday 06/04/18			Tuesday 06/05/18			Wednesday 06/06/18			Thursday 06/07/18			Friday 06/08/18			Saturday 06/09/18		
vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
12:00												2.07	2.09	53.95	2.07	2.36	65.12	2.16	2.14	58.66
12:15												2.05	2.06	52.38	2.02	2.03	50.38	2.12	2.07	54.48
12:30												1.92	1.91	43.51	2.02	1.92	46.27	2.18	2.00	53.50
12:45												1.89	1.81	39.39	1.97	1.75	38.89	2.10	2.08	54.37
13:00												1.98	1.83	42.11	1.96	1.70	37.04	2.09	1.98	50.22
13:15												2.06	1.88	45.73	1.95	1.74	38.26	2.12	2.00	51.53
13:30												2.07	1.93	47.66	1.89	1.80	39.08	2.12	1.97	50.47
13:45												2.07	1.81	43.38	1.99	1.83	42.48	2.17	2.02	53.81
14:00												1.95	1.69	36.49	2.16	1.91	49.01	2.21	2.18	61.60
14:15												1.92	1.80	39.79	2.11	1.91	47.75	2.10	2.13	56.37
14:30												1.97	1.89	44.09	1.98	1.81	41.21	2.08	2.01	51.13
14:45												2.08	1.96	48.93	1.92	1.78	39.25	2.03	1.98	48.50
15:00												2.07	2.02	51.44	2.04	1.76	40.81	1.98	1.84	42.46
15:15												2.07	2.05	52.34	1.90	1.92	43.46	2.01	1.94	46.81
15:30												2.11	2.22	60.48	2.00	1.94	46.49	1.99	1.95	46.52
15:45												2.06	2.05	52.24	1.95	1.81	40.83	1.98	1.88	43.88
16:00												2.02	1.89	44.97	1.88	1.77	38.00	1.98	1.89	44.20
16:15												1.89	1.82	39.96	1.90	1.76	38.02	1.96	1.80	40.52
16:30												1.94	1.91	44.10	2.02	1.70	38.22	1.95	1.76	39.06
16:45												2.02	1.94	46.97	2.04	1.69	38.24	2.05	1.92	46.95
17:00												2.01	1.84	42.84	2.07	1.80	42.89	2.07	1.95	48.71
17:15												1.98	1.87	43.48	2.07	1.77	41.86	2.05	1.91	46.40
17:30												2.05	2.02	50.93	2.00	1.70	37.77	1.98	1.77	40.05
17:45												2.09	2.04	52.66	2.00	1.67	36.97	2.01	1.68	37.33
18:00												2.07	1.99	49.98	2.03	1.76	40.53	2.01	1.80	41.46
18:15												2.10	2.00	51.27	2.09	1.83	44.17	1.94	1.98	46.62
18:30												2.12	2.08	54.89	2.03	1.77	41.10	1.94	1.85	41.90
18:45												2.15	2.08	55.80	1.94	1.72	37.33	2.05	1.79	42.04
19:00												2.14	2.00	52.30	2.02	1.70	38.34	2.07	1.92	47.22
19:15												2.12	1.97	50.33	1.99	1.76	39.64	2.03	1.97	48.12
19:30												2.12	1.98	50.94	1.98	1.78	40.32	2.03	1.95	47.77
19:45												2.12	2.20	59.73	1.91	1.70	36.06	2.01	1.90	45.23
20:00												2.13	2.18	59.14	1.78	1.51	27.99	1.89	1.84	40.39
20:15												2.17	2.11	57.43	1.86	1.52	29.42	1.99	1.84	42.45
20:30												2.18	2.26	64.11	1.93	1.64	34.39	2.05	1.94	47.65
20:45												2.13	2.13	57.25	2.03	1.80	42.16	1.95	1.88	43.21
21:00												2.15	2.15	58.35	2.12	2.05	53.59	1.87	1.87	41.10
21:15												1.87	1.99	45.11	2.15	2.15	58.71	1.93	1.93	44.50
21:30												1.93	1.97	46.41	2.16	2.19	60.58	2.02	1.96	47.84
21:45												2.20	2.18	61.22	2.16	2.14	58.57	2.03	2.12	53.99
22:00												2.20	2.27	64.89	2.17	2.09	56.60	2.02	1.98	48.54
22:15												2.20	2.28	65.68	1.94	1.88	42.90	2.03	1.99	49.17
22:30												2.15	2.15	58.49	1.93	1.82	40.74	2.04	2.03	50.79
22:45												2.12	2.02	52.68	1.95	1.71	37.17	1.96	1.97	46.73
23:00												2.09	1.95	49.14	1.95	1.74	38.19	1.96	1.89	43.82
23:15												1.93	1.74	37.74	1.61	1.80	33.38	1.96	1.88	43.63
23:30												1.85	1.64	33.19	1.69	1.80	34.89	1.80	1.63	32.07
23:45												1.86	1.61	32.26	1.91	1.67	35.16	1.73	1.63	30.74

