Tree Survey Report

LOS ALAMOS TRUNK SEWER REPLACMENT PHASE 1
SANTA ROSA, SONOMA COUNTY, CALIFORNIA

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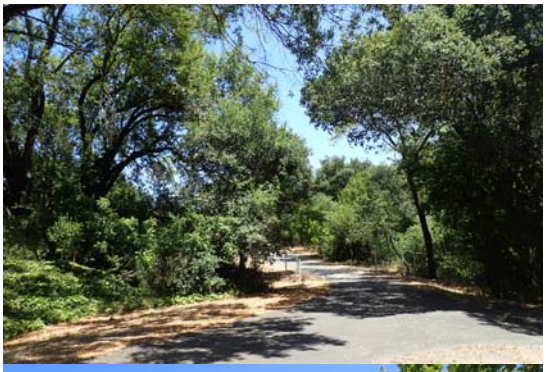
Date:
September 2017

WRA Project No:
25273



ENVIRONMENTAL CONSULTANTS

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1.0 INTRODUCTION

On July 10, and July 19, 2017, WRA, Inc. conducted a comprehensive tree survey at the site of the proposed Los Alamos Trunk Sewer Replacement Phase 1 Project (Project), located between 4312 Streamside Drive, and 100 Elaine Drive, in the northeast quadrant of the City of Santa Rosa, Sonoma County, California (Project Area). WRA's ISA Certified Arborists, Scott Yarger (ISA #WE-9300A) and Erich Schickenberg (ISA #WE-10211A), conducted this survey for the purpose of identifying and documenting the presence of all trees as defined by the City of Santa Rosa Tree Ordinance within and directly adjacent to the limit of grade of the Project Area.

This report provides a survey of all trees within the limit of grade of the Project Area, and also includes a survey of protected trees which are outside of the limit of grade of the Project Area, whose driplines and/or root zones overhang the Project Area, and thus may require pruning to facilitate the Project. GPS locations for all the protected trees surveyed within the Project Area and information regarding the species, size in diameter at breast height (DBH; as measured 4.5 feet above grade), estimated crown radius, estimated height and health were collected and are included in this report. A table with all the relevant information pertaining to surveyed trees is provided in Appendix A. A tree survey location map is provided in Appendix B.

1.1 Project Area Description

The Project Area consists of approximately 3.58 acres of predominantly developed/landscaped land in the northeastern quadrant of the City of Santa Rosa, Sonoma County, California. The proposed Project involves the replacement of an existing 15-inch trunk sewer pipe with a new 24-inch pipe along the approximately 1.04-mile (5,500 feet) alignment. The Project Area includes the approximately 1.04-mile alignment of the proposed new trunk sewer line, and a 15-foot wide easement on either side of the pipe for a total of a 30-foot wide work area. The Project Area begins at Streamside Drive and extends to the northwest for approximately 1.02 miles across city park property (Santa Rosa Creekside Trail), commercial, and residential properties.

1.2 Regulatory Background

<u>City of Santa Rosa Tree Ordinance</u>

The City of Santa Rosa recognizes the aesthetic, environmental, and economic benefits mature trees provide to the citizens of the City. Chapter 17-24, "Trees" of the Santa Rosa City Code (Tree Ordinance) regulates the protection of certain trees on public and private properties within the City limits. The Tree Ordinance defines a "heritage tree" as:

- valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), or buckeye (*Aesculus californica*) 19 inches circumference at breast height (measured at 4.5 feet above ground; or 6 inches diameter at breast height [DBH]) or greater;
- Pacific madrone (*Arbutus menziesii*) 38 inches circumference (12 inches DBH) or greater;
- coast live oak (*Quercus agrifolia*), black oak (*Q. kelloggii*), Oregon oak (*Q. garryana*), canyon live oak (*Q. chrysolepis*), interior live oak (*Q. wislizenii*), red alder (*Alnus rubra* [*A. oregona*]), or white alder (*A. rhombifolia*) 57 inches circumference (18 inches DBH) or greater; or
- Coast redwood (*Sequoia sempervirens*), California bay (*Umbellularia californica*), Douglas fir (*Pseudotsuga menziesii*), or big-leaf maple (*Acer macrophyllum*) 75 inches circumference (24 inches DBH) or greater.

A Tree Permit is generally required for the removal, alteration or relocation of any “heritage tree”, “protected tree” (i.e. any tree, including a heritage tree, designated to be preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval issued by the City), or “street tree” (i.e. any tree having a single trunk circumference greater than 6.25 inches or a diameter greater than 2 inches, a height of more than six feet, and one half or more of its trunk is within a public right of way or within 5 feet of the paved portion of a City street or a public sidewalk), except as exempted in Section 17-24.030 of the Tree Ordinance. Several non-native species including acacia, silver maple, ailanthus, hawthorn, fruitless mulberry, privet, Pyracantha, Monterey pine, Monterey cypress, and fruit and nut trees (except walnut) are exempt from the provisions of the ordinance.

2.0 METHODS

On July 10, and July 19, 2017 the Project Area was traversed on foot to inventory all protected trees (including “heritage trees” and “street trees”) and non-protected trees as defined per the City of Santa Rosa Tree Ordinance, within the limit of grade of the Project Area, as well as all protected trees outside of the Project Area with overhanging canopies and/or root zones which may require pruning to facilitate the Project. WRA’s ISA-Certified Arborists surveyed the area and recorded relevant tree information for each surveyed tree including species, DBH, estimated crown radius, estimated height, and health, condition and structure rankings.

