

March 10, 2021

Mr. Martins Aiyetiwa, P.E.  
Senior Civil Engineer  
County of Los Angeles, Department of Public Works  
900 South Fremont Avenue  
Alhambra, CA 91803-1331

Subject: Sunshine Canyon Landfill, Quarterly Vegetation Report  
Fourth Quarter 2020 Vegetation Report

Mr. Aiyetiwa,

This report has been prepared in accordance with the following:

- Condition 18B of the Finding of Conformance;
- Condition 44A of the Condition Use Permit (CUP)
- Los Angeles City Condition [Q] C.8 of the Ordinance No. 172,933.

This report presents the progress of the site's landscaping and revegetation activities for the fourth quarter of 2020. The intent of these reports is to provide detailed information regarding the site's efforts related to vegetation including vegetation of interim and permanent slopes and activities conducted for the on-site sage mitigation areas.

Architerra Design Group continues to assist site personnel in evaluating current site conditions relating to vegetation and provide recommendations for future efforts. This report includes their assessment of the pilot sage vegetation area as well as recommendations for this area. Architerra's evaluation is in addition to the required quarterly monitoring performed by our consulting biologist.

## 1.0 Interim Slopes

For the purposes of this report, interim slopes are those defined as slope areas where no activities have taken place for 180 days or longer. CUP Condition 44A requires "a temporary hydroseed vegetation cover on any slope or landfill area that is projected to be inactive for a period of greater than 180 days".

## 1.1 Hydroseeding Activities

Based on the results of the trial project completed in August 2017, a 57-acre vegetative cover project using the approved seed mix was completed in mid-December 2017. Additionally, the site completed hydroseeding approximately 155 acres; application of the approved seed mix was completed during 2019. The increase in hydroseeding application is a result of our normal winterization efforts along with slope revegetation as a result of the Saddle Ridge Fire that impacted Sylmar, CA on October 2019. These areas had successful vegetation growth after the recent rains.

## 2.0 Permanent Slopes

Permanent slopes are defined as those where no landfilling activities will be conducted in the future.

As part of our Saddle Ridge Fire recovery efforts both the City and County permanent slopes of the landfill had hydroseed applied as necessary. This application of hydroseed was completed for soil stabilization purposes.

## 3.0 Non-Permanent Cut Slopes

Prior quarterly vegetation reports have illustrated one area above the front terminal sedimentation basin and one area near the temporary bypass road as “non-permanent cut slopes”. An evaluation of these areas has been conducted and it has been determined that these areas are “permanent slopes” because no landfilling activities will be conducted against these slopes in the future.

## 4.0 Activities Conducted in Sage Mitigation Areas – 4Q2020

During the fourth quarter of 2020, the following activities were conducted in the sage mitigation areas at the landfill.

### 4.1 City South Sage Pilot Project Area – Deck C

The lower Deck C mitigation project area was impacted by the Saddle Ridge fire in October 2019. As noted in JMA’s City-Side Sage Mitigation Area Lower Deck report a substantial amount of the lower deck was burned or scorched. However, in previous reports they note that because this was an established site, they expect natural re-establishment of the native vegetation within the first two to three years. JMA has noted a substantial amount of regrowth has occurred following the fire and included the most prevalent natives such as

California Sunflower, Saltbush, Horsetweed, and pockets of Wild Ryegrass. JMA also indicated the intense weeding efforts implemented has greatly reduced the cover of the noxious non-native annual species.

During their most recent visit, Architerra Design Group indicates that there has been an abundance of Venturan CSS species germinating and crown-sprouting since the fire. The species following the rebound include Purple Sage, Coast Sunflower, White Sage, Creeping Wild Rye, Deerweed, Black Sage, and Mexican Elderberry. Surprisingly there are also new species from the original seed mix are now sprouting up in decent numbers and are Scarlet Bugler, Telegraph Weed, Monkey Flower and Smooth-Leaf Yerba Santa and now the VCSS is going through dormancy.

#### 4.2 City South Deck B

The Deck B sage mitigation project began on April 9, 2018 and planting was completed by the end of the fourth quarter 2018. Soil samples indicated low pH and high salinity, as a result Deck B underwent a leaching schedule. Additional soil amendments and resampling were completed before planting began, which took place during the fourth quarter 2018. Pacific Restoration Group, Inc (PRG) has been working with Architerra for the completion of project. A summary of the progress is included in Attachment 3. The northwest portion of the Middle Deck burned during the Saddle Ridge Fire in October 2019. Architerra Design Group (ADG) indicates Deck B is doing quite well and there is evidence of desiccation of the seedlings especially the Common Yarrow and other native species that have recently spouted and are beginning to harden off and defoliate. Architerra have indicated the plant diversity on Deck B is impressive and many of the species in the seed mix have germinated and the containerized plants also are doing well and are blooming or just finished which are the White Sage, Mexican Elderberry, Menzie's Goldenbush, and Prickly Pear.