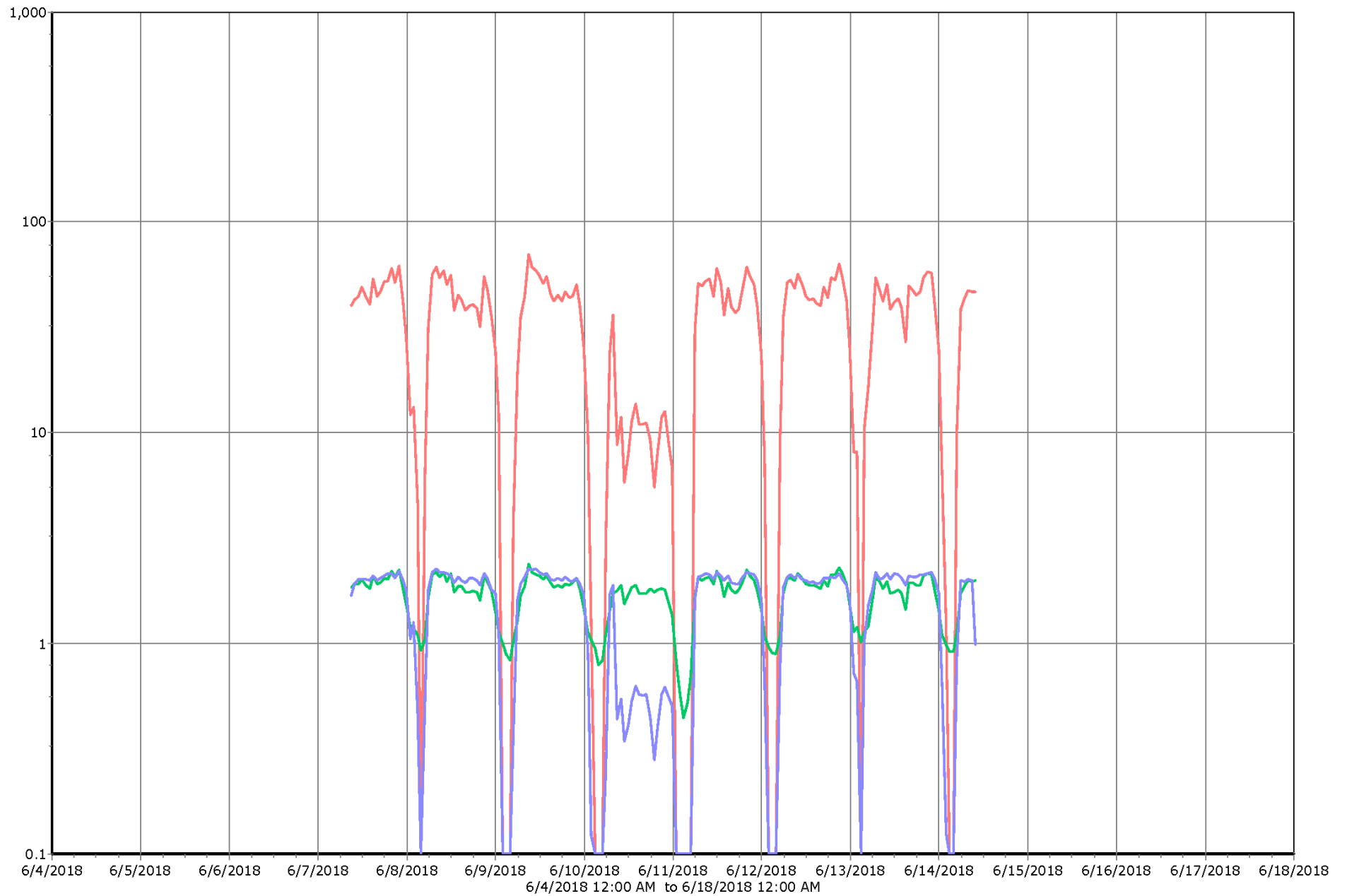
GARDENA 15 Minute PM Report

Velocity Feet Per Second
Level Inches
Flow Gallons Per Minute

Sunday 06/10/18			Monday 06/11/18			Tuesday 06/12/18			Wednesday 06/13/18			Thursday 06/14/18			Friday 06/15/18			Saturday 06/16/18		
vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo	vel	lev	flo
12:00	0.34	1.48	5.29	2.18	2.22	62.38	2.02	1.98	48.54	2.23	1.71	42.58								
12:15	0.44	1.67	8.18	2.18	2.32	66.49	1.91	1.93	44.01	2.06	1.70	38.85								
12:30	0.49	2.00	11.90	2.18	2.19	61.47	1.95	1.80	40.34	2.11	1.77	42.40								
12:45	0.45	1.94	10.47	2.00	1.91	45.43	1.97	1.84	42.18	2.16	1.97	51.37								
13:00	0.48	1.78	9.83	1.87	1.73	36.37	1.84	1.88	40.63	2.07	1.77	41.74								
13:15	0.54	1.87	11.86	1.94	1.68	35.95	2.01	1.91	45.73	2.06	1.73	39.87								
13:30	0.58	1.80	11.93	2.44	2.41	79.01	1.98	1.87	43.67	2.16	1.73	42.06								
13:45	0.64	1.91	14.45	2.18	2.26	64.45	1.87	1.89	41.94	2.22	1.76	44.28								
14:00	0.63	2.03	15.71	2.03	1.67	37.43	2.00	1.90	44.93	2.08	1.76	41.48								
14:15	0.59	1.90	13.21	1.88	1.48	28.60	1.99	1.92	45.53	1.92	1.68	35.66								
14:30	0.62	1.76	12.32	1.95	1.50	30.30	1.94	1.85	41.85	1.99	1.69	37.13								
14:45	0.54	1.65	9.82	1.90	1.54	30.67	1.83	1.82	38.45	1.97	1.61	34.33								
15:00	0.52	1.74	10.31	2.14	2.03	53.62	1.98	1.91	44.92	1.85	1.45	27.17								
15:15	0.58	1.76	11.65	2.10	2.03	52.50	1.95	1.88	43.07	1.89	1.40	26.34								
15:30	0.61	1.70	11.51	2.11	1.98	50.62	1.93	1.79	39.63	1.88	1.37	25.37								
15:45	0.61	1.70	11.51	1.96	1.88	43.67	1.81	1.77	36.58	1.77	1.36	23.50								
16:00	0.63	1.79	12.89	1.94	1.80	40.24	1.91	1.77	38.57	2.06	1.86	45.13								
16:15	0.57	1.85	12.28	2.00	1.79	40.95	1.94	1.86	42.31	2.17	2.12	58.10								
16:30	0.49	1.63	8.78	1.93	1.76	38.42	1.96	1.83	41.61	2.22	2.13	59.53								
16:45	0.40	1.51	6.31	1.81	1.65	32.68	2.09	2.07	53.75	2.14	2.03	53.56								
17:00	0.60	1.69	11.22	1.92	1.75	37.97	2.11	2.08	54.54	2.01	1.90	45.11								
17:15	0.61	1.83	12.96	1.99	1.79	40.76	2.02	1.96	47.84	2.01	1.89	44.79								
17:30	0.59	1.79	12.08	1.88	1.71	35.89	1.97	1.84	42.38	2.08	1.95	48.70								
17:45	0.58	1.68	10.83	1.90	1.73	37.06	1.95	1.74	38.24	2.16	1.91	48.96								
18:00	0.62	1.84	13.24	1.90	1.79	39.03	1.95	1.64	34.87	2.10	1.87	46.03								
18:15	0.45	1.82	9.47	1.91	1.78	38.83	2.06	1.80	42.51	2.03	1.89	45.31								
18:30	0.23	1.81	4.78	1.88	1.78	38.15	2.09	2.09	54.57	1.99	1.90	44.74								
18:45	0.23	1.89	5.13	1.87	1.76	37.48	2.10	2.19	58.90	1.99	1.72	38.28								
19:00	0.26	1.87	5.62	2.04	1.84	43.58	2.07	2.20	58.30	2.12	1.81	44.19								
19:15	0.27	1.70	5.17	2.11	2.00	51.35	2.01	1.98	48.22	2.14	1.91	48.58								
19:30	0.31	1.63	5.53	2.13	2.06	54.47	2.08	2.07	53.45	2.10	1.99	50.87								
19:45	0.37	1.65	6.78	2.13	2.24	61.80	2.04	2.06	51.90	2.17	2.10	56.93								
20:00	0.41	1.77	8.22	2.13	2.20	60.12	2.02	2.06	51.40	2.14	2.09	55.97								
20:15	0.39	1.81	8.18	2.13	2.18	59.14	2.02	2.07	51.82	2.06	2.04	51.76								
20:30	0.39	1.81	8.05	2.19	2.22	62.62	2.03	2.19	56.89	2.09	2.07	53.72								
20:45	0.46	1.83	9.69	2.24	2.26	65.88	2.08	2.21	59.02	2.16	2.10	56.76								
21:00	0.51	1.81	10.68	2.13	2.04	53.48	2.10	2.25	61.21	2.26	2.21	64.23								
21:15	0.56	1.85	12.06	2.07	2.00	50.40	2.17	2.32	66.33	2.09	2.16	57.53								
21:30	0.69	1.77	13.90	2.11	2.07	54.31	2.17	2.31	65.86	2.07	2.10	54.36								
21:45	0.62	1.72	12.01	2.14	2.02	52.74	2.13	2.22	60.95	2.19	2.18	60.91								
22:00	0.60	1.84	12.85	2.13	2.03	52.98	2.05	2.21	58.49	2.24	2.25	65.30								
22:15	0.61	1.75	11.97	2.13	2.02	52.63	2.01	2.20	56.60	2.19	2.11	57.84								
22:30	0.62	1.82	13.09	2.07	1.91	47.04	1.93	2.01	47.39	2.09	1.97	49.88								
22:45	0.57	1.82	12.13	2.06	1.90	46.46	1.92	2.06	49.18	2.07	1.89	46.40								
