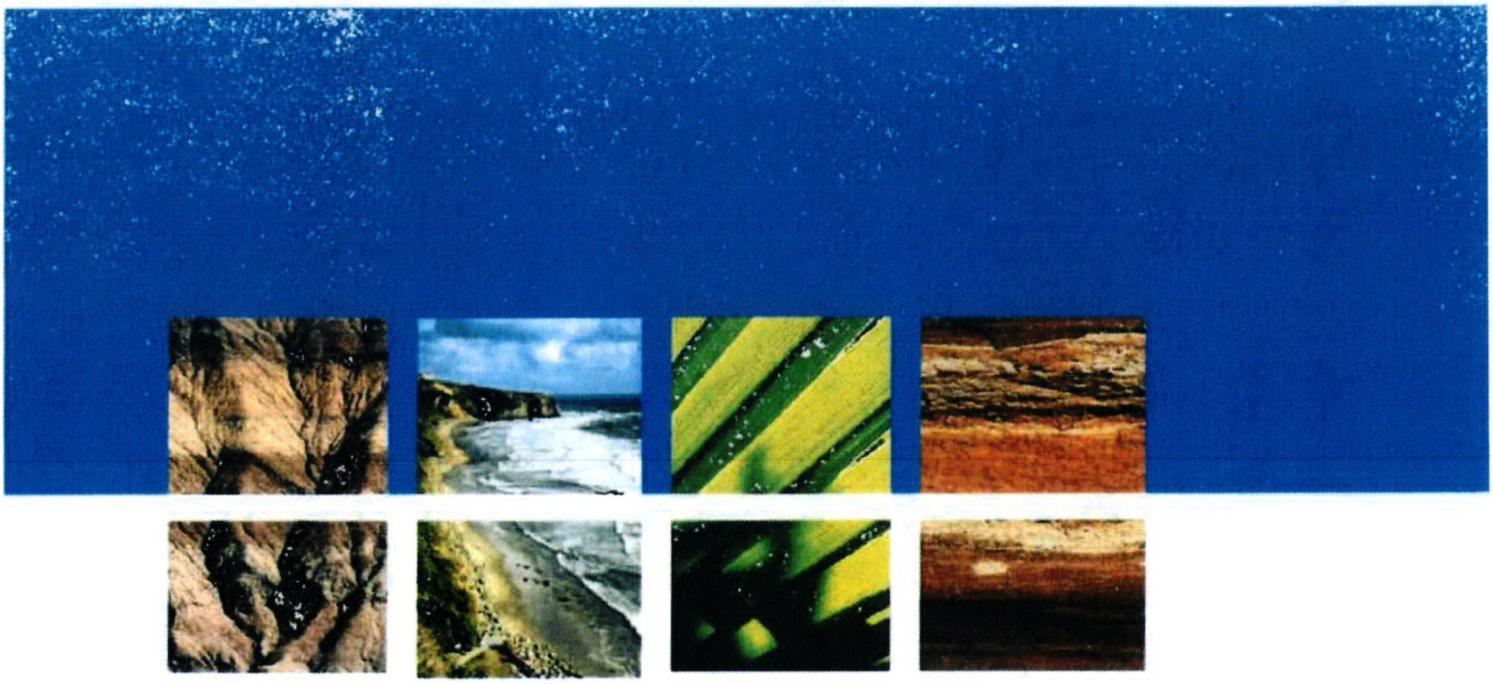


Geotechnical Report of Post Grading, PA-6, N4B Backbone Street Improvements on Pearlblossom and Tomato Springs, Portions of VTTM 16814 and VTTM 17769, Irvine, California.

PN 16045-00
September 17, 2018

KCG KLING Consulting Group, Inc.

KCG KLING Consulting Group, Inc.

September 17, 2018

PN 16045-00
Permit Nos.:00662796-MCE
:00674798-MCE

Martin Leon
Director of Construction
Irvine Community Development Company
550 Newport Center Drive
Newport Beach, California 92660

Subject: Geotechnical Report of Post Grading, PA-6, N4B Backbone Street Improvements on Pearlblossom and Tomato Springs, Portions of VTTM 16814 and VTTM 17769, Irvine, California

Dear Mr. Leon:

Pursuant to your request and authorization, Kling Consulting Group, Inc. (KCG) has provided the geotechnical services during post grading of the subject project. These services consisted principally of soils engineering observations and testing during post grading and associated laboratory testing.

Based on our geotechnical observation and testing during post-grading of the subject site under the purview of this report, it is our opinion that our recommendations and the recommendations of the referenced reports have generally been implemented.

We appreciate the opportunity to be of continued service. Should you have any questions regarding this report, please do not hesitate to call.

Sincerely,

KLING CONSULTING GROUP

Dante P. Domingo
Project Engineer
R.C.E. 57939
Expires 6/30/20

REGISTERED PROFESSIONAL ENGINEER
DANTE P. DOMINGO
No. 57939
Exp. 6/30/20
CIVIL
STATE OF CALIFORNIA

DPD:BH:mk

Distribution: (3) Addressee

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of our observation and testing during the post grading phase of the subject project. The post grading work, as summarized under the scope of work below, was conducted under the supervision of ICDC during the period of September 2, 2016 through August 15, 2017. The plans prepared by Stantec dated June 5, 2017 and Butsko Utility Design dated December 12, 2016 were utilized as the base maps to illustrate the density test locations for the subject project (Plates I through X).

2.0 SCOPE OF WORK

The scope of our services performed during post grading included the following:

- Observation and/or testing of electric crossings, sewer; domestic and recycled water;
- Observation and testing of the subgrade for curb and gutter, sidewalk, and streets;
- Observation and testing of subgrade for the installation of Turf Block;
- Observation during installation of Mirafi 600X to stabilize saturated subgrade;
- Observation and testing of the aggregate base course material for the asphalt concrete pavements within the subject streets;
- Asphalt laydown observation and testing;
- Presaturation testing of sidewalk subgrade;
- Laboratory testing in support of the above geotechnical services;
- Project coordination and geotechnical analysis;
- Preparation of this report which summarizes our observation and testing results and conclusions.

3.0 PREVIOUS GEOTECHNICAL WORK

The subject site was reportedly graded under the observation and testing by NMG Geotechnical.

4.0 POST GRADING

Post grading services performed on a part-time by this firm consisted of the following.

4.1 Electric Crossing Trench Backfill

The trench was backfilled with on-site material that was placed in thin lifts; moisture conditioned and mechanically compacted to a minimum of 90 percent relative compaction of the laboratory maximum dry density. The joint utility line was generally bedded and shaded with imported sand. The sand was densified by jetting. The laboratory maximum dry density was determined in accordance with ASTM D1557-07 testing procedures. Compaction was achieved by rolling with equipment mounted sheepsfoot wheel.

4.2 Sewer Trench Backfill

The trench was backfilled with on-site material that was placed in thin lifts; moisture conditioned and mechanically compacted. The sewer pipe was generally bedded and shaded with imported sand. The sand was densified by jetting. The laboratory maximum dry density was determined in accordance with ASTM D1557-07 testing procedures. Trench backfill compaction was achieved by rolling with equipment mounted sheepsfoot wheel.

4.3 Domestic Water Trench Backfill

The trench was backfilled with on-site material that was placed in thin lifts; moisture conditioned and mechanically compacted to a minimum of 90 percent relative compaction of the laboratory maximum dry density. The water pipe was generally bedded and shaded with imported sand. The sand was densified by jetting The laboratory maximum dry density was determined in accordance with ASTM D1557-07 testing procedures. Trench backfill compaction was achieved by rolling with equipment mounted sheepsfoot wheel.

4.4 Recycled Water Trench Backfill

The trench was backfilled with on-site material that was placed in thin lifts; moisture conditioned and mechanically compacted to a minimum of 90 percent relative compaction of the laboratory maximum dry density. The water pipe was generally bedded and shaded with imported sand. The sand was densified by jetting The laboratory maximum dry density was determined in accordance with ASTM D1557-07 testing procedures. Trench backfill compaction was achieved by rolling with equipment mounted sheepsfoot wheel.

4.5 Curb and Gutter Sub-grade

Test results indicated that the sub-grade is compacted to at least 90 percent of the laboratory maximum dry density determined in accordance with ASTM 1557.

4.6 Streets Sub-grade

The street subgrade was compacted to at least 90 percent of the laboratory maximum dry density determined in accordance with ASTM D1557. In some areas were minor pumping were observed, a layer of Mirafi 600X was installed on top of the subgrade prior to placement of aggregate base material. The approximate lateral limits of Mirafi 600X are shown on the density test location map.

4.7 Aggregate Base

Aggregate base underlying the asphalt concrete was tested for compaction. The base material was compacted utilizing a vibratory steel drum roller. Aggregate base compaction tests performed were compacted to at least 95 percent of the laboratory maximum dry density determined in accordance with ASTM D1557.

4.8 Turf Block

The subgrade for the turf block was observed and tested. Test results indicated that the subgrade was found to be compacted to a minimum 90 percent of the maximum dry density as determined by ASTM D1557.