2.1 Tree Inventory

The survey inventoried all “trees” within the Project Area, as defined by the Tree Ordinance, as having one major trunk measuring 4 inches DBH or greater, or a tree with multiple trunks with an aggregate DBH of 8 inches or greater. The survey also inventoried all “street trees,” as defined by the Tree Ordinance, as having a single trunk greater than 2 inches DBH, a height of more than 6 feet, and having one half or more of its trunk within a public right-of-way or within five feet of the paved portion of a City Street or a public sidewalk, and “exempt street trees” in the public right-of-way that were too small to meet the definition of street tree. Protected trees (street trees or heritage trees), outside of the Project Area, which may require trimming or root pruning to facilitate the Project were also surveyed. Surveyed trees status under the Tree Ordinance were determined based on size, species, and location as either: heritage tree, street tree, non-heritage tree, exempt tree, or exempt street tree.

Diameter at Breast Height was calculated for surveyed trees by measuring the trunk diameter at 4.5 ft. above grade. DBH for multi-stem trees was calculated by measuring each individual stem and calculating the sum total of stem diameters. In cases where multi-stem trees had more than five main stems, only the five largest stems were measured. DBH of some trees were estimated where trunks were inaccessible to measure due to poison oak (Toxicodendron diversilobum), or behind fences on private property, as was the case with 4770 Highway 12, where several trees behind a locked gate were surveyed from outside the property. In each case where DBH was estimated, the tree was clearly large enough to be considered protected per the Ordinance. Crown radii, and height were visually estimated in feet. The locations of each surveyed tree were recorded using a GPS unit with sub-meter accuracy and each surveyed tree was given a unique, numbered aluminum tree tag, with the exception of inaccessible trees, and trees that were too small to meet the definition of a tree (i.e. trees on private property with trunk diameters less than 4 inches DBH, or 8 inches DBH for multi-trunk tree), and exempt street trees which were not

tagged. Trees that were not tagged are shown as “NT” on the tree survey table (Appendix A) and tree survey location map (Appendix B).

2.2 Tree Assessment

General notes on the condition of trees were taken, including health, structure, and overall condition. Assessment of the health, structure, and overall condition of each tree was conducted according to the narratives listed in Table 1.

Table 1. Rating narratives for tree assessment

Health	
Good	Tree is free from symptoms of disease and stress.
Fair	Tree shows some symptoms of disease or stress including twig and small branch dieback, evidence of fungal / parasitic infection, thinning of crown, or poor leaf color.
Poor	Tree shows symptoms of severe decline.
Structure	
Good	Tree is free from major structural defects.
Fair	Tree shows some structural defects in branches but overall structure is stable.
Poor	Tree shows structural failure of a major branch or co-dominant trunk.
General Condition	
Good	Tree shows condition of foliage, bark, and overall structure characteristic of the species and lacking obvious defect, or disease.
Fair	Tree shows condition of foliage, bark, and overall structure characteristic of the species with some evidence of stress, defect, or disease.
Poor	Tree shows condition of foliage, bark, and overall structure uncharacteristic of the species with obvious evidence of stress, defect, or disease.

2.3 Tree Impact Assessment

Potential impacts to surveyed trees were analyzed in GIS. The Project footprint (i.e. the alignment of the proposed trunk sewer replacement pipe, and 15-foot wide easement on either side of the pipe) was overlaid on tree survey data to determine which trees will potentially be impacted by removal or grading (Appendix B). Potential impacts were assessed based on the location inside or outside of the limit of grade of the Project Area. Trees located inside the limit of grade were considered “potential removal”, while trees outside of the limit of grade, with canopies or root zones which overlap the limit of grade were considered to potentially require pruning (Appendix A). It is likely that not all trees within the limit of grade of the Project Area will require removal. However, this impact assessment methodology was used as a conservative measure.

3.0 RESULTS

3.1 Tree Inventory

A total of 130 trees were inventoried during this assessment, including 25 heritage trees, 33 street trees, 51 non-heritage trees, 18 exempt trees, and 3 exempt street trees. A complete list of all trees surveyed within the Study Area is included in Appendix A. The GPS locations of surveyed trees are shown in Appendix B. Heritage trees present within the Project Area are predominantly coast live oak, but also include valley oak, black oak, California buckeye, California bay, and Coast redwood. Street trees present within the Project Area are predominantly Chinese pistache (*Pistacia chinensis*) and red maple (*Acer rubrum*), but also include Crape myrtle (*Lagerstroemia indica*), and Deodar cedar (*Cedrus deodara*), Other native, non-heritage trees on-site included red willow (*Salix laevigata*), and Northern California black walnut (*Juglans hindsii*), although Northern California black walnut is not native to the Project Area, and has been introduced outside of its native range in California. Exempt trees present within the Project Area are predominantly cherry plum (*Prunus cerasifera*), but also include other fruit trees such as apple (*Malus* sp.), common pear (*Pyrus communis*), Japanese loquat (*Eriobotrya japonica*), Japanese persimmon (*Diospyros kaki*), peach (*Prunus persica*).

The largest heritage tree surveyed was a 121.5-inch multi-trunk California bay (tree #221). The largest single-trunk tree surveyed was a 36.4-inch coast live oak (tree #220). Both of these trees are outside of the Project Area, but have canopies and/or root zones that overlap the Project Area, and therefore, they may require pruning. Among all 130 trees surveyed, DBH ranged from 0.9 to 121.5 inches. Approximate canopy radii averaged from 1 to 40 feet. Approximate height ranged from 8 to 55 feet.