23:00	0.51	1.55	8.37	2.12	1.94	49.28	1.92	2.01	47.23	2.01	1.79	41.04								
23:15	0.56	1.45	8.25	1.93	1.70	36.51	1.91	1.83	40.54	1.99	1.78	40.46								
23:30	0.54	1.43	7.86	1.87	1.58	31.54	1.83	1.82	38.70	1.95	1.69	36.51								
23:45	0.56	1.46	8.26	1.84	1.58	30.93	1.75	1.71	33.29	1.90	1.57	31.64								

GARDENA

Velocity (fps) Level (in) Flow (gpm)



Appendix G

Will Serve Letter



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

155 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

May 3, 2018

Ref. Doc. No.: 4565654

Mr. David Lelie
Project Manager
KB Home
25152 Springfield Court
No. 180
Valencia, CA 91355

Dear Mr. Lelie:

Will Serve Letter for the Townhome Development on 1017 West 141st Street

The Sanitation Districts of Los Angeles County (Districts) received your will serve letter request for the subject project on April 24, 2018. The proposed project is located within the jurisdictional boundaries of District No. 5. We offer the following comments regarding sewerage service:

1. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the Districts, for conveyance to the Districts' East Rosecrans Avenue Trunk Sewer Section 1, located in Rosecrans Avenue at Normandie Avenue. The Districts' 15-inch diameter trunk sewer has a capacity of 1.5 million gallons per day (mgd) and conveyed a peak flow of 0.5 mgd when last measured in 2011.
2. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant located in the City of Carson, which has a capacity of 400 mgd and currently produces an average flow of 256 mgd.
3. The expected average wastewater flow from the project, described in the application as 63 townhome units, is 12,285 gallons per day. For a copy of the Districts' average wastewater generation factors, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the [Table 1, Loadings for Each Class of Land Use](#) link.
4. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System for increasing the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is imposed in an amount sufficient to construct an incremental expansion of the Sewerage System to accommodate the proposed project. Payment of a connection fee will be required before a permit to connect to the sewer is issued. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and search for the appropriate link. In determining the impact to the Sewerage System and applicable connection fees, the Districts'

Chief Engineer and General Manager will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel or facilities on the parcel. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at (562) 908-4288, extension 2727.

5. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,



Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: A. Schmidt
M. Tatalovich

Appendix H

LA County Standard S-C4 Kutter's Flow Diagram

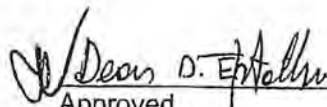
Appendix I

LA County's Policy for Managing Available Sewer Capacity and Sewage Discharge in Excess of Design Capacity

43560 g f + / ac

Steve Borge

October 12, 2005


Approved

TO: Dean Efstathiou
FROM: Dennis Hunter 
Land Development Division

**POLICIES FOR MANAGING AVAILABLE SEWER CAPACITY
AND SEWAGE DISCHARGE IN EXCESS OF DESIGN CAPACITY**

The following will set forth Public Works' policies related to managing sewer infrastructure capacity. Design capacity of the sewer mainline is defined as follows:

< 15" diameter	1/2 full = 100% capacity (d/D)
≥ 15" diameter	3/4 full = 100% capacity (d/D)

When Public Works determines there is available capacity in a mainline sewer for infill and redevelopment projects, the remaining available capacity shall be allocated on a first come – first serve basis.