4.9 Asphaltic Concrete

Our field technician conducted observations of the base course asphalt concrete paving operations. The temperature of the hot mix material and thickness of the paving mat was measured just prior to rolling. Compaction tests were performed on the asphalt concrete surface after final compaction rolling and prior to finish rolling. Test results indicated that the compaction of the asphaltic concrete were at least 95 percent of the laboratory maximum density of asphalt.

The pavement sections recommendations presented within the geotechnical recommendation for pavement section reports by our firm dated November 18, 2016 and by NMG Geotechnical, Inc., dated August 12, 2016 approved by the City of Irvine were implemented during streets construction.

4.10 Presaturation

The subgrade soils for sidewalk were tested for presaturation. Where tested subgrade soils were observed to have achieved a moisture content of at least 3 percent over optimum moisture content to a depth of 18 inches. The results of our presaturation observations and testing were presented on a field daily which was issued in the field shortly after the observations and testing were completed.

5.0 GROUNDWATER

Groundwater, as a zone of free water was not encountered during post grading work. Groundwater conditions within the site are discussed in detail in the referenced reports and should be referred to for future information regarding groundwater conditions.

6.0 FIELD DENSITY TESTING

Field density tests were performed by the Nuclear Gauge Method (ASTM D6938-07b). Density test results are presented on the attached Summary of Field Tests (Appendix C) and the approximate test locations are depicted on the attached Density Test Location Map (Plates I through X).

7.0 LABORATORY TESTING

Representative samples were obtained from the subject site and tested in our laboratory for maximum density (ASTM D1557) and Sand Equivalent (CA217). The results of these tests are presented in Appendix B.

8.0 CONCLUSIONS

We conclude that the geotechnical recommendations presented within the referenced reports for the subject project were in general compliance with our recommendations.

Based on our field observations and testing, Kling Consulting Group, Inc. concludes that the subject post grading under the purview of this report has been performed in general accordance with our recommendations.

The utility trench backfill, curb and gutter and street subgrades, aggregate base, presaturation test of the sidewalk subgrade and asphalt laydown that were observed and tested during post grading, as described herein, are in general compliance with our recommendations and are considered suitable for the intended use.

9.0 RECOMMENDATIONS

9.1 Additional Work

This office should be informed if any work that requires geotechnical services is performed after August 15, 2017.

10.0 PROFESSIONAL LIMITATIONS

Kling Consulting Group, Inc. has performed the services under the scope of this report within the specifications of our client, with the usual thoroughness and competence of the geotechnical engineering profession.

The conclusions, considerations and recommendations presented in this report are professional opinions based upon observations, interpolation of data obtained from separate sampling locations, selective laboratory testing and engineering analyses. These opinions have been derived in accordance with current standards of geotechnical practice and no warranty is expressed or implied. Environmental impacts were not included within the scope of services; silence regarding such does not indicate an absence of potential environmental problems.

Compaction test results are intended to be representative of the fill and backfill. Kling Consulting Group Inc. does not warrant the condition of fill and/or backfill materials between tests, the quality of the contractors work, nor the long-term performance of the fill and/or backfill. Locations of utility trenches and field density tests are approximate only. Kling Consulting Group, Inc. accepts no responsibility for errors in the location of trenches or density tests.

All locations of compaction tests, trench locations, elevations, etc. are represented herein to the best of our abilities. The approximate locations depicted on all the plates are based upon available control as provided in the field by others. Where no information was provided by others, locations were estimated or approximated using limited measuring methods and crude instrumentation. We do not verify the locations or elevations reported herein as accurate in survey or void of error. Kling Consulting Group, Inc. assumes no responsibility for any future costs associated with errors in the area of survey.

This report has been prepared for ICDC and was directed at complying with their specific needs. This report has not been prepared for use by other parties and may not contain sufficient information for their needs and uses.

It is the reader's responsibility to verify the correct interpretation and intention of the recommendations presented herein. Kling Consulting Group, Inc. assumes no responsibility for misunderstandings or improper interpretations that result in unsatisfactory or unsafe work products. It is the reader's further responsibility to acquire copies of any supplemental reports, addendums or responses to public agency reviews that may supersede recommendations in this report.

This report is subject to review by the controlling agencies for this project.

APPENDIX A

REFERENCES

1. Kling Consulting Group, Inc., 2016, Final Pavement Structural Section Recommendations for Tomato Springs, Planning Area 6-N4B, City of Irvine, California ,dated November 18, 2016 (Project No. 16045-00)

2. NMG Geotechnical, Inc., 2016, Pavement Section Recommendations for Pearlbossom Road, Tract 17769, Planning Area 6, Neighborhood 4B, City of Irvine, California, dated August 12, 2016 (Project Nos.: 99070-35 and 99070-64)

3. NMG Geotechnical, Inc., 2016, Geotechnical Review of Updated 40-scale Preliminary Grading Plan, Portion of Tentative Tract Map 16814 and 17769, Neighborhood 4B of Planning Area 6, City of Irvine, CA., dated January 29, 2016 (Project No. 99070-35)

4. NMG Geotechnical, Inc., 2016, Supplemental Geotechnical Investigation and Review of Updated 4-Scale Preliminary Grading Plan, Neighborhood 4B, Tentative Tract Map 16814, Planning Area 6, City of Irvine, CAlifornia dated, MArch 21, 2014 (Project No. 99070-35)

APPENDIX B

SUMMARY OF LABORATORY TESTS

APPENDIX B

SUMMARY OF LABORATORY TESTS

MAXIMUM DRY DENSITY

The maximum dry density and optimum moisture content of typical materials is determined in accordance with ASTM D1557 (five layers).

Maximum Dry Density

Soil Type	Classification	Maximum Density (PCF)	Optimum Moisture (%)
1	Brown Clayey Sand (SC)	129.0	10.0
2	Crushed Miscellaneous Base (SM/GM	124.0	11.4
3	Light Brown Clayey Sand (SC)	125.0	10.5
4	Crushed Miscellaneous Base(SM/GM)	125.0	11.5
5	Light Silty Fine Sand (SM)	125.5	9.5
6	Crushed Miscellaneous Base(SM/GM)	125.6	10.9
7	Dark Brown Clayey Sand w/gravel (SC)	128.5	10.5
8	Rock Corrected, 5.4% retained 3/4"	130.0	9.9
9	Crushed Miscellaneous Base(SM/GM)	122.5	13.5

SAND EQUIVALENT

Sand equivalent testing was performed on imported sand that was used for bedding shading of utility lines. Testing was conducted in accordance with CA 217 and the results are presented below:

Sample No.	Description	Sand Equivalent (SE)
SE-1	Light Gray Silty Fine Sand (SM)	32
SE-2	Light Gray Silty Fine Sand (SM)	49

APPENDIX C

SUMMARY OF DENSITY TESTS

APPENDIX C

FIELD DENSITY TEST PROCEUDRES

1. Field density tests were performed by the Sand Cone Method (ASTM D1556-07) and by the Nuclear Gauge Method (ASTM D6938-07b). Sand Cone Tests are indicated by a SC designation and Nuclear Gauge Tests are indicated by an N designation on the Field Density Test Summary Sheets within the "Test Type" column.

2. Maximum Densities and Optimum Moisture were determined in accordance with ASTM D1557-07.

3. A letter following the Test No. indicates a retest of a failing test as shown in the following example:

4. Test No. 6 - Original Test
   6A - Retest of Test No. 6 denoted by A

5. Note: Retests are indicated on the Field Density Test Location Map in the same manner, with corresponding additional alphabetical letters, if necessary.

