APPENDIX B

- **Waypoint Analytical soil test and analytical investigation with recommendations dated August 18, 2015, Report 15-219-0101**

San Jose Office
August 18, 2015
Report 15-219-0101

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Attn: John Cahalan
RE: Cupertino Senior Center

Background

One sample was received on August 7, 2015 identified as site soil from a depth of 4 to 6 inches from an area where new landscaping is being installed. Fertilizer and amendment recommendations were requested. The sample was analyzed for horticultural suitability, fertility, and physical characteristics. The results of the analyses are attached.

Analytical Results and Comments

The reaction of the soil is slightly acidic at a pH of 6.5. This pH is within the range preferred by most plants. Salinity (ECe) and boron are safely low. Sodium is slightly elevated, and a particularly thorough initial irrigation should be sufficient to decrease sodium to a more favorable range. The SAR shows sodium is adequately balanced by soluble calcium and magnesium; this balance is important for soil structure and how it relates to water infiltration in these soils.

According to the USDA Soil Classification system the less than 2mm fraction of the sample is sandy loam. Organic content is favorable at 5.5% dry weight. The 21.9% gravel present classifies this material as gravelly. Based on these characteristics the estimated infiltration rate is favorable at 0.31 inch per hour. Infiltration rates may vary due to differences in compaction across the site.

In terms of soil fertility, nitrogen is low and phosphorus is fair. Potassium, calcium, magnesium and sulfate are sufficient for proper plant nutrition. Of the micronutrients, copper and manganese are sufficient, and zinc and iron are abundant but not problematically so. Fertilizers containing zinc in particular will not be needed for some time.

Recommendations

Nitrogen and phosphorus fertilizers are recommended.

<u>To Prepare for Mass Planting:</u>
Drainage of the root zone should be improved by first loosening the top 10 inches of any undisturbed or compacted soil. The following materials should then be evenly spread and thoroughly blended with the top 6 inches of soil to form a homogenous layer:

Amount per 1000 Square Feet	
7 pounds	Ammonium Sulfate (21-0-0)
3 pounds	Triple Superphosphate (0-45-0)
	OR
10 pounds	Feather Meal (12-0-0) (organic)
8 pounds	Steamed Bone Meal (3-15-0) (organic)

**For native planting areas the amount of fertilizer being incorporated should be decreased by half.

To Prepare Backfill For Trees and Shrubs:

- Excavate planting pits at least twice as wide as the diameter of the rootball.
- Soil immediately below the root ball should be left undisturbed to provide support but the sides and the bottom around the side should be cultivated to improve porosity.
- The top of the rootball should be at or slightly above final grade.
- The top 12 inches of backfill around the sides of the rootball of trees and shrubs may consist of the above amended soil or may be prepared as follows:

Site Soil

Uniformly incorporated with:

Amount per Cubic Yard	
1/3 pound	Ammonium Sulfate (21-0-0)
1/4 pound	Triple Superphosphate (0-45-0)
	OR
1/2 pound	Feather Meal (12-0-0) (organic)
1/3 pound	Steamed Bone Meal (3-15-0) (organic)

- Backfill below 12 inches required for 24 inch box or larger material should not contain the ammonium sulfate or feather meal but should still contain the triple superphosphate or steamed bone meal at the recommended rate.
- Ideally a weed and turf free zone should be maintained just beyond the diameter of the planting hole. A 2-4 inch deep layer of coarse mulch can be placed around the tree or shrub. Mulch should be kept a minimum 4 inches from the trunk.
- Irrigation of new plantings should take into consideration the differing texture of the rootball substrate and surrounding soil matrix to maintain adequate moisture during this critical period of establishment.

Maintenance

Maintenance fertilization for California natives should be based entirely on color and growth performance. The chosen fertilizer should be applied at a rate that provides ½ pound of actual nitrogen per 1000 square feet per month during the growing season. Early spring, substitute a complete fertilizer with low phosphorus (~2% or less) to help insure continuing adequate potassium and minimal phosphorus. If compost is applied it should also be limited to half of the recommended rate for native areas.

Maintenance fertilization for conventional plantings may rely primarily on a nitrogen only program supplemented with a complete fertilizer in the fall and spring. You may begin applying Ammonium Sulfate (21-0-0) at a rate of 5 pounds per 1000 square feet 45-60 days after planting with refertilization every 45-60 days. Or, slow release Sulfur Coated Urea (43-0-0) may be used at a 5 pound rate with refertilization scheduled at 3 month intervals. Once the landscape has become well established the frequency of fertilization should be decreased depending on color and rate of growth desired. In the spring and fall substitute a complete fertilizer such as 16-6-8 to help insure continuing adequate phosphorus and potassium.

Alternatively, organic sources of fertilizer such as Alfalfa, Blood, Soybean and Cotton Seed Meal may be applied per the label rate. Alfalfa Meal at a rate of 20 pounds per 1000 square feet would provide slow

release nitrogen for 2-3 months or a combination of Blood and Feather Meal at a total of 16 pounds per 1000 square feet would provide nitrogen for 3-4 months. Refertilization may be accomplished with a nitrogen only organic fertilizer during the growing season. In the fall and spring, substitute a complete organic fertilizer such as 5-5-5 applied at the manufacturer's label rate. Or, nutrient rich composted greenwaste may be spread in a 1 to 2 inch layer, which generally carries enough nutrition to boost complete nutrition though a source of nitrogen might also be added at a half rate to assure adequate nitrogen availability.