Sewer Advisory Committee

A Sewer Advisory Committee (SAC) will be formed for the purpose of recommending courses of action to address proposed development connecting to existing sewers that will cause them to be operating beyond their design capacity. The SAC will make their recommendations to Dean Efstathiou, Assistant Director. The SAC will be chaired by Waterworks and Sewer Maintenance Division and will have representatives from Design and Land Development Divisions. Each Division will appoint a Principal Engineer or Senior Civil Engineer as a representative to the SAC and will convene whenever sewer decisions are required to address developmental impacts. Sewer Maintenance will maintain records of SAC meetings and will prepare recommendations to Administration for approval. The SAC may require other Division representatives to participate on a case-by-case basis when necessary, such as Building and Safety and Programs Development.

Divisional Responsibilities

Design Division

1. Support activities of the SAC.
2. Prepare sewer area studies when required.

3. Maintain records/archive of all approved sewer area studies and flow measurements.

Land Development Division

1. Support activities of the SAC.
2. Impose sewer area study requirements for private developments if necessary and review/approve all submittals.
3. Refer cases to SAC when both sewer area studies and flow measurements indicate that a potential overload situation exists or will exist based on criteria described below.
4. Provide copies of all approved sewer area studies and flow measurements to Design Division for archiving.

Waterworks and Sewer Maintenance Division

1. Chair the SAC, maintain meeting records and prepare position papers to Administration.
2. Advise the SAC when an overload condition is observed during maintenance activities.
3. Initiate effort to track and map all overload areas within the Consolidated Maintenance District.
4. Keep database of all flow measurement results.

Design Criteria

1. Capacity of sewer mainlines less than 15" in diameter are considered full (100 percent) when the ratio of the depth of flow (d) over the pipe diameter (D) is equal to 0.5, expressed as $d/D = 0.5$.
2. Capacity of sewer mainlines equal to or greater than 15" in diameter are considered full (100 percent) when the ratio of the depth of flow (d) over the pipe diameter (D) is equal to 0.75, expressed as $d/D = 0.75$.

3. When an area study indicates that flow conditions based on calculated discharges is between 101 percent to 150 percent of capacity, no flow measurements and no mitigation will be required. If maintenance records warrant, a flow test may be required.
4. When an area study for a development that proposes to increase the density or change the zoning indicates that flow conditions are between 151 to 200 percent of capacity, flow measurements shall be required. If the flow test indicates that the actual flow condition is below 151 percent, no mitigation will be required. If the flow test results indicate the actual flow is above 151 percent, the case shall be referred to the SAC to evaluate options and make recommendations to Administration for approval. These options may include, but are not limited to: requiring full mitigation from the development, assessing pro-rata shares, creation of a reimbursement district, or establishing a County Improvement (CI) district.

AHN:ca

P:\LD\PUB\SUBPCHECK\SEWER\MISCELLANEOUS\SEWER INFRASTRUCTURE MANAGEMENT

cc: Administration (Kelly)
Building and Safety (Patel)
Design (Kumar) *Pacheco*
Land Development (D'Antonio, Burger, Ruiz, Chong, Wittler, Narag)
Programs Development (Afshari)
Waterworks and Sewer Maintenance (Del Real, Lehto)

Appendix J

LA County Sewage Flow Loading Table (used for peaking factor only)

Estimated Average Daily Sewage Flows for Various Occupancies

Occupancy	Abbreviation	*Average daily flow
Apartment Buildings:		
Bachelor or Single dwelling units	Apt	150 gal/D.U.
1 bedroom dwelling units	Apt	200 gal/D.U.
2 bedroom dwelling units	Apt	250 gal/D.U.
3 bedroom or more dwelling units	Apt	300 gal/D.U.
Auditoriums, churches, etc.	Aud	5 gal/seat
Automobile parking	P	25 gal/1000 sq ft gross floor area
Bars, cocktails lounges, etc.	Bar	20 gal/seat
Commercial Shops & Stores	CS	100 gal/1000 sq ft gross floor area
Hospitals (surgical)	HS	500 gal/bed
Hospitals (convalescent)	HC	85 gal/bed
Hotels	H	150 gal/room
Medical Buildings	MB	300 gal/1000 sq ft gross floor area
Motels	MB	150 gal/unit
Office Buildings	Off	200 gal/1000 sq ft gross floor area
Restaurants, cafeterias, etc.	R	50 gal/seat
Schools:		
Elementary or Jr. High	S	10 gal/student
High Schools	HS	15 gal/student
Universities or Colleges	U	20 gal/student
College Dormitories	CD	85 gal/student

*Multiply the average daily flow by 2.5 to obtain the peak flow

Zoning Coefficients

Zone	Coefficient (cfs/Acre)
Agriculture -----	0.001
Residential*:	
R-1 -----	0.004
R-2 -----	0.008
R-3 -----	0.012
R-4 -----	0.016*
Commercial:	
C-1 through C-4 -----	0.015*
Heavy Industrial:	
M-1 through M-4 -----	0.021*