6. AB denotes Aggregate Base Density Tests.

7. SG denotes Subgrade Density Test

8. W denotes Water (Domestic & Recycled) Trench Backfill Density Test.

9. RW denotes Recycled Water Trench Backfill Density Test.

10. RWL denotes Recycled Water Lateral Trench Backfill Density Test.

11. DW denotes Domestic Water Trench Backfill Density Test.

12. DWL denotes Domestic Water Lateral Trench Backfill Density Test.

13. E denotes Electric Crossing Trench Backfill Density Test.

14. S denotes Sewer Trench Backfill Density Test.

15. C&G denotes Curb and Gutter Subgrade Test.

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Water

TEST NO.	TEST DATE	TEST OF	STREET	STATION	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
W1	9/6/2016	RWM	Pearblossom	45+80	1	589.0	117.9	129.0	13.3%	10.0%	91%	N
W2	9/6/2016	RWM	Pearblossom	43+95	1	592.0	116.0	129.0	12.0%	10.0%	90%	N
W3	9/6/2016	RWM	Pearblossom	42+20	1	594.0	118.1	129.0	13.1%	10.0%	92%	N
W4	9/13/2016	DWM	Pearblossom	12+55	1	590.0	120.2	129.0	12.2%	10.0%	93%	N
W5	9/13/2016	DWM	Pearblossom	14+35	1	591.5	115.9	129.0	11.8%	10.0%	90%	N
W6	9/13/2016	DWM	Pearblossom	16+00	1	593.5	117.0	129.0	12.3%	10.0%	91%	N
W7	11/9/2016	DWM	Pearblossom	10+80	1	87.5	121.5	129.0	12.8%	10.0%	94%	N
W8	11/9/2016	DWM	Pearblossom	10+80	1	89.5	118.5	129.0	14.5%	10.0%	92%	N
W9	11/16/2016	RWM	Tomato Springs	40-25	1	587.0	121.4	129.0	11.7%	10.0%	94%	N
W10	11/16/2016	RWM	Tomato Springs	38+75	1	587.5	117.6	129.0	13.3%	10.0%	91%	N
W11	11/16/2016	RWM	Tomato Springs	37+50	1	590.0	121.0	129.0	13.0%	10.0%	94%	N
W12	11/16/2016	RWM	Tomato Springs	36+00	1	590.5	123.6	129.0	11.1%	10.0%	96%	N
W13	11/16/2016	RWM	Tomato Springs	34+50	1	531.5	118.9	129.0	10.5%	10.0%	92%	N
W14	11/16/2016	RWM	Tomato Springs	33+00	1	592.5	119.0	129.0	13.3%	10.0%	92%	N
W15	11/16/2016	RWM	Tomato Springs	31+50	1	595.0	118.3	129.0	11.3%	10.0%	92%	N
W16	11/17/2016	RWM	Pearblossom	41+15	1	593.0	121.0	129.0	12.8%	10.0%	94%	N
W17	11/17/2016	RWM	Pearblossom	41+80	1	593.5	115.9	129.0	11.8%	10.0%	90%	N
W18	11/18/2016	RWM	Tomato Springs	61+60	1	593.0	118.5	129.0	11.7%	10.0%	92%	N
W19	11/18/2016	RWM	Tomato Springs	62+20	1	595.0	124.0	129.0	13.0%	10.0%	96%	N
W20	12/12/2016	RWM	Tomato Springs	63+50	1	602.5	120.0	129.0	12.7%	10.0%	93%	N
W21	12/12/2016	RWM	Tomato Springs	63+95	1	606.0	117.5	129.0	12.0%	10.0%	91%	N
W22	12/12/2016	RWM	Tomato Springs	64+75	1	607.5	115.9	129.0	14.3%	10.0%	90%	N
W23	12/12/2016	RWM	Tomato Springs	65+20	1	608.5	121.4	129.0	13.1%	10.0%	94%	N
W24	3/6/2017	RWM	Tomato Springs	62+65	1	603.5	117.9	129.0	14.4%	10.0%	91%	N
W25	3/6/2017	RWM	Tomato Springs	64+15	1	606.0	116.9	129.0	14.8%	10.0%	91%	N
W26	3/6/2017	RWM	Tomato Springs	65+55	1	608.0	120.2	129.0	13.9%	10.0%	93%	N
W27	3/13/2017	RWL	Tomato Springs	32+71	1	596.5	116.3	129.0	15.4%	10.0%	90%	N
W28	3/13/2017	RWL	Tomato Springs	32+71	1	598.0	120.5	129.0	14.9%	10.0%	93%	N
W29	3/13/2017	RWL	Tomato Springs	32+71	1	600.0	121.3	129.0	14.3%	10.0%	94%	N
W30	4/7/2017	RWM	Tomato Springs	29+85	1	605.1	117.4	129.0	12.2%	10.0%	91%	N
W31	4/7/2017	RWM	Tomato Springs	27+62	1	603.2	116.2	129.0	12.4%	10.0%	90%	N
W32	4/7/2017	RWM	Tomato Springs	25+84	1	598.0	118.3	129.0	12.0%	10.0%	92%	N
W33	4/7/2017	RWM	Tomato Springs	23+50	1	581.0	117.7	129.0	12.5%	10.0%	91%	N
W34	4/7/2017	RWM	Tomato Springs	21+52	1	570.2	115.5	129.0	12.4%	10.0%	90%	N
W35	4/7/2017	RWM	Tomato Springs	12+45	1	534.1	115.7	129.0	12.7%	10.0%	90%	N
W36	4/7/2017	RWM	Tomato Springs	10+52	1	504.5	118.4	129.0	13.4%	10.0%	92%	N
W37	4/10/2017	RWM	Tomato Springs	19+65	1	579.0	115.8	129.0	12.1%	10.0%	90%	N
W38	4/10/2017	RWM	Tomato Springs	17+50	1	566.3	116.2	129.0	12.3%	10.0%	90%	N
W39	4/10/2017	RWM	Tomato Springs	15+80	1	531.2	116.6	129.0	12.6%	10.0%	90%	N
W40	4/12/2017	RWM	Tomato Springs	10+60	1	504.8	121.8	129.0	12.2%	10.0%	94%	N
W41	4/12/2017	RWM	Tomato Springs	10+80	1	507.1	118.9	129.0	12.9%	10.0%	92%	N
W42	4/21/2017	DWM	Tomato Springs	49+10	3	608.0	116.2	125.0	11.8%	10.5%	93%	N
W43	4/21/2017	DWM	Tomato Springs	37+45	5	584.1	112.7	125.5	11.5%	9.5%	90%	N
W44	4/21/2017	DWM	Tomato Springs	31+50	5	533.9	115.7	125.5	12.1%	9.5%	92%	N
W45	4/21/2017	DWM	Tomato Springs	48+75	5	607.1	113.7	125.5	11.6%	9.5%	91%	N
W46	4/21/2017	DWM	Tomato Springs	46+10	5	599.0	113.4	125.5	11.9%	9.5%	90%	N
W47	4/25/2017	DWM	Tomato Springs	41+20	3	565.9	116.2	125.0	11.6%	10.5%	93%	N
W48	4/25/2017	DWM	Tomato Springs	49+50	3	606.9	118.6	125.0	12.4%	10.5%	95%	N
W49	6/6/2017	DWL	Tomato Springs	1+71	5	566.0	114.1	125.5	9.9%	9.5%	91%	N
W50	7/6/2017	DWL	Tomato Springs	1+39	5	565.0	116.8	125.5	13.7%	9.5%	93%	N

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Electric

TEST NO.	TEST DATE	TEST OF	STREET	STATION	LOCATION / LOT	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
E1	11/9/2016	EL	Pearblosssom	15+28	South End	1	593.0	116.6	129.0	14.4%	10.0%	90%	N
E2	11/9/2016	EL	Pearblosssom	15+28	South End	1	593.5	124.3	129.0	12.5%	10.0%	96%	N
E3	11/9/2016	EL	Pearblosssom	12+43	South End	1	589.0	118.0	129.0	13.6%	10.0%	91%	N
E4	11/9/2016	EL	Pearblosssom	12+43	South End	1	589.5	119.7	129.0	14.9%	10.0%	93%	N
E5	3/15/2017	EL	Tomato Springs	63+00	South End	1	92.5	117.1	129.0	14.2%	10.0%	91%	N
E6	5/19/2017	EC	Tomato Springs	31+41	Eastbound	3	508.6	117.4	125.0	9.9%	10.5%	94%	N
E7	5/19/2017	EC	Tomato Springs	40+97	Eastbound	3	547.6	117.6	125.0	5.8%	10.5%	94%	N
E8	5/19/2017	EC	Tomato Springs	49+13	Eastbound	3	582.4	118.8	125.0	9.2%	10.5%	95%	N
E9	5/19/2017	EC	Tomato Springs	52+80	Eastbound	3	607.1	116.8	125.0	6.9%	10.5%	93%	N