3.2 Tree Assessment

The majority of trees within the Project Area are in good condition, with good form, and vigorous growth habits. Trees that generally ranked ‘good’ in condition, health, and structure included most of the coast live oaks within the Project Area. Trees that generally ranked ‘fair’ to ‘poor’ included Northern California black walnut, cherry plum, and red willow. Many of the Northern California black walnuts within the Project Area are stump sprouts from previously removed trees, and these multi-trunked trees have inherently poor structure, with weak attachments to the parent stump. The majority of cherry plums within the Project Area also exhibited multi-trunked growth forms with one or more dead major trunks. Red willows exhibited nearly prostrate growth forms with significantly leaning scaffold branches.

Other maladies commonly observed throughout the Project Area affecting trees included codominant trunks with included bark, small to significant branch dieback, poor leaf color, and trunk and scaffold branch rot. The overall condition, structural condition, health of inventoried trees was found to be generally fair to good with the majority of trees ranking good in condition, health, and structure. Table 3 below summarizes the assessment results of all inventoried trees in the Project Area.

Table 2. Tree assessment results summary

Criteria Assessed/Rating	Condition	Health	Structure
Good	76 (58%)	77 (59%)	76 (58%)
Fair	41 (32%)	45 (35%)	41 (32%)
Poor	13 (10%)	8 (6%)	13 (10%)

3.3 Tree Impact Assessment

A total of 65 trees are anticipated to be removed by the Project, including eight heritage trees, 17 street trees, 25 non-heritage trees, 13 exempt trees, and two exempt street trees. Heritage trees which will potentially be removed include six coast live oaks, one black oak, and one California buckeye, ranging in size from a single-trunk, 6.5 inch DBH California buckeye (tree #282nt), to a multi-trunked 37.1-inch DBH coast live oak (tree #235). Street trees which will potentially be removed include ten red maples, 6 Chinese pistache trees, and one Crape myrtle. In addition, a total of 17 heritage trees, and 16 street trees may require pruning as they are located outside of the limit of grade of the Project Area, but have overhanging canopies and/or root zones. Potential impacts to the canopy or root system could include damage to branches or trunk during construction, ripping or tearing roots during subgrade excavation, or smothering roots due to soil compaction or grade fills. These types of injuries can lead to reduced tree vigor, increased susceptibility to pathogens or pests, or in severe cases eventual tree decline or death. Potential permit, mitigation, and tree protection requirements as required by the Tree Ordinance are provided below.

4.0 SUMMARY AND RECOMMENDATIONS

A tree removal permit will be required for any alteration, removal or relocation of heritage, protected or street trees. The City of Santa Rosa may require replacement plantings as a condition of approval in order to mitigate for the loss of functions provided by trees to be removed including shade, erosion control, groundwater replenishment, visual screening, and wildlife habitat. Replacement trees shall be planted in accordance with the following criteria from the Tree Ordinance:

- For each 6 inches or fraction thereof of the diameter of a tree which was approved for removal, two trees of the same genus and species as the removed tree (or another species, if approved by the City), each of a minimum 15-gallon container size, shall be planted on the project site, provided however, that an increased number of smaller size trees of the same genus and species may be planted if approved by the City, or a fewer number of such trees of a larger size if approved by the City.

- If the development site is inadequate in size to accommodate the replacement trees, the trees shall be planted on public property with the approval of the Director of the City's

Recreation and Parks Department. Upon the request of the developer and the approval of the Director, the City may accept an in-lieu payment of $100.00 per 15-gallon replacement tree on condition that all such payments shall be used for tree-related educational projects and/or planting programs of the City.

As described above, the Project will potentially remove eight heritage trees, 17 street trees, 25 non-heritage trees, and 21 exempt tree. Under the Tree Ordinance, trees, other than heritage trees, situated within City owned parks and other City-owned or controlled places do not require a tree removal permit when altered, removed, or relocated by City employees or by contractors retained by the City. Since the Project proponent is the City of Santa Rosa, and the Project is located either on City-owned property, or areas where the City will obtain an easement, it is assumed that only the eight heritage trees would require a tree removal permit.

Assuming only heritage trees will require a permit, the eight heritage trees within the Project Area limit of grade have a combined DBH of 188.7 inches. Assuming all eight heritage trees require removal, and typical mitigation ratios would apply, that would require 63 15-gallon replacement trees, or the payment of $6,300 of in-lieu fees. However, actual permit and mitigation requirements will be determined by the City.

The following relevant tree protection measures during construction may be required as a condition of approval, as excerpted from Section 17-24.050 of the Tree Ordinance:

(1) Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the “protected perimeter,” which shall be either the root zone or other limit as may be established by the City. Such fences shall remain continuously in place for the duration of all work undertaken in connection with the development. The area so fenced off shall not be used as a storage area or altered or disturbed except as may be permitted under this subsection.

(2) If the proposed development, including any site work for the development, will encroach upon the protected perimeter of a protected tree, special measures shall be utilized, as approved by the Director or the Planning Commission, to allow the roots to obtain oxygen, water, and nutrients as needed. Any excavation, cutting, filling, or compaction of the existing ground surface within the protected perimeter, if authorized at all by the Director, shall be minimized and subject to such conditions as may be imposed by the Director. No significant change in existing ground level shall be made within the drip line of a protected tree. No burning or use of equipment with an open flame shall occur near or within the protected perimeter. All brush, earth and other debris shall be removed in a manner which prevents injury to the protected tree.