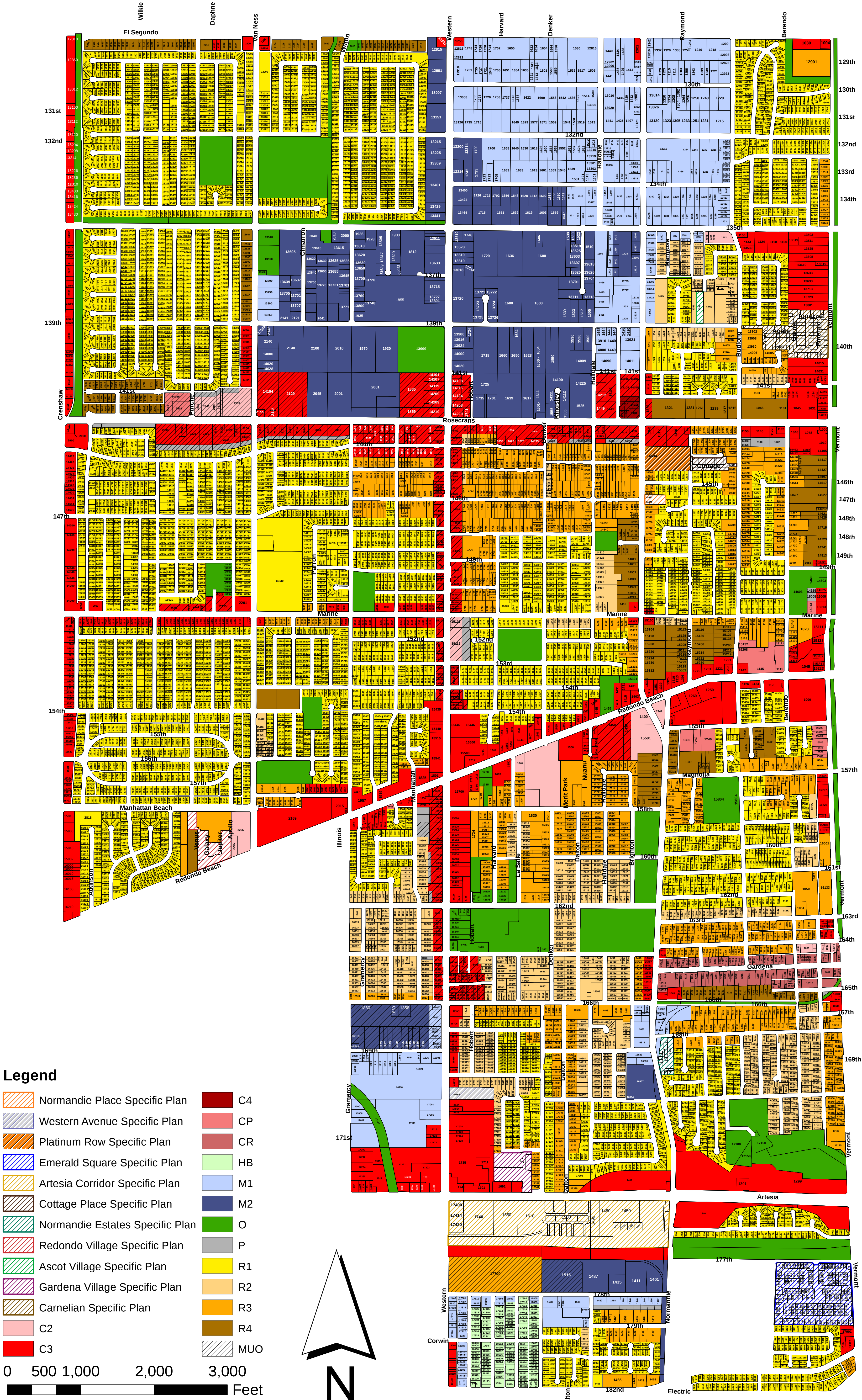
**PEAK FLOW
FACTOR**

* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown

* Use 0.001 (cfs/unit) for condominiums only

Appendix K
City of Gardena Zoning Map

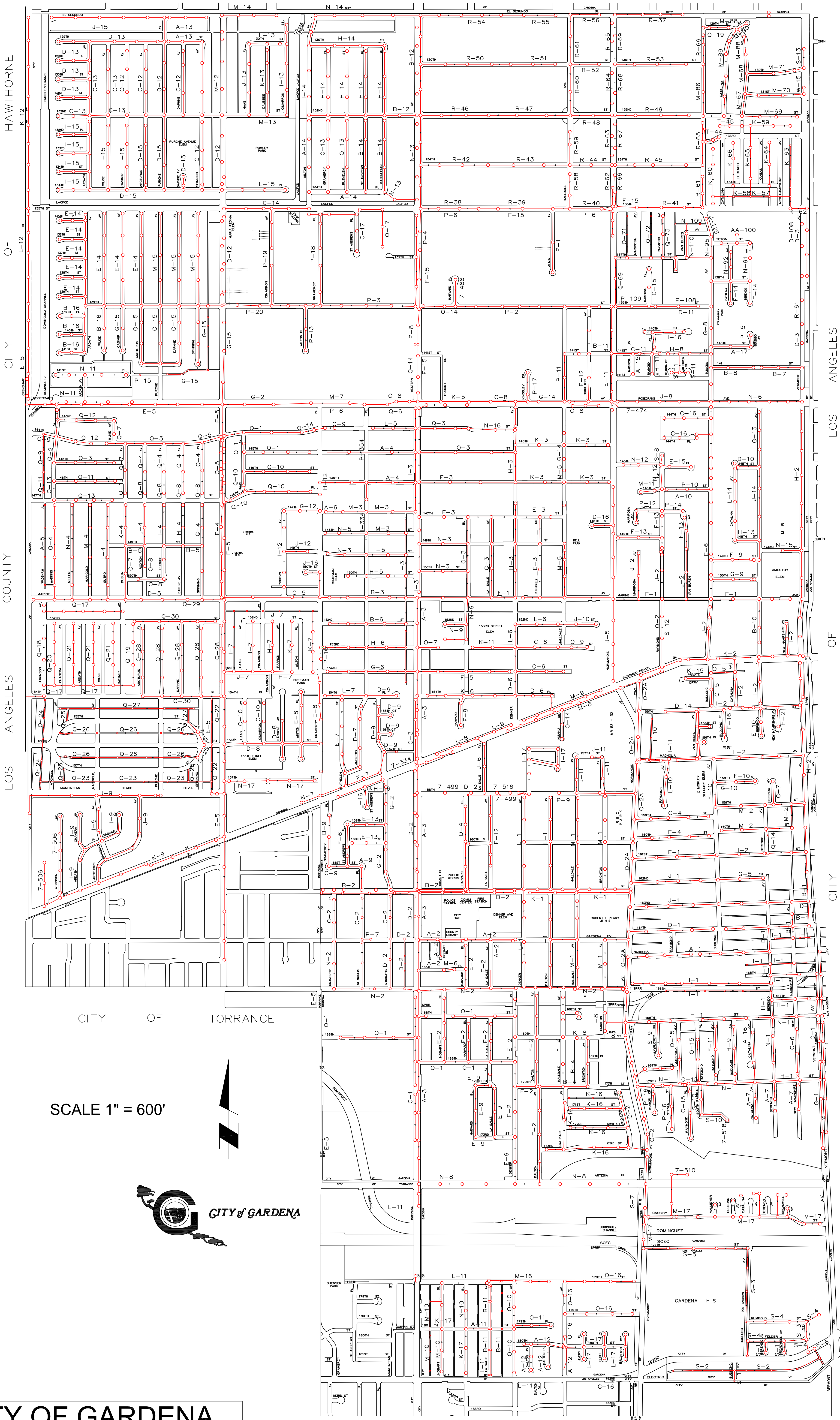
ZONING MAP



Appendix L
City of Gardena Sewer Wall Map