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Curb and Gutter

TEST NO.	TEST DATE	TEST OF	STREET	STATION	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
CG1	11/8/2016	CG	Pearblossom	15+50	1	593.8	121.4	129.0	13.9%	10.0%	94%	N
CG2	11/8/2016	CG	Pearblossom	14+50	1	592.8	117.6	129.0	14.4%	10.0%	91%	N
CG3	11/8/2016	CG	Pearblossom	13+20	1	591.0	117.1	129.0	13.3%	10.0%	91%	N
CG4	11/8/2016	CG	Pearblossom	12+25	1	590.5	120.1	129.0	14.9%	10.0%	93%	N
CG5	11/8/2016	CG	Pearblossom	11+25	1	590.3	116.5	129.0	15.1%	10.0%	90%	N
CG6	11/8/2016	CG	Pearblossom	12+50	1	590.8	125.0	129.0	12.1%	10.0%	97%	N
CG7	11/8/2016	CG	Pearblossom	14+00	1	592.3	118.5	129.0	13.4%	10.0%	92%	N
CG8	11/8/2016	CG	Pearblossom	15+25	1	593.5	121.4	129.0	13.0%	10.0%	94%	N
CG9	2/13/2017	CG	Tomato Springs	60+90	4	592.5	121.0	125.0	13.6%	11.5%	97%	N
CG10	2/13/2017	CG	Tomato Springs	56+00	4	592.8	119.9	125.0	14.4%	11.5%	96%	N
CG11	2/13/2017	CG	Tomato Springs	54+05	4	596.5	118.4	125.0	14.6%	11.5%	95%	N
CG12	2/13/2017	CG	Tomato Springs	51+15	4	604.5	120.1	125.0	13.1%	11.5%	96%	N
CG13	2/13/2017	CG	Tomato Springs	53+50	4	598.0	119.3	125.0	3.9%	11.5%	95%	N
CG14	2/13/2017	CG	Tomato Springs	57+00	4	590.0	119.1	125.0	13.5%	11.5%	95%	N
CG15	2/13/2017	CG	Tomato Springs	60+50	4	589.0	121.1	125.0	14.7%	11.5%	97%	N
CG16	2/13/2017	CG	Pearblossom	16+30	4	596.0	118.5	125.0	14.4%	11.5%	95%	N
CG17	5/18/2017	CG	Tomato Springs	32+94	4	516.1	112.8	125.0	8.3%	11.5%	90%	N
CG18	5/18/2017	CG	Tomato Springs	36+00	3	530.8	113.8	125.0	8.2%	10.5%	91%	N
CG19	5/18/2017	CG	Tomato Springs	38+00	3	548.0	114.0	125.0	9.6%	10.5%	91%	N
CG20	5/18/2017	CG	Tomato Springs	40+50	3	565.6	111.9	125.0	6.4%	10.5%	90%	N
CG21	5/18/2017	CG	Tomato Springs	44+50	3	579.1	116.2	125.0	5.6%	10.5%	93%	N
CG22	5/18/2017	CG	Tomato Springs	47+00	3	594.8	113.7	125.0	4.9%	10.5%	91%	N
CG23	5/18/2017	CG	Tomato Springs	49+50	3	606.4	113.7	125.0	8.5%	10.5%	91%	N
CG24	5/18/2017	CG	Tomato Springs	52+60	3	514.0	121.1	125.0	4.8%	10.5%	97%	N
CG25	5/18/2017	CG	Tomato Springs	35+00	3	526.8	114.0	125.0	9.3%	10.5%	91%	N
CG26	5/18/2017	CG	Tomato Springs	38+70	3	544.7	114.2	125.0	7.2%	10.5%	91%	N
CG27	5/18/2017	CG	Tomato Springs	41+00	3	562.5	114.2	125.0	6.6%	10.5%	91%	N
CG28	5/18/2017	CG	Tomato Springs	45+55	5	594.3	113.4	125.5	7.4%	9.5%	90%	N
CG29	5/18/2017	CG	Tomato Springs	48+07	5	606.8	116.9	125.5	9.4%	9.5%	93%	N
CG30	5/18/2017	CG	Tomato Springs	45+58	5	594.2	113.8	125.5	8.1%	9.5%	91%	N
CG31	5/18/2017	CG	Tomato Springs	42+00	5	570.6	115.5	125.5	9.2%	9.5%	92%	N
CG32	5/18/2017	CG	Tomato Springs	38+00	5	546.9	114.6	125.5	9.1%	9.5%	91%	N
CG33	6/7/2017	CG	Tomato Springs	37+25	5	545.0	117.0	125.5	8.6%	9.5%	93%	N

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Aggregate Base

TEST NO.	TEST DATE	TEST OF	STREET	STATION	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
AB1	11/28/2016	AB	Pearblossom	11+25	2	590.5	121.0	124.7	13.1%	11.4%	97%	N
AB2	11/28/2016	AB	Pearblossom	13+00	2	591.5	118.3	124.7	13.5%	11.4%	95%	N
AB3	11/28/2016	AB	Pearblossom	14+50	2	593.5	119.5	124.7	12.5%	11.4%	96%	N
AB4	11/28/2016	AB	Pearblossom	15+25	2	594.0	120.0	124.7	13.8%	11.4%	96%	N
AB5	11/28/2016	AB	Pearblossom	15+00	2	593.8	118.1	124.7	12.2%	11.4%	95%	N
AB6	11/28/2016	AB	Pearblossom	13+50	2	592.5	122.0	124.7	12.6%	11.4%	98%	N
AB7	11/28/2016	AB	Pearblossom	12+00	2	591.0	119.7	124.7	14.0%	11.4%	96%	N
AB8	11/28/2016	AB	Pearblossom	10+75	2	592.0	121.1	124.7	12.8%	11.4%	97%	N
AB9	3/18/2017	AB	Tomato Springs	51+50	4	602.8	121.0	125.0	13.6%	11.5%	97%	N
AB10	3/18/2017	AB	Tomato Springs	52+75	4	600.0	119.9	125.0	12.9%	11.5%	96%	N
AB11	3/18/2017	AB	Tomato Springs	54+30	4	598.0	118.4	125.0	13.9%	11.5%	95%	N
AB12	3/18/2017	AB	Tomato Springs	55+00	4	597.3	120.1	125.0	13.0%	11.5%	96%	N
AB13	3/18/2017	AB	Tomato Springs	56+75	4	595.8	119.3	125.0	12.9%	11.5%	95%	N
AB14	3/18/2017	AB	Tomato Springs	57+60	4	595.0	120.0	125.0	13.8%	11.5%	96%	N
AB15	3/18/2017	AB	Tomato Springs	58+80	4	594.3	118.9	125.0	12.7%	11.5%	95%	N
AB16	3/18/2017	AB	Tomato Springs	59+95	4	590.0	119.6	125.0	13.3%	11.5%	96%	N
AB17	3/18/2017	AB	Tomato Springs	61+05	4	591.0	121.2	125.0	13.7%	11.5%	97%	N
AB18	3/18/2017	AB	Tomato Springs	62+10	4	598.0	119.0	125.0	12.6%	11.5%	95%	N
AB19	3/18/2017	AB	Tomato Springs	62+55	4	599.0	121.1	125.0	13.0%	11.5%	97%	N
AB20	3/18/2017	AB	Tomato Springs	63+30	4	602.2	118.5	125.0	12.7%	11.5%	95%	N
AB21	3/18/2017	AB	Tomato Springs	64+00	4	606.0	119.8	125.0	12.4%	11.5%	96%	N
AB22	3/18/2017	AB	Tomato Springs	64+60	4	607.0	120.7	125.0	13.0%	11.5%	97%	N
AB23	4/26/2017	AB	Tomato Springs	65+28	2	608.4	120.2	124.7	15.4%	11.4%	96%	N
AB24	4/26/2017	AB	Tomato Springs	65+12	2	608.1	120.7	124.7	16.8%	11.4%	97%	N
AB25	6/1/2017	AB	Tomato Springs	50+00	4	606.3	120.8	125.0	11.2%	11.5%	97%	N
AB26	6/1/2017	AB	Tomato Springs	47+50	4	604.0	119.4	125.0	10.6%	11.5%	96%	N
AB27	6/1/2017	AB	Tomato Springs	45+00	4	590.5	121.3	125.0	10.8%	11.5%	97%	N
AB28	6/1/2017	AB	Tomato Springs	30+90	9	510.3	116.0	122.5	13.8%	13.5%	95%	N
AB29	6/12/2017	AB	Tomato Springs	46+00	5	606.6	121.2	125.5	16.8%	9.5%	97%	N
AB30	6/12/2017	AB	Tomato Springs	47+50	5	604.8	118.8	125.5	17.1%	9.5%	95%	N
AB31	6/12/2017	AB	Tomato Springs	45+00	5	590.6	119.9	125.5	16.7%	9.5%	96%	N
AB32	6/12/2017	AB	Tomato Springs	42+50	5	573.7	120.9	125.5	17.4%	9.5%	96%	N
AB33	6/12/2017	AB	Tomato Springs	40+00	5	561.4	121.2	125.5	15.8%	9.5%	97%	N
AB34	6/12/2017	AB	Tomato Springs	37+50	5	544.9	122.4	125.5	15.6%	9.5%	98%	N
AB35	6/12/2017	AB	Tomato Springs	35+00	5	526.5	120.8	125.5	14.9%	9.5%	96%	N
AB36	6/12/2017	AB	Tomato Springs	32+50	5	512.9	118.9	125.5	15.0%	9.5%	95%	N
AB37	6/12/2017	AB	Tomato Springs	50+00	5	607.1	119.0	125.5	15.3%	9.5%	95%	N
AB38	6/12/2017	AB	Tomato Springs	47+50	5	605.2	121.8	125.5	14.7%	9.5%	97%	N
AB39	6/14/2017	AB	Tomato Springs	45+00	5	591.0	119.9	125.5	16.1%	9.5%	96%	N
AB40	6/14/2017	AB	Tomato Springs	42+50	5	574.3	119.4	125.5	15.9%	9.5%	95%	N
AB41	6/14/2017	AB	Tomato Springs	40+00	5	562.0	120.1	125.5	16.4%	9.5%	96%	N
AB42	6/14/2017	AB	Tomato Springs	37+50	5	545.4	122.3	125.5	15.7%	9.5%	97%	N
AB43	6/14/2017	AB	Tomato Springs	35+00	9	527.0	118.9	122.5	16.0%	13.5%	97%	N
AB44	6/14/2017	AB	Tomato Springs	32+50	6	513.4	121.1	125.6	15.8%	10.9%	96%	N
AB45	7/6/2017	AB	Tomato Springs	31+00	9	508.7	116.6	122.5	13.0%	13.5%	95%	N