(3) No oil, gas, chemicals or other substances that may be harmful to trees shall be stored or dumped within the protected perimeter of any protected tree, or at any other location on the site from which such substances might enter the perimeter of a protected tree. No construction materials shall be stored within the protected perimeter of a protected tree.

(4) Underground trenching for utilities shall avoid major support and absorbing tree roots of protected trees. If avoidance is impractical, tunnels shall be made below the roots. Trenches shall be consolidated to service as many units as possible. Trenching within the

drip line of protected trees shall be avoided to the greatest extent possible and shall only be done under the on-site directions of a Certified Arborist.

(5) No concrete or asphalt paving shall be placed over the root zones of protected trees [selected for preservation]. No artificial irrigation shall occur within the root zone of oaks.

(6) No compaction of the soil within the root zone of protected trees [selected for preservation] shall occur.

Additional measures may be required as a conditions of approval, as outlined in Section 17-24.050 of the Tree Ordinance.

5.0 REFERENCES

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APPENDIX A

TREE SURVEY TABLE

Appendix A. Los Alamos Trunk Sewer Replacment Phase 1 Tree Survey
July 2017

Tag ID	Species	Common Name	Multi-stem	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Total DBH (inches)	Ordinance Status	Potential Impact	Dripline (feet)	Height (feet)	Condition	Health	Structure
201	*Quercus agrifolia*	Coast live oak	no	13.7	0.0	0.0	0.0	0.0	13.7	Non-heritage	Potential Pruning	13	25	Good	Good	Good
202	*Quercus agrifolia*	Coast live oak	no	8.8	0.0	0.0	0.0	0.0	8.8	Non-heritage	Potential Pruning	10	18	Good	Good	Good
203	*Quercus agrifolia*	Coast live oak	no	12.3	0.0	0.0	0.0	0.0	12.3	Non-heritage	Potential Removal	12	22	Good	Good	Good
204	*Quercus agrifolia*	Coast live oak	yes	4.0	3.6	0.0	0.0	0.0	7.6	Non-heritage	Potential Pruning	6	12	Good	Good	Good
205	*Quercus agrifolia*	Coast live oak	no	11.3	0.0	0.0	0.0	0.0	11.3	Non-heritage	Potential Pruning	13	25	Good	Good	Good
206	*Quercus agrifolia*	Coast live oak	yes	15.3	4.6	0.0	0.0	0.0	19.9	Heritage Tree	Potential Removal	18	30	Good	Good	Fair
207	*Quercus agrifolia*	Coast live oak	no	32.0	0.0	0.0	0.0	0.0	32	Heritage Tree	Potential Pruning	35	55	Good	Good	Good
208	*Picea breweriana*	Weeping spruce	no	9.6	0.0	0.0	0.0	0.0	9.6	Non-heritage	Potential Removal	8	35	Fair	Fair	Good
209	*Picea breweriana*	Weeping spruce	no	9.0	0.0	0.0	0.0	0.0	9	Non-heritage	Potential Removal	8	35	Fair	Fair	Good
210	*Quercus agrifolia*	Coast live oak	no	7.1	0.0	0.0	0.0	0.0	7.1	Non-heritage	Potential Removal	12	18	Fair	Fair	Fair
211	*Juglans hindsii*	Northern California black walnut	yes	9.7	6.4	6.4	4.0	0.0	26.5	Non-heritage	Potential Removal	14	35	Fair	Fair	Fair
212	*Quercus agrifolia*	Coast live oak	yes	7.6	8.1	0.0	0.0	0.0	15.7	Non-heritage	Potential Removal	12	22	Fair	Fair	Fair
213	*Umbellularia californica*	California bay	yes	17.7	18.0	16.9	0.0	0.0	52.6	Heritage Tree	Potential Pruning	25	50	Fair	Fair	Fair
214	*Juglans hindsii*	Northern California black walnut	no	10.1	0.0	0.0	0.0	0.0	10.1	Non-heritage	Potential Removal	10	28	Fair	Fair	Fair
215	*Juglans hindsii*	Northern California black walnut	no	7.3	0.0	0.0	0.0	0.0	7.3	Non-heritage	Potential Removal	15	18	Fair	Fair	Poor
