State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

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To: LIZA WALKER
ASSOCIATE ENVIRONMENTAL PLANNER
DISTRICT 3/NORTH REGION

Date: November 24, 2014

File: 01-HUM-254
01-43060
EFIS No. 0100000186

From: JENNIFER OSMONDSON
ASSOCIATE ENVIRONMENTAL PLANNER/NS (BIOLOGIST)
DISTRICT 3/NORTH REGION

Subject: **ADDENDUM TO THE JULY 2014 NES – OLD GROWTH REDWOOD TREES**

A survey for old growth redwood trees was conducted for this project on October 27 and 28, 2014. During this survey, 46 coastal redwood trees (*Sequoia sempervirens*) were observed. Diameter at breast height (dbh), existing tree condition, and existing site condition/development were recorded for each tree. The structural root zone (SRZ) (3 times dbh) and root health zone (RHZ) (5 times dbh) were calculated for each tree. Attachment 1 (Tree Root Disturbance Assessment Form) details the information collected for each tree during this survey effort.

A scale was developed for the Caltrans' Richardson Grove Improvement Project to quantify the potential impact of construction on old growth redwood trees (Yniguez 2013), as shown in Table 1. Redwood trees were assigned a rating using this scale. Factors used to rate each tree included tree condition (observed in October 2014), potential root disturbance within the RHZ and SRZ of each tree, and distance of project activities to the base of each tree.

Table 1: Scale of the Effect of Root Zone Disturbance on Tree Health

Rating	Description
0	No Effect
1	Effect of root zone disturbance is extremely minor with no decline in foliage density or tree health.
2	Effect of root zone disturbance is very slight with no decline in foliage density or tree health.
3	Effect of root zone disturbance is slight with no decline in foliage density or tree health.
4	Effect of root zone disturbance may be short-term visible reduction in foliage density that is still well within the adaptive capabilities of the tree.
5	Effect of root zone disturbance may be reduction in root health sufficient to cause lasting visible dieback in the uppermost crown; tree survival is not threatened.
6	Effect of root disturbance may be severe enough to threaten survival of the tree.

Eleven of the trees were rated 0. The proposed project would not impact these trees. There would be no disturbance within the SRZ or RHZ of trees that were rated as 0. Fourteen of the

trees were rated 1. Activities for the proposed project would have an extremely minor effect on these trees, with no decline in foliage density or tree health. There may be disturbance within the SHZ and/or RHZ of these trees; however, project activities would be at least 10 feet from the base of these trees. Twenty-one of these trees were rated 2. Activities for the proposed project would have a minor effect on these trees, with no decline in foliage density or tree health. There may disturbance within the SHZ and/or RHZ of these trees; project activities would be closer than 10 feet from the base of these trees.

Any root disturbance that would result from construction of the proposed project would not have a significant detrimental effect on the health or stability of these old growth redwood trees. The implementation of avoidance and minimization measures, as described in the July 2014 NES prepared for this project, would help to reduce impacts to old growth redwood trees and their root systems during construction of the proposed project.

Reference

Yniguez, D. 2013. Final Report: An Evaluation of Potential Effects on Old-Growth Redwoods from Implementation of the Richardson Grove Operational Improvement Project. Tree Decisions. Available electronically at:
http://www.dot.ca.gov/dist1/d1projects/richardson_grove/rg_tree_eval_final_9-16-2013.pdf