N:\ENGINEERING\CAD\AutoCAD\MAPS\ctymaps\Sewer Map at Counter 2008

CITY OF HAWTHORNE LOS ANGELES COUNTY



SCALE 1" = 600'



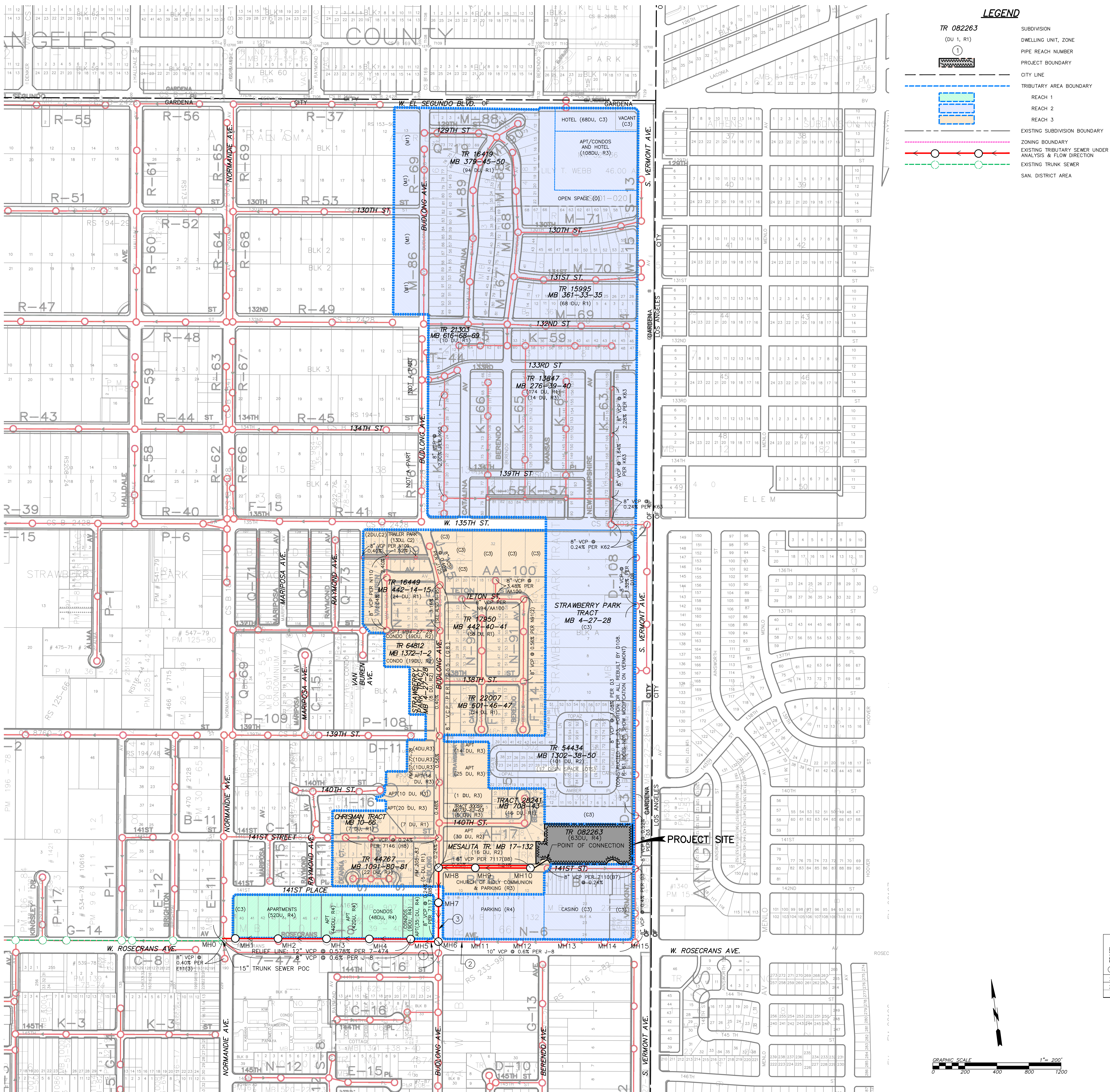
CITY OF GARDENA

ENGINEERING DIVISION

CITY WIDE SEWER MAP 7-71

CITY OF LOS ANGELES

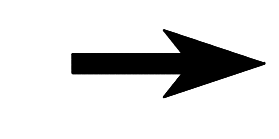
Appendix M
Sewer Area Study Exhibit, Figure 2