216	*Quercus agrifolia*	Coast live oak	no	12.0	0.0	0.0	0.0	0.0	12	Non-heritage	Potential Pruning	18	40	Good	Good	Good
217	*Juglans hindsii*	Northern California black walnut	no	9.5	0.0	0.0	0.0	0.0	9.5	Non-heritage	Potential Pruning	17	28	Fair	Fair	Fair
218	*Quercus agrifolia*	Coast live oak	no	13.5	0.0	0.0	0.0	0.0	13.5	Non-heritage	Potential Pruning	22	25	Good	Good	Good
219	*Juglans hindsii*	Northern California black walnut	no	9.5	0.0	0.0	0.0	0.0	9.5	Non-heritage	Potential Pruning	18	28	Fair	Fair	Fair
220	*Quercus agrifolia*	Coast live oak	no	36.4	0.0	0.0	0.0	0.0	36.4	Heritage Tree	Potential Pruning	39	45	Good	Good	Good
221	*Umbellularia californica*	California bay	yes	38.0	27.9	21.0	12.6	22.0	121.5	Heritage Tree	Potential Pruning	35	45	Fair	Fair	Fair
222	*Quercus agrifolia*	Coast live oak	yes	16.7	16.7	0.0	0.0	0.0	33.4	Heritage Tree	Potential Pruning	25	45	Good	Good	Good
223	*Quercus agrifolia*	Coast live oak	no	11.5	0.0	0.0	0.0	0.0	11.5	Non-heritage	Potential Removal	14	35	Good	Good	Good
224	*Quercus agrifolia*	Coast live oak	no	8.3	0.0	0.0	0.0	0.0	8.3	Non-heritage	Potential Removal	10	18	Good	Good	Good
225	*Salix lasiolepis*	Arroyo willow	yes	3.0	2.8	3.1	3.0	3.0	14.9	Non-heritage	Potential Pruning	20	15	Poor	Fair	Poor
226	*Acer negundo*	Box elder	no	17.4	0.0	0.0	0.0	0.0	17.4	Non-heritage	Potential Pruning	35	37	Good	Good	Fair
227	*Salix laevigata*	Red willow	yes	6.1	6.5	5.8	5.8	4.0	28.2	Non-heritage	Potential Pruning	35	12	Poor	Poor	Poor
228	*Salix laevigata*	Red willow	yes	12.1	10.0	7.0	6.0	4.0	39.1	Non-heritage	Potential Pruning	35	40	Fair	Fair	Fair
229	*Salix laevigata*	Red willow	yes	9.5	10.1	7.8	0.0	0.0	27.4	Non-heritage	Potential Pruning	35	35	Poor	Fair	Poor
230	*Salix laevigata*	Red willow	yes	15.0	14.3	8.0	0.0	0.0	37.3	Non-heritage	Potential Pruning	35	35	Fair	Fair	Poor
231	*Salix laevigata*	Red willow	no	19.5	0.0	0.0	0.0	0.0	19.5	Non-heritage	Potential Pruning	40	25	Fair	Fair	Poor
232	*Salix laevigata*	Red willow	no	11.3	0.0	0.0	0.0	0.0	11.3	Non-heritage	Potential Pruning	25	22	Fair	Fair	Fair
233	*Salix laevigata*	Red willow	yes	11.1	10.6	0.0	0.0	0.0	21.7	Non-heritage	Potential Pruning	25	18	Poor	Fair	Poor
234	*Quercus agrifolia*	Coast live oak	no	8.9	0.0	0.0	0.0	0.0	8.9	Non-heritage	Potential Removal	12	20	Good	Good	Good
235	*Quercus agrifolia*	Coast live oak	yes	12.8	13.9	10.4	0.0	0.0	37.1	Heritage Tree	Potential Removal	18	25	Good	Good	Good
236	*Zelkova serrata*	Japanese zelkova	yes	2.5	2.0	2.0	2.0	2.0	10.5	Non-heritage	Potential Removal	5	15	Good	Good	Good
237	*Zelkova serrata*	Japanese zelkova	yes	2.8	2.0	2.0	2.0	2.0	10.8	Non-heritage	Potential Removal	5	12	Good	Good	Good
238	*Pyrus calleryana*	Callery pear	no	8.9	0.0	0.0	0.0	0.0	8.9	Non-heritage	Potential Pruning	13	15	Good	Good	Good
239	*Pistacia chinensis*	Chinese pistache	no	6.5	0.0	0.0	0.0	0.0	6.5	Street Tree	Potential Pruning	8	12	Good	Good	Good
240	*Pistacia chinensis*	Chinese pistache	no	5.5	0.0	0.0	0.0	0.0	5.5	Street Tree	Potential Pruning	8	12	Good	Good	Good
241	*Pistacia chinensis*	Chinese pistache	no	4.8	0.0	0.0	0.0	0.0	4.8	Street Tree	Potential Pruning	8	10	Good	Good	Good
242	*Pistacia chinensis*	Chinese pistache	no	8.0	0.0	0.0	0.0	0.0	8	Street Tree	Potential Removal	10	14	Good	Good	Good
243	*Pistacia chinensis*	Chinese pistache	no	6.1	0.0	0.0	0.0	0.0	6.1	Street Tree	Potential Removal	8	15	Fair	Fair	Good
244	*Pistacia chinensis*	Chinese pistache	no	8.2	0.0	0.0	0.0	0.0	8.2	Street Tree	Potential Pruning	13	15	Good	Good	Good