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Sewer

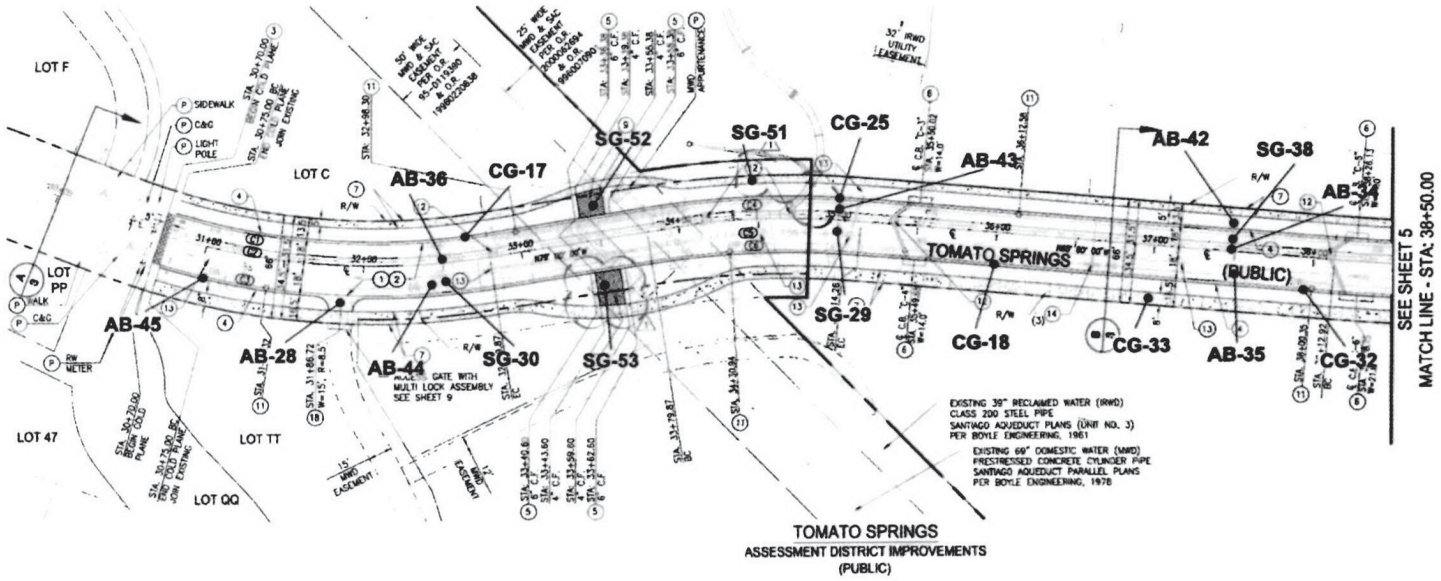
TEST NO.	TEST DATE	TEST OF	STREET	LINE	STATION	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
S1	12/5/2016	SM	Tomato Springs	C	17+75	1	596.5	120.1	129.0	12.9%	10.0%	93%	N
S2	12/5/2016	SM	Tomato Springs	C	18+00	1	599.0	122.2	129.0	13.8%	10.0%	95%	N
S3	12/5/2016	SM	Tomato Springs	C	18+50	1	599.0	121.5	129.0	12.2%	10.0%	94%	N
S4	12/5/2016	SM	Tomato Springs	C	18+75	1	601.0	120.9	129.0	14.0%	10.0%	94%	N
S5	12/5/2016	SM	Tomato Springs	C	19+00	1	604.0	116.5	129.0	13.1%	10.0%	90%	N
S6	12/6/2016	SMH	Tomato Springs	MH #2	19+15	1	604.0	118.8	129.0	11.9%	10.0%	92%	N
S7	12/6/2016	SMH	Tomato Springs	MH #3	19+65	1	604.5	123.9	129.0	13.5%	10.0%	96%	N
S8	12/6/2016	SM	Tomato Springs	C	19+30	1	604.0	121.4	129.0	13.5%	10.0%	94%	N
S9	12/6/2016	SMH	Tomato Springs	MH #4	20+15	1	606.5	117.6	129.0	12.4%	10.0%	91%	N
S10	12/6/2016	SL	Tomato Springs	Lateral C-1	1+25	1	605.0	117.1	129.0	14.0%	10.0%	91%	N
S11	12/6/2016	SM	Tomato Springs	C	20+60	1	608.0	123.7	129.0	11.8%	10.0%	96%	N
S12	12/6/2016	SM	Tomato Springs	C	19+80	1	605.5	118.7	129.0	13.0%	10.0%	92%	N
S13	12/6/2016	SMH	Tomato Springs	MH #1	18+15	1	601.0	117.6	129.0	13.8%	10.0%	91%	N
S14	12/6/2016	SM	Tomato Springs	C	19+20	1	608.0	122.5	129.0	11.8%	10.0%	95%	N
S15	12/6/2016	SM	Tomato Springs	C	19+75	1	607.0	118.7	129.0	12.9%	10.0%	92%	N
S16	12/6/2016	SL	Tomato Springs	Lateral C-1	20+15	1	608.5	122.8	129.0	14.3%	10.0%	95%	N
S17	12/6/2016	SM	Tomato Springs	C	20+50	1	610.0	117.3	129.0	13.0%	10.0%	91%	N

KCG KLING Consulting Group, Inc.

Job Name: Portola Springs (PA-6) Enclave 4B Street Improvements
Location: Tracts 16814 and 17769