LEGEND

- TR 082263 (Du 1, R1)
- Subdivision
- DWELLING UNIT, ZONE
- PIPE REACH NUMBER
- PROJECT BOUNDARY
- CITY LINE
- TRIBUTARY AREA BOUNDARY
- REACH 1
- REACH 2
- REACH 3
- EXISTING SUBDIVISION BOUNDARY
- ZONING BOUNDARY
- EXISTING TRIBUTARY SEWER UNDER ANALYSIS & FLOW DIRECTION
- EXISTING TRUNK SEWER
- SAN. DISTRICT AREA

PROPOSED SEWAGE FLOW CALCULATIONS



PROPOSED SEWAGE FLOW SUMMARY

REACH	STREET NAME	SEGMENT	PIPE	CAPACITY (ft/s)	Area ^d (Acres)	Zoning	Flow Coeff.	TOTAL FLOW						TOTAL FLOW		
								Avg Daily (gpd)	Peak (cfs)	Cumulative Calculated Flow ^b		Depth of Cumulative Flow (m)	City of Gardena Construction Plan #	Flow Depth (0.5 ft) Dia	Cumulative Capacity (cfs)	
										Avg	Peak					
1	Bulding Ave	6	8	0.24	0.27	0.00	55	Varies	135,552	0.524	135,552	0.524	6.24	7-117	156	1.95
2	Rosecrans Ave	6	11	0.80	0.80	0.00	120	Varies	221,065	0.855	221,065	0.855	5.28	7-474	106	1.08
3	Rosecrans Ave	5	6	10.00	0.80	0.00	8	Varies	38,630	0.149	395,246	1.529	7.80	7-474	156	1.92

FORMA ENGINEERING INC.
400 San Fernando Mission Boulevard, Suite 200
San Fernando, California 91340
Phone: (818) 832-1710 • Fax: (818) 832-1740
PREPARED UNDER THE SUPERVISION OF:
ARET BINATU, P.E. R.C.E. 64448 DATE

Drawing Title:
Figure 2
TRACT 082263
SEWER AREA STUDY MAP
Prepared for:
KB HOME

Work Order
18006
Date:
10/05/2016
Scale:
1"= 200'
Designed:
JT
Drawn:
JT
Checked:
AB
Sheet 1 of
1 Sheets

FORMA ENGINEERING, INC.
400 San Fernando Mission Blvd. Suite 200
San Fernando, CA 91340
(818) 832-1710

Tract 082263, Stonefield 63
140031 S. Vermont Ave. & 1017 W. 141st St., Gardena, CA 90247
PCC 1 RESPONSES: Sewer Area Study Peer Review

October 5, 2018

To: Kimley-Horn and Associates, Inc

Attn: Mike Agbodo, PE

From: Joel Thompson
(818) 832-1710 ext. 103
jthompson@formaeng.com

Re: Preliminary Hydrology & LID Report, Tract 082263

Plan Check Number: 1 Date: 9/19/2018

The following items address the plan review comments received from Kimley Horn and Associates, Inc.
Responses to all corections to affected Report and Exhibits are addressed below.

Memorandum

ITEM NO.	SHEET NO.	DESCRIPTION:
1	2,3	Section 5 describing the existing system reaches was revised such that they are described based on direction of flow.
2	2	Section 4, proposed sewer system, describes construction of a new line from the project to the point of connection, MH 8.
3	3,4	At the request of the City of Gardena Engineer, Jun De Castro, average daily flow was to be provided in Gallons per Day. Peak flow is converted to CFS as those are the typical units used in hydraulic analysis by County methodology. Discussion on this conversion is described in section 6.1.3.
4	4	Peaking Factor of 2.5 is described in section 6.1.3. This peaking factor is cited from County Documentation provided in Appendix K.
5	5	Hand Calculations using have been replaced with Computer Software, Bentley FlowMaster. Refer to Section 6.2 for citation of County Guidelines.

6	4	Description of calculations revised to eliminate the use of 'Raw Data' as it is unclear.
7	---	The use of the term 'Theoretical' was intended to describe data that was not directly measured; based on 'theory'. Description of data has been revised throughout the report to describe data as be based on either calculations or measurements.
8	5, Appendix I	Section 7.1 Capacity Analysis Methodology included to describe the County
9	Appendices A, G, H, J	Entire report has been reviewed for consistent use of units and differentiating calculated data and measured data. GPD Units are consistently used for Average Daily Flows, and CFS is consistently used for Peak Flows as cited in County of Los Angeles Standards and Sanitation District Standards cited in Appendices.
10	10	Section 7.4 updated to cite county policy. The analysis meets the County standard as indicated through the report
11a	3, Appendix A	Infiltration and Inflow Factors not included. 6.1.1
11b	4, Appendix B	GPD vs CFS use is described in the section 6.1.3. Table is extensive as a result of calculations based on occupancy rather than zoning because each individual parcel is listed. Calculations based on zoning would have been more concise but too conservative and as was illustrated by the field measurements, the calculations were already conservative.
11c	4, Appendix C	see item 11b response
11d	4, Appendix D	Existing flow depth calculation method replaced with computer software output.
11e	Appendix F	Proposed flow depth calculation method replaced with computer software output. Reduced flow depth calculations also provided based on field measurements.
11f		Disagree. I have added labels to the sheets where data is being referenced. The sewer monitoring report prepared by contractor is complete and clear. Please see the title of each table for description of results. The data sample times and dates are clearly labeled in the margins, the units and data are also provided.
11g	Appendix G	no comment

Additional Report Comments

ITEM NO.	SHEET NO.	DESCRIPTION:
1	3	pocket inserts added as appendices.



MEMORANDUM

To: Rita Garcia

From: Mike Agbodo, PE
Kimley-Horn and Associates, Inc.

Date: October 21, 2018

Subject: **Sewer Area Study Tract 082263 Stonefield, in the City of Gardena Peer Review**

Kimley-Horn has prepared a peer review of the *Sewer Area Study Tract 082263 Stonefield, in the City of Gardena*, prepared by Forma Engineering Inc. (August 13, 2018 and revised October 5, 2018). The following comments are offered and indicated "in-text" in Attachment 1, *Sewer Area Study Mark Up*.