Attachment 1: Tree Root Disturbance Form
EA 01-43060, EFIS No. 0100000186

		Existing Baseline Condition of Trees												Potential Root Disturbance within SRZ or RHZ							
Tree No.	Location No.	Diameter at Breast Height (dbh) (inches)	Structural Root Zone (SRZ) (3x dbh) (feet)	Root Health Zone (RHZ) (5x dbh) (feet)	Dead/ Live	Tree Crown Position (Dominant (D), Co-dominant (C), Intermediate (I), Suppressed (S))	Top Damage/ Broken	Bole Damage (Burn or Other)	Signs of Root Damage	Existing Compaction	Existing Pavement in SRZ or RHZ (percent)	Percent of Root Zone Already Affected	Signs of Historical Mechanical Damage	Project Activity	Type of Disturbance within SRZ (excavation, compaction, paving, etc)	Type of Disturbance within RHZ (excavation, compaction, paving, etc)	Distance from Ground Disturbance to Tree Base (horizontal feet)	Depth of Ground Disturbance (inches)	Percent of Root Zone Affected by Project	Effect of Root Zone Disturbance on Tree Health (Rating)	Justification for Rating
1	1-southwest corner (SW)	72	18	30	Live	C	No	No	No	Yes	data not collected	35-40	data not collected	Paving	excavation, compaction, paving	excavation, compaction, paving	2	0.86	10+	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
2	1-SW	44	11	19	Live	C	No	No	No	Yes	data not collected	35-40	Yes	Paving	excavation, compaction, paving	excavation, compaction, paving	2	0.86	10+	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
3	1-SW	56	14	23	Live	C	No	No	No	No	data not collected	12	Yes	Paving	excavation, compaction, paving	excavation, compaction, paving	8	0.86	2 to 5	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
4	1-SW	33	9	14	Live	I	No	No	No	No	data not collected	15-20	Yes	Crash cushion, abutment work, paving	excavation, compaction, paving	excavation, compaction, paving	10	0.86	2 to 5	2	Disturbance within both SRZ and RHZ, disturbance 10 feet from the base of tree, shallow depth of disturbance.
5	1-SW	82	20	34	Live	C	No	No	No	Yes	data not collected	40	No	Crash cushion, abutment work, paving	excavation, compaction, paving	excavation, compaction, paving	8	0.86	10+	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
6	1-southeast corner (SE)	21	5	9	Live	S	data not collected	No	data not collected	Yes	75	75-100	Yes	Crash cushion, abutment work, paving	None	excavation, compaction, paving	8	6	1+	2	Disturbance within RHZ only, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
7	1-SE	24	6	10	Live	S	data not collected	No	data not collected	Yes	75	95-100	Yes	Crash cushion, abutment work, paving	None	excavation, compaction, paving	8	6	1+	2	Disturbance within RHZ only, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
8	1-SE	174	44	73	Live	S	data not collected	Yes	data not collected	Yes	80-90	100	Yes	Crash cushion, abutment work, paving	excavation, compaction, paving	excavation, compaction, paving	35	6	1+	1	Disturbance within both SRZ and RHZ, disturbance over 30 feet from base of tree, shallow depth of disturbance.
9	1-SE	42.5	11	18	Live	I	data not collected	No	Yes	Yes	80	100	Yes	Crash cushion, abutment work, paving	None	None	35	0	data not collected	0	No disturbance within RHZ or SRZ, disturbance over 30 feet from base of tree.
10	1-(northwest corner (NW)	33	8	14	Live	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	Crash cushion, abutment work, paving	None	None	40	0	0	0	No disturbance within RHZ or SRZ.
11	1-NW	83.5	21	35	Live	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	Crash cushion, abutment work, paving	None	None	40	0	0	0	No disturbance within RHZ or SRZ.
12	1-northeast corner (NE)	53	13	22	Live	C	No	No	No	Yes	No	1	No	MBGR, abutment work, paving	excavation, compaction, paving	excavation, compaction, paving	9	0	0	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree.