Appendix A. Los Alamos Trunk Sewer Replacment Phase 1 Tree Survey
July 2017

Tag ID	Species	Common Name	Multi-stem	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Total DBH (inches)	Ordinance Status	Potential Impact	Dripline (feet)	Height (feet)	Condition	Health	Structure
245	*Pistacia chinensis*	Chinese pistache	no	9.2	0.0	0.0	0.0	0.0	9.2	Street Tree	Potential Pruning	14	15	Good	Good	Good
246	*Pistacia chinensis*	Chinese pistache	no	5.4	0.0	0.0	0.0	0.0	5.4	Street Tree	Potential Removal	8	13	Good	Good	Good
247	*Pistacia chinensis*	Chinese pistache	no	8.2	0.0	0.0	0.0	0.0	8.2	Street Tree	Potential Removal	13	15	Good	Good	Good
248	*Pistacia chinensis*	Chinese pistache	no	5.0	0.0	0.0	0.0	0.0	5	Street Tree	Potential Pruning	8	12	Fair	Good	Fair
249	*Pistacia chinensis*	Chinese pistache	no	7.3	0.0	0.0	0.0	0.0	7.3	Street Tree	Potential Removal	12	15	Good	Good	Good
250	*Pistacia chinensis*	Chinese pistache	no	7.4	0.0	0.0	0.0	0.0	7.4	Street Tree	Potential Removal	13	15	Good	Good	Good
251	*Acer rubrum*	Red maple	no	2.2	0.0	0.0	0.0	0.0	2.2	Street Tree	Potential Removal	4	12	Poor	Poor	Fair
252	*Lagerstroemia indica*	Crape myrtle	no	4.0	0.0	0.0	0.0	0.0	4	Street Tree	Potential Pruning	7	13	Good	Good	Good
253	*Acer rubrum*	Red maple	no	4.1	0.0	0.0	0.0	0.0	4.1	Street Tree	Potential Removal	9	17	Good	Good	Good
254	*Acer rubrum*	Red maple	no	2.1	0.0	0.0	0.0	0.0	2.1	Street Tree	Potential Removal	3	15	Poor	Poor	Fair
255	*Acer rubrum*	Red maple	no	2.7	0.0	0.0	0.0	0.0	2.7	Street Tree	Potential Removal	5	12	Good	Good	Good
256	*Acer rubrum*	Red maple	no	3.3	0.0	0.0	0.0	0.0	3.3	Street Tree	Potential Removal	6	12	Good	Good	Good
257	*Acer rubrum*	Red maple	no	3.9	0.0	0.0	0.0	0.0	3.9	Street Tree	Potential Removal	6	15	Good	Good	Good
258	*Acer rubrum*	Red maple	no	3.5	0.0	0.0	0.0	0.0	3.5	Street Tree	Potential Removal	7	15	Good	Good	Good
259	*Acer rubrum*	Red maple	no	3.8	0.0	0.0	0.0	0.0	3.8	Street Tree	Potential Removal	9	14	Good	Good	Good
260	*Acer rubrum*	Red maple	no	2.8	0.0	0.0	0.0	0.0	2.8	Street Tree	Potential Pruning	5	11	Fair	Fair	Good
261	*Quercus lobata*	Valley oak	no	6.1	0.0	0.0	0.0	0.0	6.1	Heritage Tree	Potential Pruning	10	18	Good	Good	Good
262	*Quercus lobata*	Valley oak	no	9.9	0.0	0.0	0.0	0.0	9.9	Heritage Tree	Potential Pruning	15	20	Good	Good	Good
263	*Acer rubrum*	Red maple	no	6.2	0.0	0.0	0.0	0.0	6.2	Street Tree	Potential Pruning	12	25	Good	Fair	Good
264	*Acer rubrum*	Red maple	no	5.0	0.0	0.0	0.0	0.0	5	Street Tree	Potential Removal	10	22	Good	Good	Good
265	*Acer rubrum*	Red maple	no	4.6	0.0	0.0	0.0	0.0	4.6	Street Tree	Potential Removal	9	20	Good	Good	Good
266	*Cedrus deodara*	Deodar cedar	no	16.1	0.0	0.0	0.0	0.0	16.1	Street Tree	Potential Pruning	14	40	Good	Good	Good
267	*Cedrus deodara*	Deodar cedar	no	20.3	0.0	0.0	0.0	0.0	20.3	Street Tree	Potential Pruning	16	40	Good	Good	Good
268	*Quercus agrifolia*	Coast live oak	no	8.3	0.0	0.0	0.0	0.0	8.3	Non-heritage	Potential Pruning	8	12	Good	Good	Good
269	*Acer rubrum*	Red maple	no	7.2	0.0	0.0	0.0	0.0	7.2	Street Tree	Potential Pruning	12	28	Good	Good	Good
270	*Acer rubrum*	Red maple	no	9.8	0.0	0.0	0.0	0.0	9.8	Street Tree	Potential Pruning	15	20	Good	Good	Good
271	*Quercus agrifolia*	Coast live oak	no	8.9	0.0	0.0	0.0	0.0	8.9	Non-heritage	Potential Pruning	10	16	Good	Good	Good
272	*Acer rubrum*	Red maple	no	4.3	0.0	0.0	0.0	0.0	4.3	Street Tree	Potential Pruning	8	16	Good	Good	Good
273	*Acer rubrum*	Red maple	no	3.7	0.0	0.0	0.0	0.0	3.7	Street Tree	Potential Pruning	7	16	Good	Good	Good
274	*Quercus lobata*	Valley oak	no	6.6	0.0	0.0	0.0	0.0	6.6	Heritage Tree	Potential Pruning	8	21	Good	Good	Good
275	*Quercus agrifolia*	Coast live oak	yes	23.4	27.1	0.0	0.0	0.0	50.5	Heritage Tree	Potential Pruning	30	40	Fair	Fair	Fair
276	*Quercus agrifolia*	Coast live oak	no	7.6	0.0	0.0	0.0	0.0	7.6	Non-heritage	Potential Pruning	9	16	Good	Good	Fair
277	*Quercus agrifolia*	Coast live oak	no	16.0	0.0	0.0	0.0	0.0	16	Non-heritage	Potential Pruning	19	28	Good	Good	Good
278	*Quercus lobata*	Valley oak	no	7.5	0.0	0.0	0.0	0.0	7.5	Heritage Tree	Potential Pruning	13	18	Good	Good	Good
279	*Quercus agrifolia*	Coast live oak	yes	23.1	20.0	19.0	0.0	0.0	62.1	Heritage Tree	Potential Pruning	34	38	Good	Fair	Fair
280	*Lagerstroemia indica*	Crape myrtle	no	4.3	0.0	0.0	0.0	0.0	4.3	Street Tree	Potential Pruning	6	12	Good	Good	Good
281	*Lagerstroemia indica*	Crape myrtle	no	4.4	0.0	0.0	0.0	0.0	4.4	Street Tree	Potential Removal	5	10	Good	Good	Good
282nt	*Aesculus californica*	California buckeye	yes	4.0	2.5	0.0	0.0	0.0	6.5	Heritage Tree	Potential Removal	8	8	Fair	Good	Fair
283nt	*Pinus pinea*	Italian stone pine	no	20.0	0.0	0.0	0.0	0.0	20	Non-heritage	Potential Pruning	18	30	Good	Good	Good
284	*Quercus agrifolia*	Coast live oak	yes	7.6	2.9	0.0	0.0	0.0	10.5	Non-heritage	Potential Pruning	13	20	Fair	Good	Good
285nt	*Quercus agrifolia*	Coast live oak	yes	12.0	12.6	0.0	0.0	0.0	24.6	Heritage Tree	Potential Removal	13	28	Good	Good	Good
286	*Quercus agrifolia*	Coast live oak	no	20.4	0.0	0.0	0.0	0.0	20.4	Heritage Tree	Potential Pruning	20	35	Good	Good	Good
287	*Quercus agrifolia*	Coast live oak	yes	3.5	7.1	0.0	0.0	0.0	10.6	Non-heritage	Potential Removal	12	24	Good	Good	Good
288	*Salix laevigata*	Red willow	no	4.5	0.0	0.0	0.0	0.0	4.5	Non-heritage	Potential Removal	9	9	Poor	Fair	Poor