1. Page 2, Existing System: The third, fourth, and fifth paragraphs on the existing system which attempts to explain Reaches 1, 2, and 3 is confusing. At our request, Forma Engineering provided a map to explain this section. The map provided by Forma Engineering should be included in the report to aid in the explanation. When describing the direction of the pipeline, the description should follow the direction of flow. For example, the report referred to the reach that runs north in Budlong Avenue, whereas the statement should read the Reach that runs South in Budlong Avenue. This traces the reach from upstream to downstream. **This was addressed in the revised report.**
2. Page 2, Point of Connection: Please confirm if there is a new line from the point of connection to MH8. It is assumed that this was the intention, and if so, it is unclear in the report. Please revise the report to clarify that there is a proposed new line. **This was addressed in the revised report.**
3. Page 3, Gallons per Day vs. Cubic Feet per Second: This section uses gallons per day for the average flow and then cubic feet per second for the peak flow. The reason for using two different units is unclear in the report. Please revise the report to use one unit (i.e., gallons per day), enabling the reader to follow the flow numbers through the report. This avoids having to use a conversion factor to change from gallons per day to cubic feet per second. Alternatively, please explain why the peak flow rates are calculated in cubic feet per second while the average flow rates are calculated in gallons per day. This was addressed in the revised report.

4. Page 3, Use of 2.5 Peaking Factor: The use of 2.5 peaking factor seems reasonable, however, the Sanitation Districts of Los Angeles County (LACSD) Sewer Design Guidelines to verify this assumption were not provided. Please revise the report to cite/include the relevant Sewer Design Guidelines used as the basis for the peaking factor. **This was addressed in the revised report.**
5. Page 4, Use of Kutter's Method: This hand calculation is tedious and prone to error. A computer model would have provided a more efficient/accurate evaluation. A better approach to this assessment is to handle through computer modeling rather than hand calculation. The calculations have already been completed. However, it is recommended that City Staff be consulted to determine if there is a hydraulic model of the system that can be used for calculations. **This was addressed in the revised report.**
6. Page 4, Raw Flow: The report refers to **Raw Flow** calculations given in Appendices B and C. The report is unclear concerning Raw Flow and no definition or explanation are provided. Please revise the report to include a Raw Flow definition and explanation. **Raw flow reference was removed from the revised report.**
7. Page 5, Typos and Raw Flow: See Attachment 1 for typographical errors. The report is unclear concerning the use of theoretical flows and no definition or explanation are provided. Please revise the report to include a Raw Flow definition and explanation. **This was addressed in the revised report.**
8. Page 5, Percent Utilization: The report is unclear concerning the percent utilization. Please revise the report to include an explanation and cite/include the relevant Los Angeles County Sanitation District (LACSD) Sewer Design Guidelines used as the basis for the percent utilization. The report should demonstrate that the pipes have adequate capacity and meet the LACSD Sewer Design Guidelines and the City of Gardena guidelines. **This was addressed in the revised report.**
9. Page 6, Confusion Concerning Flow Units (i.e., Gallons per Day/Cubic Feet per Second, Percent Utilization, and Theoretical Flows): The confusion concerning gallons per day/cubic feet per second, percent utilization, and theoretical flows, as discussed above in Item Nos. 3, 5, and 7, respectively, is carried through on this page. Please revise the report, as recommended in Item Nos. 3, 5, and 7. **This was addressed in the report.**
10. Page 9, Code: The report states that the analysis meets code, however, does not specify which code. Also, see Item Nos. 4 and 8 above concerning compliance with LACSD and City of

Gardena guidelines. **A memorandum from the County was provided with the revised report, which will suffice. However, a published code from the County is preferable.**

11. Appendices: The Appendices contain information that requires further explanation.

- a. Appendix A, Sewage Flow Factors: This information is useful; however, it is unclear whether the duty factors quoted here include an allowance for infiltration and inflow. Please revise the report to clarify what is included in the duty factors. **This was addressed in the revised report.**
- b. Appendix B, Existing Flow Calculations: This information is useful, however, difficult to follow. This table apparently had some error in the June version of the report that was corrected in the August version. Toggling between gallons per day flow units vs. cubic feet per second flow units for average and peak flow conditions is confusing. Please revise the report to explain why two different flow rates are used. Also, see Item No. 3 above concerning gallons per day flow units vs. cubic feet per second flow units. **Explanation between gallons per day vs. cubic feet per second was included in the revised report.**
- c. Appendix C, Proposed Flow Calculations: The same comments discussed under Appendix B above apply. **This was addressed in the revised report.**
- d. Appendix D, Existing Flow Depth Calculations: This is a tedious calculation effort that could have been simplified using a computer model. See Item No. 5 above concerning use of hand calculations instead of a model. **Computer model was used for the calculations.**
- e. Appendix E Proposed Flow Depth Calculations: The same comments discussed under Appendix D above apply. **See item D above.**
- f. Appendix F Sewer Monitoring Report: The summary reports presented in this section are very confusing. Please revise the report to clarify and for consistency with the comments presented above. **This was addressed in the revised report.**
- g. Appendix G Will Serve Letter: No comment.

SUMMARY: Overall, the report appears to be prepared using good engineering principles. However, reference to pipe utilization need to be clarified to ensure there is adequate capacity to convey the flows. The peaking factor used in the calculation seems reasonable, however, the toggling between gallons per day and cubic feet per second makes the report hard to follow. The report improved

however, a few typos, grammatical errors, and minor errors remained. For example, the report referenced Table 7.3, but there was no Table 7.3 in the report. Also, it is recommended that a figure be included to help better explain the direction of flow. However, the report presents a logical explanation of the work performed and suffices for CEQA purposes.

Please do not hesitate to contact me at 951.335.8233 (office), 951.514.6388 (cell), or mike.agbodo@kimley-horn.com with any questions.