If we can be of any further assistance, please feel free to contact us.

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Project : Cupertino Senior Center
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COMPREHENSIVE SOIL ANALYSIS

Report No : **15-219-0101**
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Page : 1 of 1

Sample Description - Sample ID	Half Sat %	pH	ECe dS/m	NO_3-N ppm	NH_4-N ppm	PO_4-P ppm	K ppm	Ca ppm	Mg ppm	Cu ppm	Zn ppm	Mn ppm	Fe ppm	Organic % dry wt.	Lab No.
	TEC	Qual Lime		Sufficiency Factors											
Site Soil 4-6"	27	6.8	2.0	15	15	23	378	1563	287	3.5	32.7	19	151	5.5	30746
	112	None		0.6		0.7	2.2	0.8	1.1	2.4	5.8	1.5	2.7		

Saturation Extract Values						SAR	Gravel %		Percent of Sample Passing 2 mm Screen					USDA Soil Classification	Lab No.
									Sand						
Ca meq/L	Mg meq/L	Na meq/L	K meq/L	B ppm	SO_4 meq/L		Coarse 5 - 12	Fine 2 - 5	Very Coarse 1 - 2	Coarse 0.5 - 1	Med. to Very Fine 0.05 - 0.5	Silt .002-.05	Clay 0-.002		
7.6	4.2	9.7	1.2	0.56	5.3	4.0	10.1	11.8	7.6	19.5	48.6	17.9	6.3	Gravelly Sandy Loam	30746

Sufficiency factor (1.0=sufficient for average crop) below each nutrient value. N factor based on 200 ppm constant feed. SAR = Sodium adsorption ratio. Half Saturation %=approx field moisture capacity. Nitrogen(N), Potassium(K), Calcium(Ca) and Magnesium(Mg) by sodium chloride extraction. Phosphorus(P) by sodium bicarbonate extraction. Copper(Cu), Zinc(Zn), Manganese(Mn) & Iron(Fe) by DTPA extraction. Sat. ext. method for salinity (ECe as dS/m),Boron (B), Sulfate(SO_4), Sodium(Na). Gravel fraction expressed as percent by weight of oven-dried sample passing a 12mm(1/2 inch) sieve. Particle sizes in millimeters. Organic percentage determined by Walkley-Black or Loss on Ignition.

* LOW , SUFFICIENT , HIGH

Risk Categorization

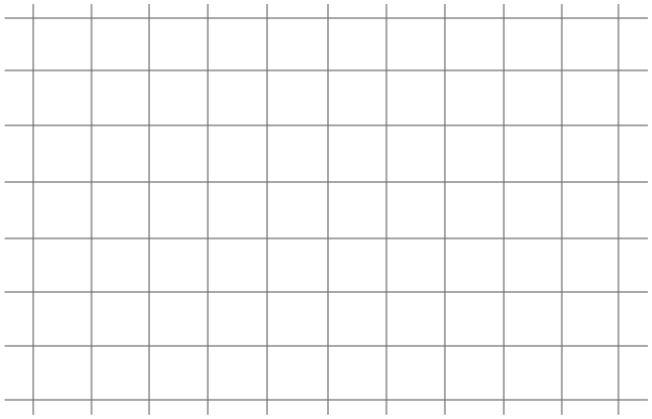
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1	Crown and Branches	Cabled and/or decaying limbs	12"	50'	1	None			X					X			X				X		High
			12"	50'	2	None			X				X			X						X	Moderate
			12"	50'	3	None			X				X			X					X		Moderate
2	Trunk	Column of decay	53"	50'	1	None		X						X		X					X		Moderate
			53"	50'	2	None		X					X		X							X	Low
			53"	50'	3	None		X					X		X						X		Low
3	Roots and Root Collar	Decay cavities	53"	50'	1	None			X					X			X				X		High
			53"	50'	2	None			X				X			X						X	Moderate
			53"	50'	3	None			X				X			X					X		Moderate
4																							

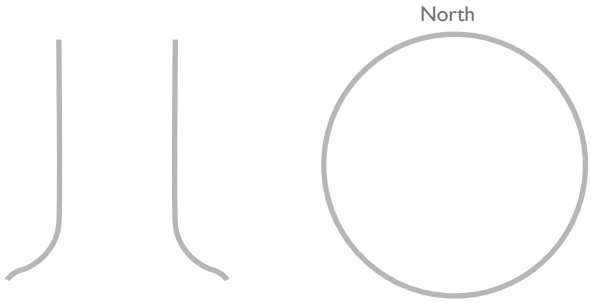
Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low





Notes, explanations, descriptions See report

Mitigation options Remove tree — **Residual risk** Low

Install support system — **Residual risk** Moderate

Inspect cables — **Residual risk** High

Root zone remediation — **Residual risk** High

Overall tree risk rating Low ☐ Moderate ☐ High ☒ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ☒ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** three years

Data ☒ Final ☐ Preliminary **Advanced assessment needed** ☒ No ☐ Yes-Type/Reason

Inspection limitations ☐ None ☒ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe Ground level inspection with basic tools

This datasheet was produced by the International Society of Arboriculture (ISA) and is intended for use by Tree Risk Assessment Qualified (TRAQ) arborists – 2013