		Existing Baseline Condition of Trees												Potential Root Disturbance within SRZ or RHZ							
Tree No.	Location No.	Diameter at Breast Height (dbh) (inches)	Structural Root Zone (SRZ) (3x dbh) (feet)	Root Health Zone (RHZ) (5x dbh) (feet)	Dead/ Live	Tree Crown Position (Dominant (D), Co-dominant (C), Intermediate (I), Suppressed (S))	Top Damage/ Broken	Bole Damage (Burn or Other)	Signs of Root Damage	Existing Compaction	Existing Pavement in SRZ or RHZ (percent)	Percent of Root Zone Already Affected	Signs of Historical Mechanical Damage	Project Activity	Type of Disturbance within SRZ (excavation, compaction, paving, etc)	Type of Disturbance within RHZ (excavation, compaction, paving, etc)	Distance from Ground Disturbance to Tree Base (horizontal feet)	Depth of Ground Disturbance (inches)	Percent of Root Zone Affected by Project	Effect of Root Zone Disturbance on Tree Health (Rating)	Justification for Rating
13	2-SW	110	28	46	Live	C	None	Yes	Yes	Yes	Yes	40	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	12	0.86	1+	1	Disturbance within both SRZ and RHZ, disturbance over 10 feet from base of tree, shallow depth of disturbance.
14	2-SW	21.2	5	9	Live	I	None	No	No	No	Yes	5	No	Crash cushion, paving	None	excavation, compaction, paving	6	0.86	1+	2	Disturbance within RHZ only, disturbance less than 10 feet from the base of tree, shallallow depth of disturbance.
15	2-SW	74	19	31	Live	C	None	No	No	No	Yes	30	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	6	0.86	1+	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
16	2-SW	125	31	52	Live	C	Yes	Yes	No	Yes	Yes	45	Yes	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	5	0.86	1+	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
17	2-SW	67	17	28	Live	C	None	No	No	No	No	0	No	Crash cushion, paving	None	excavation, compaction, paving	17	0.86	>1	1	Disturbance within RHZ only, disturbance over 10 feet from base of tree, shallow depth of disturbance.
18	2-SW	120	30	50	Live	C	None	Yes	No	Yes	Yes	12	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	20	0.86	>1	1	Disturbance within both SRZ and RHZ, disturbance over 10 feet from base of tree, shallow depth of disturbance.
19	2-SE	15	4	6	Live	I	data not collected	No	No	No	No	0	No	Crash cushion, paving	None	None	18	0.86	0	0	No disturbance within RHZ or SRZ, disturbance over 10 feet from base of tree.
20	2-SE	145.4	36	61	Live	C	data not collected	Yes	No	Yes	Yes	65 to 70	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	18	0.86	>1	1	Disturbance within both SRZ and RHZ, disturbance over 10 feet from base of tree, shallow depth of disturbance.
21	2-NW	231	58	96	Live	D	None	Burn	No	No	Yes	10 to 12	No	Crash cushion, paving	None	None	42	0.86	>1	0	No disturbance within RHZ or SRZ, disturbance over 30 feet from base of tree.
22	2-NW	125.5	31	52	Live	C	None	Burn	No	Yes	Yes	25	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	6	0.86	>1	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
23	2-NE	59	15	25	Live	I	None	No	No	Yes	Yes	50	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	4	0.86	>1	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
24	2-NE	139	35	58	Live	D	None	Burn	No	Yes	Yes	45	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	15	0.86	>1	1	Disturbance within both SRZ and RHZ, disturbance over 10 feet from base of tree, shallow depth of disturbance.

		Existing Baseline Condition of Trees												Potential Root Disturbance within SRZ or RHZ							
Tree No.	Location No.	Diameter at Breast Height (dbh) (inches)	Structural Root Zone (SRZ) (3x dbh) (feet)	Root Health Zone (RHZ) (5x dbh) (feet)	Dead/ Live	Tree Crown Position (Dominant (D), Co-dominant (C), Intermediate (I), Suppressed (S))	Top Damage/ Broken	Bole Damage (Burn or Other)	Signs of Root Damage	Existing Compaction	Existing Pavement in SRZ or RHZ (percent)	Percent of Root Zone Already Affected	Signs of Historical Mechanical Damage	Project Activity	Type of Disturbance within SRZ (excavation, compaction, paving, etc)	Type of Disturbance within RHZ (excavation, compaction, paving, etc)	Distance from Ground Disturbance to Tree Base (horizontal feet)	Depth of Ground Disturbance (inches)	Percent of Root Zone Affected by Project	Effect of Root Zone Disturbance on Tree Health (Rating)	Justification for Rating
25	2-NE	173	43	72	Live	D	None	Burn	No	Yes	Yes	20	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	3	0.86	>0.5	2	Disturbance within both SRZ and RHZ, disturbance in close proximity to tree, shallow depth of disturbance.
26	2-NE	72	18	30	Live	C	None	Burn	No	Yes	Yes	30 to 40	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	12	0.86	1	1	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
27	3-SW	57	14	24	Live	C	No	No	No	Yes	Yes	35 to 40	No	MBGR, paving	excavation, compaction, paving	excavation, compaction, paving	4	6	>1	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree.
28	3-SW	38	10	16	Live	C	No	No	No	Yes	Yes	35 to 40	No	MBGR, paving	excavation, compaction, paving	excavation, compaction, paving	4	6	>1	3	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree.
29	3-SE	27	7	11	Live	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	MBGR, paving	None	None	50	0	data not collected	0	No disturbance within RHZ or SRZ.
30	3-SE	108	27	45	Live	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	data not collected	MBGR, paving	None	None	50	0	data not collected	0	No disturbance within RHZ or SRZ.
31	3-NW	73	18	30	Live	C	No	No	No	Yes	Yes	25 to 30	data not collected	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	4	0.86	1 to 2	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
32	3-NW	55	14	23	Live	C	Yes	No	No	Yes	Yes	25	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	6	0.86	1 to 2	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.
33	4-SW	16	4	7	Live	S	No	No	No	No	No	0	No	MBGR, paving	None	None	20	6	0	0	No disturbance within RHZ or SRZ, disturbance 20 feet from base of tree.
34	4-SW	31	8	13	Live	S	No	No	Yes	data not collected	No	40	Yes	MBGR, paving	None	excavation, compaction, paving	12	6	data not collected	1	Disturbance within RHZ only, disturbance over 10 feet from base of tree.
35	4-SE	113	28	47	Live	D	Yes	Yes	Yes	Yes	Yes	50	No	MBGR, paving	None	excavation, compaction, paving	45	0.86	1	1	Disturbance within RHZ only, disturbance over 40 feet from base of tree.
36	4-SE	80	20	33	Live	D	Yes	No	No	No	Yes	25	Yes	MBGR, paving	excavation, compaction, paving	excavation, compaction, paving	10	4	1	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree.
37	4-SE	40	10	17	Live	I	No	No	No	Yes	Yes	25	No	MBGR, paving	None	excavation, compaction, paving	17	4	1	1	Disturbance within RHZ only, disturbance over 10 feet from base of tree.
38	4-NW	69	17	29	Live	C	No	No	Yes	Yes	Yes	20	Yes	MBGR, paving	excavation, compaction, paving	excavation, compaction, paving	8	4	1	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree.