Appendix A. Los Alamos Trunk Sewer Replacment Phase 1 Tree Survey
July 2017

Tag ID	Species	Common Name	Multi-stem	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Total DBH (inches)	Ordinance Status	Potential Impact	Dripline (feet)	Height (feet)	Condition	Health	Structure
289	*Quercus agrifolia*	Coast live oak	no	7.3	0.0	0.0	0.0	0.0	7.3	Non-heritage	Potential Removal	13	21	Good	Good	Good
290	*Quercus agrifolia*	Coast live oak	yes	19.5	18.3	0.0	0.0	0.0	37.8	Heritage Tree	Potential Pruning	20	38	Good	Good	Good
291	*Quercus kelloggii*	Black oak	no	28.0	0.0	0.0	0.0	0.0	28	Heritage Tree	Potential Pruning	30	35	Fair	Fair	Fair
292	*Sequoia sempervirens*	Coast redwood	no	26.6	0.0	0.0	0.0	0.0	26.6	Heritage Tree	Potential Pruning	18	42	Fair	Fair	Good
293	*Quercus lobata*	Valley oak	no	11.7	0.0	0.0	0.0	0.0	11.7	Heritage Tree	Potential Pruning	17	35	Good	Good	Good
294	*Ligustrum lucidum*	Glossy privet	yes	6.5	6.5	9.9	0.0	0.0	22.9	Exempt	Potential Removal	12	30	Good	Good	Good
295	*Malus sp.*	Apple	no	4.0	0.0	0.0	0.0	0.0	4	Exempt	Potential Removal	7	8	Fair	Fair	Fair
296	*Eriobotrya japonica*	Japanese loquat	yes	2.8	3.0	3.0	0.0	0.0	8.8	Exempt	Potential Removal	9	10	Good	Good	Fair
297	*Malus sp.*	Apple	yes	3.9	2.5	2.0	0.0	0.0	8.4	Exempt	Potential Removal	9	8	Fair	Fair	Fair
298	*Diospyros kaki*	Japanese persimmon	yes	4.8	3.2	2.2	0.0	0.0	10.2	Exempt	Potential Removal	10	15	Good	Good	Good
299	*Juglans hindsii*	Northern California black walnut	yes	12.1	13.0	13.0	0.0	0.0	38.1	Non-heritage	Potential Removal	13	28	Fair	Fair	Fair
300	*Prunus cerasifera*	Cherry plum	no	4.0	0.0	0.0	0.0	0.0	4	Exempt	Potential Removal	9	11	Fair	Fair	Fair
301	*Prunus persica*	Peach	yes	4.0	2.0	3.5	0.0	0.0	9.5	Exempt	Potential Pruning	12	18	Fair	Fair	Fair
302	*Quercus agrifolia*	Coast live oak	no	26.6	0.0	0.0	0.0	0.0	26.6	Heritage Tree	Potential Removal	25	40	Good	Good	Good
303	*Quercus agrifolia*	Coast live oak	no	17.8	0.0	0.0	0.0	0.0	17.8	Non-heritage	Potential Removal	25	40	Good	Good	Good
304	*Quercus agrifolia*	Coast live oak	no	20.0	0.0	0.0	0.0	0.0	20	Heritage Tree	Potential Removal	20	35	Good	Good	Fair
305	*Prunus cerasifera*	Cherry plum	yes	4.0	2.5	2.5	2.5	2.5	14	Exempt	Potential Removal	10	12	Fair	Fair	Fair
306	*Juglans hindsii*	Northern California black walnut	yes	3.2	2.0	2.0	2.0	2.0	11.2	Non-heritage	Potential Removal	9	15	Poor	Poor	Poor
307	*Quercus kelloggii*	Black oak	no	18.0	0.0	0.0	0.0	0.0	18	Heritage Tree	Potential Removal	18	38	Good	Good	Good
308	*Juglans hindsii*	Northern California black walnut	yes	4.0	1.0	1.0	1.0	1.0	8	Non-heritage	Potential Removal	8	11	Poor	Poor	Poor
309	*Juglans hindsii*	Northern California black walnut	yes	2.0	2.0	2.0	2.0	0.0	8	Non-heritage	Potential Removal	9	12	Fair	Fair	Fair
310	*Juglans hindsii*	Northern California black walnut	no	9.5	0.0	0.0	0.0	0.0	9.5	Non-heritage	Potential Removal	14	19	Fair	Fair	Fair