Project Number: 16045-00
Test Of: Subgrade:
Street, Sidewalk & Turfblock (TB

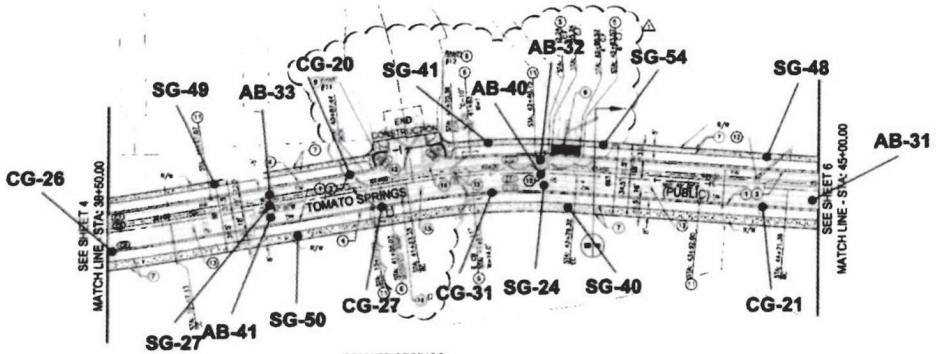
TEST NO.	TEST DATE	TEST OF	STREET	STATION	SOIL TYPE	ELEV/ DEPTH	FIELD DRY DENSITY	MAX. DRY DENSITY	FLD% MOIST.	OPT% MOIST.	%REL COMP	TEST TYPE
SG1	11/22/2016	SG	Pearblossom	15+25	1	593.0	117.0	129.0	13.6%	10.0%	91%	N
SG2	11/22/2016	SG	Pearblossom	13+50	1	591.0	115.9	129.0	14.4%	10.0%	90%	N
SG3	11/22/2016	SG	Pearblossom	12+50	1	590.0	118.4	129.0	14.6%	10.0%	92%	N
SG4	11/22/2016	SG	Pearblossom	11+90	1	589.8	120.1	129.0	13.1%	10.0%	93%	N
SG5	11/22/2016	SG	Pearblossom	12+15	1	590.0	117.3	129.0	13.9%	10.0%	91%	N
SG6	11/22/2016	SG	Pearblossom	13+25	1	591.0	119.1	129.0	13.5%	10.0%	92%	N
SG7	11/22/2016	SG	Pearblossom	14+50	1	592.5	117.1	129.0	14.7%	10.0%	91%	N
SG8	11/22/2016	SG	Pearblossom	15+25	1	592.8	118.5	129.0	14.4%	10.0%	92%	N
SG9	2/1/2017	SG	Tomato Springs	57+60	1	591.0	117.0	129.0	14.6%	10.0%	91%	N
SG10	2/1/2017	SG	Tomato Springs	56+10	1	595.5	115.9	129.0	15.4%	10.0%	90%	N
SG11	2/1/2017	SG	Tomato Springs	53+60	1	597.0	118.4	129.0	15.6%	10.0%	92%	N
SG12	2/1/2017	SG	Tomato Springs	52+10	1	601.8	120.1	129.0	14.5%	10.0%	93%	N
SG13	2/1/2017	SG	Tomato Springs	50+90	1	604.2	117.3	129.0	14.9%	10.0%	91%	N
SG14	3/8/2017	SG	Tomato Springs	57+00	1	591.5	116.2	129.0	14.3%	10.0%	90%	N
SG15	3/8/2017	SG	Tomato Springs	54+50	1	594.5	115.9	129.0	15.0%	10.0%	90%	N
SG16	3/8/2017	SG	Tomato Springs	53+05	1	599.5	117.4	129.0	14.8%	10.0%	91%	N
SG17	3/8/2017	SG	Tomato Springs	51+75	1	601.8	119.1	129.0	15.1%	10.0%	92%	N
SG18	3/8/2017	SG	Tomato Springs	61+80	1	596.0	117.9	129.0	14.3%	10.0%	91%	N
SG19	3/8/2017	SG	Tomato Springs	63+15	1	602.5	119.1	129.0	14.5%	10.0%	92%	N
SG20	3/8/2017	SG	Tomato Springs	64+10	1	605.8	117.2	129.0	14.7%	10.0%	91%	N
SG21	3/8/2017	SG	Tomato Springs	65+00	1	610.0	118.4	129.0	14.4%	10.0%	92%	N
SG22	4/26/2017	SG	Tomato Springs	47+00	1	608.7	118.2	129.0	12.8%	10.0%	92%	N
SG23	5/26/2017	SG	Tomato Springs	50+00	3	606.1	115.2	125.0	12.1%	10.5%	92%	N
SG24	5/26/2017	SG	Tomato Springs	47+50	3	604.4	114.4	125.0	11.6%	10.5%	92%	N
SG25	5/26/2017	SG	Tomato Springs	45+00	3	590.1	118.9	125.0	11.9%	10.5%	95%	N
SG26	5/31/2017	SG	Tomato Springs	42+50	3	573.9	116.0	125.0	11.5%	10.5%	93%	N
SG27	5/31/2017	SG	Tomato Springs	40+00	3	521.9	116.9	125.0	12.4%	10.5%	94%	N
SG28	5/31/2017	SG	Tomato Springs	37+50	3	542.0	114.9	125.0	12.3%	10.5%	92%	N
SG29	5/31/2017	SG	Tomato Springs	35+00	3	571.0	116.5	125.0	11.9%	10.5%	93%	N
SG30	5/31/2017	SG	Tomato Springs	32+50	3	572.4	116.9	125.0	11.7%	10.5%	94%	N
SG31	6/9/2017	SG	Pearblossom	14+50	5	591.0	112.6	125.5	10.2%	9.5%	90%	N
SG32	6/9/2017	SG	Pearblossom	12+00	5	593.8	115.3	125.5	8.5%	9.5%	92%	N
SG33	6/9/2017	SG	Tomato Springs	61+00	1	592.9	124.8	129.0	6.0%	10.0%	97%	N
SG34	6/9/2017	SG	Tomato Springs	59+75	1	589.1	118.6	129.0	10.8%	10.0%	92%	N
SG35	6/9/2017	SG	Tomato Springs	56+00	1	593.7	116.8	129.0	6.2%	10.0%	91%	N
SG36	6/9/2017	SG	Tomato Springs	51+80	1	601.0	118.0	129.0	4.5%	10.0%	91%	N
SG37	6/13/2017	SG	Tomato Springs	50+00	1	606.0	118.7	129.0	6.9%	10.0%	92%	N
SG38	6/19/2017	SG	Tomato Springs	47+50	5	606.1	120.3	125.5	5.7%	9.5%	96%	N
SG39	6/19/2017	SG	Tomato Springs	45+00	5	599.5	120.1	125.5	3.7%	9.5%	96%	N
SG40	6/19/2017	SG	Tomato Springs	42+60	5	577.3	113.8	125.5	4.4%	9.5%	91%	N
SG41	6/19/2017	SW	Tomato Springs	42+00	5	563.4	117.7	125.5	5.2%	9.5%	94%	N
SG42	7/11/2017	SW	Tomato Springs	49+50	5	607.8	123.5	125.5	6.9%	9.5%	98%	N
SG43	7/11/2017	SW	Tomato Springs	52+00	5	602.4	122.9	125.5	7.1%	9.5%	98%	N
SG44	7/11/2017	SW	Tomato Springs	47+00	5	602.0	120.5	125.5	7.7%	9.5%	96%	N
SG45	7/11/2017	SW	Tomato Springs	56+80	5	591.8	112.4	125.5	8.1%	9.5%	90%	N
SG46	7/11/2017	SW	Tomato Springs	58+56	5	588.2	116.4	125.5	9.0%	9.5%	93%	N
SG47	7/20/2017	SW	Tomato Springs	54+30	3	603.5	116.8	125.0	9.6%	10.5%	93%	N
SG48	7/20/2017	SW	Tomato Springs	44+60	3	588.0	112.4	125.0	8.2%	10.5%	90%	N
SG49	7/20/2017	SW	Tomato Springs	39+75	3	571.2	113.3	125.0	9.1%	10.5%	91%	N
SG50	7/20/2017	SW	Tomato Springs	40+50	3	563.4	118.8	125.0	8.7%	10.5%	95%	N
SG51	7/20/2017	SW	Tomato Springs	34+10	3	541.0	119.8	125.0	9.7%	10.5%	96%	N
SG52	8/15/2017	SG	Tomato Springs	33+50	1	519.3	118.1	129.0	13.5%	10.0%	92%	N
SG53	8/15/2017	TB	Tomato Springs	33+50	1	519.5	116.2	129.0	14.0%	10.0%	90%	N
SG54	8/15/2017	TB	Tomato Springs	42+85	1	573.5	118.4	129.0	14.4%	10.0%	92%	N
SG55	8/15/2017	TB	Tomato Springs	56+00	1	592.5	117.2	129.0	14.7%	10.0%	91%	N



TOMATO SPRINGS
ASSESSMENT DISTRICT IMPROVEMENTS
(PUBLIC)

Legend

AB-45	●	Approximate Density Test Location of Aggregate Base
CG-32	●	Approximate Density Test Location of Curb & Gutter
SG-54	●	Approximate Density Test Location of Subgrade



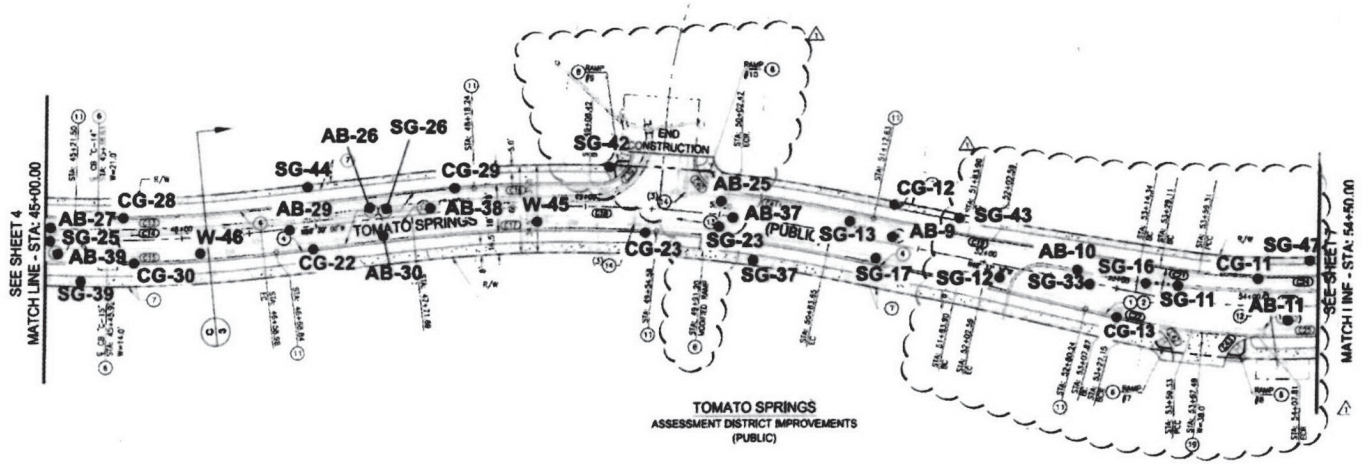
TOMATO SPRINGS
ASSESSMENT DISTRICT IMPROVEMENTS
(PUBLIC)

Reference: Stantec, Improvement Plans, Plan & Profile - Sta. 30+50 - Sta. 38+50, Portion of VTTM 16814 & VTTM 17769, Irvine, California, Sheet 4&5/13, 4-21-2016

KCG KLING Consulting Group, Inc.