		Existing Baseline Condition of Trees												Potential Root Disturbance within SRZ or RHZ							
Tree No.	Location No.	Diameter at Breast Height (dbh) (inches)	Structural Root Zone (SRZ) (3x dbh) (feet)	Root Health Zone (RHZ) (5x dbh) (feet)	Dead/ Live	Tree Crown Position (Dominant (D), Co-dominant (C), Intermediate (I), Suppressed (S))	Top Damage/ Broken	Bole Damage (Burn or Other)	Signs of Root Damage	Existing Compaction	Existing Pavement in SRZ or RHZ (percent)	Percent of Root Zone Already Affected	Signs of Historical Mechanical Damage	Project Activity	Type of Disturbance within SRZ (excavation, compaction, paving, etc)	Type of Disturbance within RHZ (excavation, compaction, paving, etc)	Distance from Ground Disturbance to Tree Base (horizontal feet)	Depth of Ground Disturbance (inches)	Percent of Root Zone Affected by Project	Effect of Root Zone Disturbance on Tree Health (Rating)	Justification for Rating
39	4-NW	86	22	36	Live	D	No	No	Yes	Yes	Yes	20	Yes	MBGR, paving	None	None	40	6	data not collected	0	No disturbance within RHZ or SRZ, disturbance over 30 feet from base of tree.
40	4-NW	22	6	9	Live	I	No	No	No	No	No	25	No	MBGR, paving	None	None	20	6	data not collected	0	No disturbance within RHZ or SRZ, disturbance 20 feet from base of tree.
41	4-NW	35	9	15	Live	C	No	No	No	No	No	0	No	MBGR, paving	None	excavation, compaction, paving	15	6	data not collected	1	Disturbance within RHZ only, disturbance over 10 feet from base of tree.
42	4-NE	156	39	65	Dead	D	Yes	Yes	Yes	Yes	Yes	35	Yes	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	10	1	1	2	Disturbance within both SRZ and RHZ, disturbance10 feet from base of tree, shallow depth of disturbance.
43	4-NE	30	8	13	Live	I	No	No	Yes	Yes	No	10	No	Crash cushion, paving	None	None	20	1	0	0	No disturbance within RHZ or SRZ, disturbance 20 feet from base of tree.
44	4-NE	100	25	42	Dead	D	Yes	No	No	Yes	Yes	10	No	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	20	1	1	1	Disturbance within both SRZ and RHZ, disturbance 20 feet from base of tree, shallow depth of disturbance.
45	4-NE	42	11	18	Live	I	No	No	Yes	No	No	1	No	Crash cushion, paving	None	excavation, compaction, paving	17	1	1	1	Disturbance within RHZ only, disturbance over 10 feet from base of tree, shallow depth of disturbance.
46	4-NE	74	19	31	Dead	D	Yes	Yes	Yes	Yes	Yes	30	Yes	Crash cushion, paving	excavation, compaction, paving	excavation, compaction, paving	5	4	2	2	Disturbance within both SRZ and RHZ, disturbance less than 10 feet from the base of tree, shallow depth of disturbance.