311	*Juglans hindsii*	Northern California black walnut	yes	4.0	1.0	1.0	1.0	1.0	8	Non-heritage	Potential Removal	15	12	Poor	Poor	Poor
312	*Juglans hindsii*	Northern California black walnut	no	11.1	0.0	0.0	0.0	0.0	11.1	Non-heritage	Potential Removal	20	16	Fair	Fair	Poor
313	*Quercus agrifolia*	Coast live oak	no	36.0	0.0	0.0	0.0	0.0	36	Heritage Tree	Potential Removal	37	40	Good	Good	Good
314	*Prunus cerasifera*	Cherry plum	yes	7.0	5.5	6.0	6.0	6.0	30.5	Exempt	Potential Pruning	18	18	Fair	Fair	Fair
315	*Juglans hindsii*	Northern California black walnut	no	4.0	0.0	0.0	0.0	0.0	4	Non-heritage	Potential Pruning	12	19	Fair	Fair	Fair
316	*Juglans hindsii*	Northern California black walnut	no	23.8	0.0	0.0	0.0	0.0	23.8	Non-heritage	Potential Removal	30	35	Good	Good	Good
317	*Quercus lobata*	Valley oak	no	10.0	0.0	0.0	0.0	0.0	10	Heritage Tree	Potential Pruning	16	28	Good	Good	Good
318	*Prunus cerasifera*	Cherry plum	yes	2.0	1.9	2.0	2.0	1.0	8.9	Exempt	Potential Pruning	8	12	Poor	Fair	Poor
319	*Prunus cerasifera*	Cherry plum	yes	1.5	1.5	1.9	1.5	2.0	8.4	Exempt	Potential Removal	3	11	Fair	Fair	Fair
320	*Pyrus communis*	Common pear	yes	6.5	4.2	0.0	0.0	0.0	10.7	Exempt	Potential Removal	11	15	Fair	Fair	Fair
321	*Prunus cerasifera*	Cherry plum	yes	3.2	1.9	1.0	1.0	1.0	8.1	Exempt	Potential Removal	7	10	Fair	Fair	Fair
322	*Quercus agrifolia*	Coast live oak	no	5.1	0.0	0.0	0.0	0.0	5.1	Non-heritage	Potential Pruning	10	12	Good	Good	Good
323	*Prunus cerasifera*	Cherry plum	yes	4.5	3.1	3.0	2.0	2.0	14.6	Exempt	Potential Pruning	9	12	Fair	Fair	Fair
324	*Prunus cerasifera*	Cherry plum	no	4.1	0.0	0.0	0.0	0.0	4.1	Exempt	Potential Removal	8	18	Good	Good	Good
NT	*Pyrus communis*	Common pear	no	2.0	0.0	0.0	0.0	0.0	2	Exempt	Potential Removal	5	8	Fair	Fair	Fair
NT	*Prunus persica*	Peach	no	2.0	0.0	0.0	0.0	0.0	2	Exempt	Potential Removal	5	8	Fair	Fair	Fair
NT	*Malus sp.*	Apple	no	2.0	0.0	0.0	0.0	0.0	2	Exempt	Potential Pruning	5	8	Fair	Fair	Fair
NT	*Acer rubrum*	Red maple	no	1.4	0.0	0.0	0.0	0.0	1.4	Exempt Street Tree	Potential Pruning	3	9	Poor	Poor	Fair
NT	*Acer rubrum*	Red maple	no	0.9	0.0	0.0	0.0	0.0	0.9	Exempt Street Tree	Potential Removal	1	8	Poor	Poor	Fair
NT	*Acer rubrum*	Red maple	no	1.2	0.0	0.0	0.0	0.0	1.2	Exempt Street Tree	Potential Removal	3	9	Good	Good	Good

APPENDIX B

TREE SURVEY MAP

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Santa Rosa Sewer Trunk LIne Replacement Santa Rosa, California

Appendix B. Surveyed Trees Phase I

- Orchard Trees
- Project Area

Tree Ordinance Status

- Exempt
- Exempt Street Tree
- Heritage Tree
- Non-heritage
- Street Tree

Sewer Line

- Phase I
- Phase II, III, IV

N
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S

0 30 60 90
Feet

Map Prepared Date: 7/25/2017
Map Prepared By: smortensen
Base Source: Esri Streaming - NAIP 2014
Data Source(s): WRA

Path: L:\Acad 2000 Files\25000\25273\GIS\ArcMap\Tree Survey Phase I.mxd

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