Density Test Location Map
Tomato Springs
Planning Area 6 - N4B,
Irvine, California

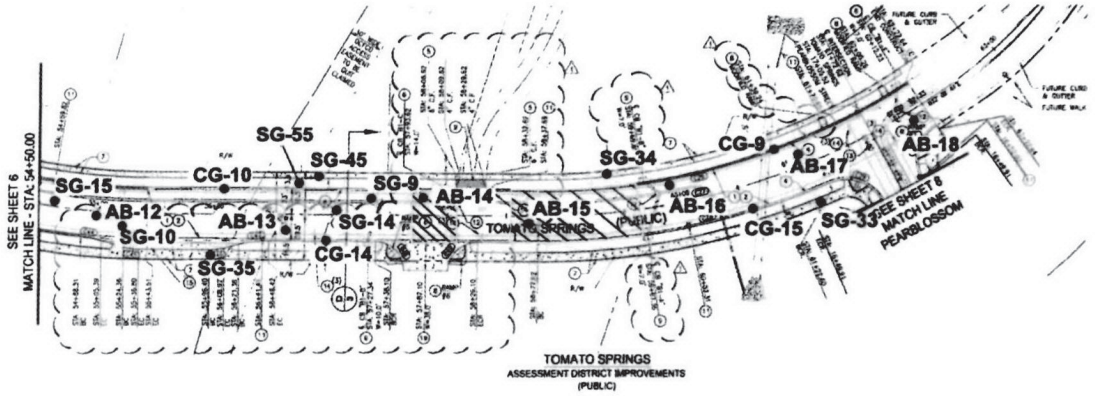
Plate: I
PN: 16045-00
Date: Sept 17, 2018



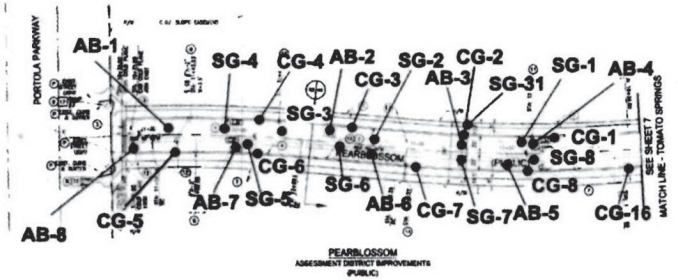
TOMATO SPRINGS
ASSESSMENT DISTRICT IMPROVEMENTS
(PUBLIC)

Legend

AB-39	●	Approximate Density Test Location of Aggregate Base
CG-30	●	Approximate Density Test Location of Curb & Gutter
SG-47	●	Approximate Density Test Location of Subgrade
W-45	●	Approximate Density Test Location of Water
	●	Approximate Limits of Mirafi 600x geofabric



TOMATO SPRINGS
ASSESSMENT DISTRICT IMPROVEMENTS
(PUBLIC)



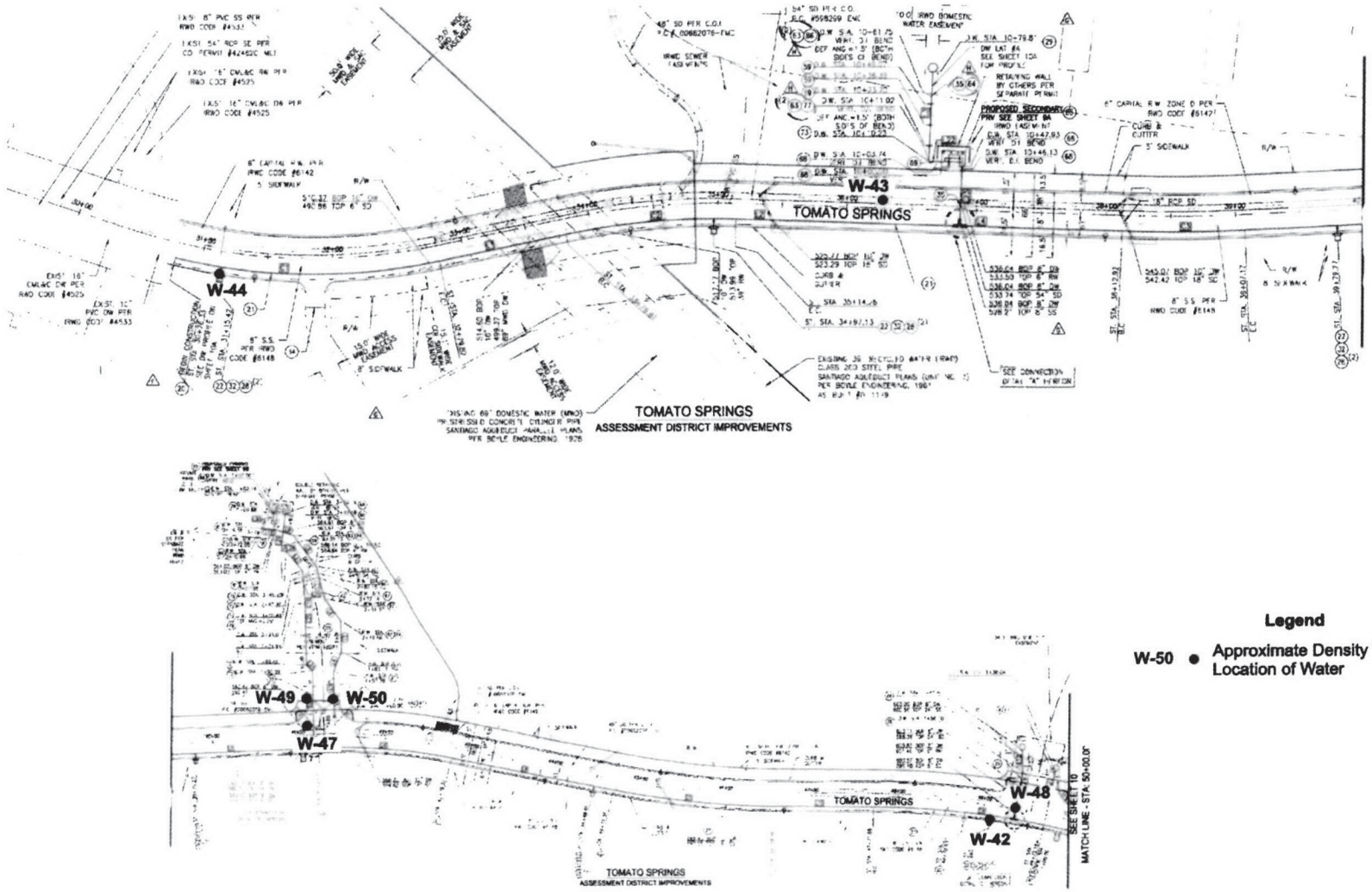
PEARBLOSSOM
ASSESSMENT DISTRICT IMPROVEMENTS
(PUBLIC)

Reference: Stantec, Improvement Plans, Plan & Profile - Sta. 30+50 - Sta. 38+50, Portion of VTTM 16814 & VTTM 17769, Irvine, California, Sheet 6,7&8/13, 4-21-2016

KCG KLING Consulting Group, Inc.

Density Test Location Map
Tomato Springs
Planning Area 6 - N4B,
Irvine, California

Plate: II
PN: 16045-00
Date: Sept 17, 2018



Reference: Stantec, Improvement Plans, Plan & Profile - Sta. 30+50 - Sta. 38+50, Portion of VTTM 16814 & VTTM 17769, Irvine, California, Sheet 9/13, 4-21-2016

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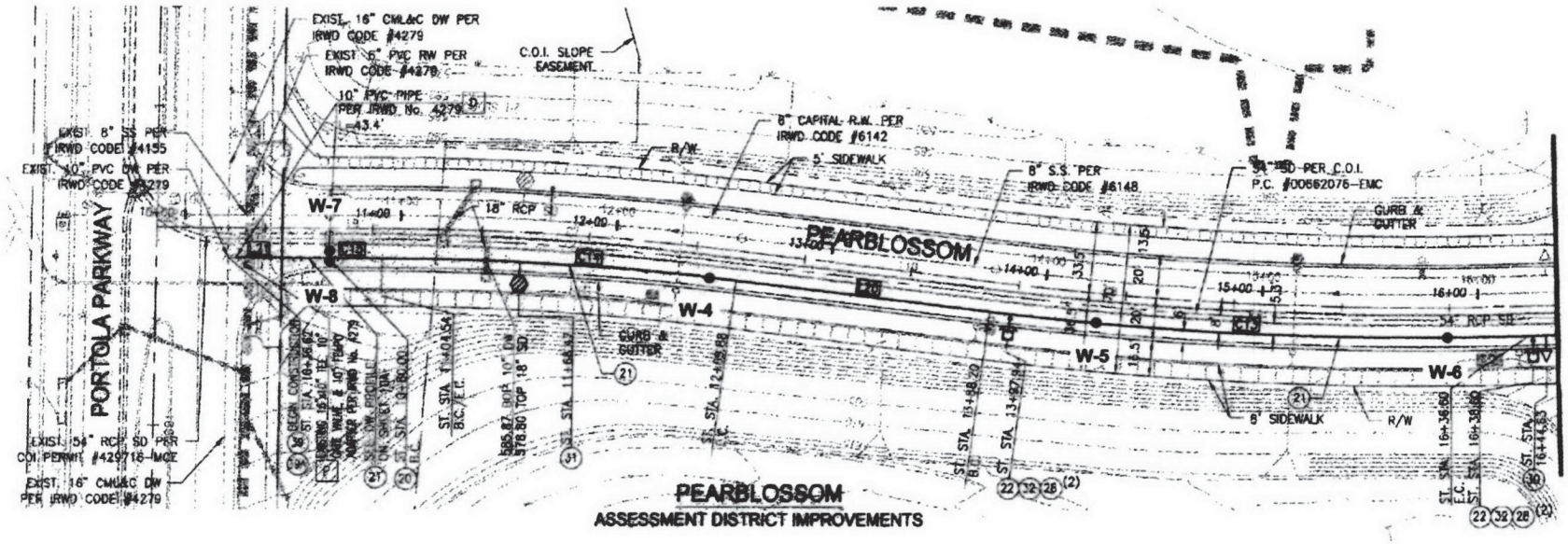
Density Test Location Map
Tomato Springs
Planning Area 6 - N4B,
Irvine, California

Plate:	III
PN:	16045-00
Date:	Sept 17, 2018



PEARBLOSSOM
ASSESSMENT DISTRICT IMPROVEMENTS

Legend

W-8 ● Approximate Density Test Location of Water

Reference: Stantec, Improvement Plans, Plan & Profile - Sta. 30+50 - Sta. 38+50, Portion of VTTM 16814 & VTTM 17769, Irvine, California, Sheet 10/13, 4-21-2016

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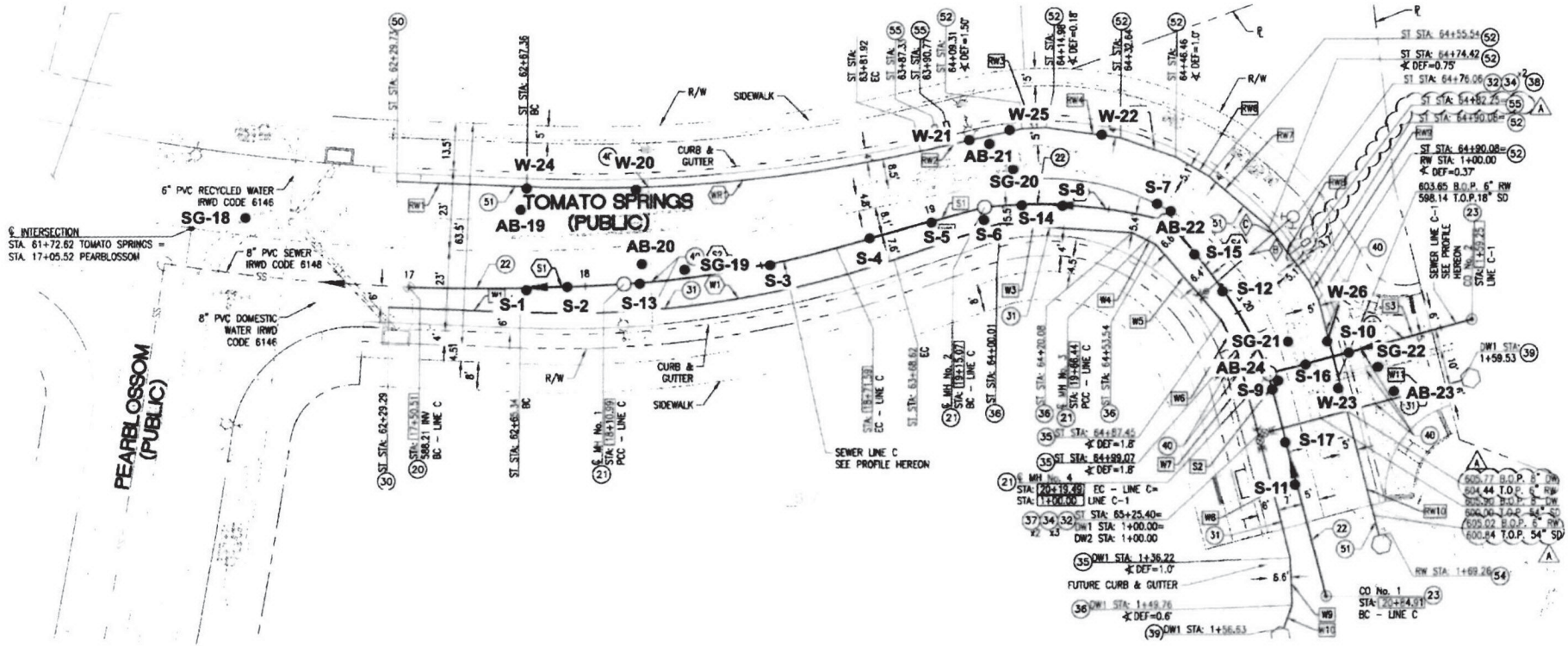
Density Test Location Map
Pearblossom
Planning Area 6 - N4B,
Irvine, California

Plate: IV
PN: 16045-00
Date: Sept 17, 2018



Legend

W-26 ●	Approximate Density Test Location of Water	AB-23 ●	Approximate Density Test Location of Aggregate Base
SG-22 ●	Approximate Density Test Location of Subgrade	S-17 ●	Approximate Density Test Location of Sewer

Reference: Stantec, Street, Domestic Water, Sewer, & Recycled Water, Improvement Plans, Portions of VTTM 17769, IRWD Code #6817, Irvine, California, Sheet 3/6-30-2016

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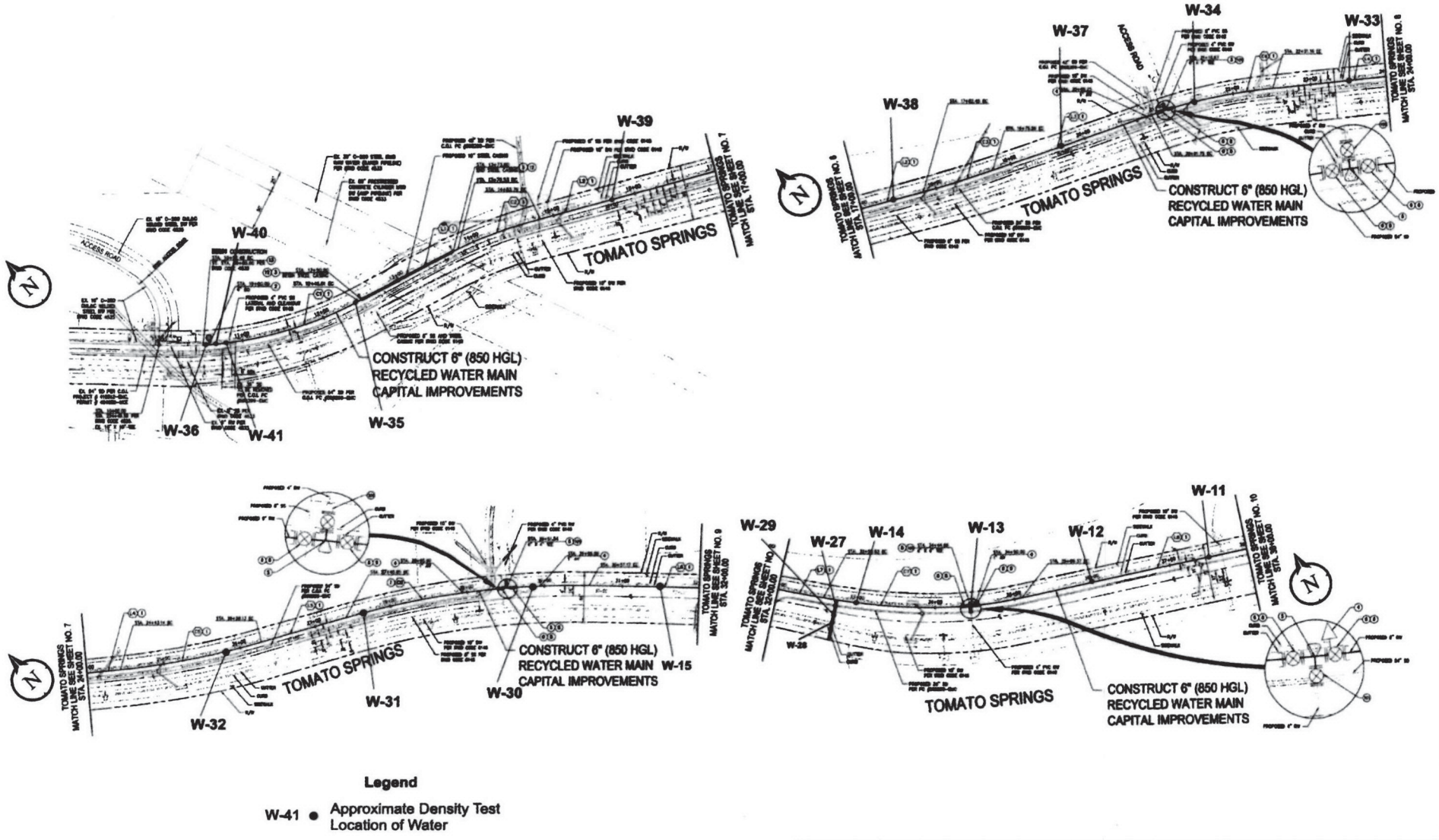
Density Test Location Map
Tomato Springs
Planning Area 6 - N4B,
Irvine, California

Plate: V
PN: 16045-00
Date: Sept 17, 2018



Legend

W-41 ● Approximate Density Test Location of Water

Reference: Stantec, Irvine Ranch Water District Capitol Facilities Planning Area 6 Neighborhood 4B, Recycled Water Mains, Capitol Project #30501 (5243), Irvine, California, Sheet 6-9/11, 5-9-2016

KCG KLING Consulting Group, Inc.

Density Test Location Map
Tomato Springs
Planning Area 6 - N4B,
Irvine, California

Plate:	VI
PN:	16045-00
Date:	Sept 17, 2018