JMA has noted a large amount of sage scrub has resprouted and some of which are flowered this past Spring following the damage from the fire. JMA has mentioned the weed cover is generally low-to-moderate and most annual species are currently dormant or have desiccated.

Deck B south slope panoramic view from Deck C entry road



#### 4.3 County Sage Mitigation Area

The County sage mitigation area is located on the western side of the County portion of Sunshine Canyon Landfill (Drawing 1). As noted in the fourth quarter JMA County-Side Sage Mitigation Area report the upper half of the mitigation site was burned in the Saddle Ridge fire in October of 2019. No revegetation activities were conducted in this area during the fourth quarter of 2020, and as noted in multiple JMA progress reports, the conditions in this mitigation area have remained unchanged for some time. JMA notes in their attached 2020 fourth quarter vegetation report that this area remains problematic for establishment of vegetation. Soil samples from this location indicate low pH, high salinity, and Boron present in native soils. A trail test pilot plan is being evaluated at this time with Architerra.

#### 5.0 Assessments of Sage Mitigation Areas

Assessments of the site's sage mitigation areas are conducted by a qualified biologist on a quarterly basis. The following sections present a summary of the recommendations for the sage mitigation areas from JMA (City and County sage mitigation areas) and Architerra (City South Sage Pilot Project Area (Deck C) and Middle Deck (Deck B) and the proposed actions in response to the recommendations.

##### 5.1 JMA Recommendations for City Sage Mitigation Areas

JMA's progress reports for the City Sage Mitigation Areas for the fourth quarter of 2020 are provided in Attachment 1. These reports include recommendations based on the assessments. Table 1 presents a summary of these recommendations and the proposed actions.



**Table 1 – JMA Recommendations and Proposed Actions – City  
Sage Mitigation Areas, Fourth Quarter 2020**

AREA		RECOMMENDATION	PROPOSED ACTION
Lower, Middle, and Upper Decks (Decks C, B, and A)	1	Weed Control – Implement a year-round weed control program to control non-native species.	A weed control program is already in place on Deck C and B as part of the pilot project and will continue. A weed control program on A will be implemented along with the mitigation plans for these areas.
Lower, Middle, and Upper Decks (Decks C, B, and A)	2	Prohibit Access – Continue to prohibit vehicle access to mitigation areas.	Repairs to the T-post fencing will be made as needed.
Upper Deck (Deck A)	3	Improve root zone and soil conditions	This will be addressed when the plans for Deck A is developed. Actions were taken to address improving the root zone in Decks B & C; it is expected that similar actions will be incorporated into the plans for Deck A.
Upper Deck (Deck A)	4	Plant natives in areas dominated with non-natives	This will be addressed when the plans for Deck A are developed. Various planting methods were used for the construction of the pilot project on Decks B & C; it is expected that similar actions will be incorporated into the plans for Deck A.
Upper Deck (Deck A)	5	Reseeding – apply native seeds during the rainy season after soil mounds have been established	This will be addressed when plans for Deck A are developed

JMA also recommended that a monitoring biologist should be present during weed control activities or the native plants should be flagged to ensure only non-native species are removed. A monitoring biologist will be consulted prior to any weed control activities to ensure native plants are protected.

Architerra continues to provide support to the Oakridge maintenance personnel to assist in removal of the invasive weeds on both Deck B and C. Architerra has pointed out some of the more aggressive weeds that have flourished since the Saddle Ridge Fire. Architerra provided them with images of the invasive weeds to help identify and target these invasive species. PRG and Oakridge Landscape have been diligently removing Russian Thistle, Wild Oat, Shortpod Mustard, Red

Brome Grass, False Barley, Tree Tobacco, and Yellow Star Thistle that took hold in the burned barren areas.

## 5.2 JMA Recommendations for County Sage Mitigation Area

Table 2 presents a summary of the recommendations proposed by JMA based on the assessment of the County Sage Mitigation Area and the proposed actions. Please refer to the full recommendations in the JMA reports in Attachment 2.

**Table 2 – JMA Recommendations and Proposed Actions – County Sage Mitigation Area, Fourth Quarter 2020**

AREA	RECOMMENDATION		PROPOSED ACTION
County Sage Mitigation Area	1	Create benches to control soil erosion and improve soil conditions to improve plant establishment and seed dispersal	ADG is evaluating recommendations from the County Task Force and UltraSystems.
County Sage Mitigation Area	2	Reseed and plant container plants	A trail test pilot plan will be discussed with California Native shrub.
County Sage Mitigation Area	3	Plant within view sheds	A trail test pilot plan will be discussed with California Native shrub.
County Sage Mitigation Area	4	Use soil amendments	This recommendation will be considered at a later date.
County Sage Mitigation Area	5	Signage – Install signage indicating revegetation efforts.	Due to the slopes, stormwater channel and overall difficulty to access this area, personnel are limited to access this area.
County Sage Mitigation Area	6	Weed Control – Continue weeding as needed on a quarterly basis.	Personnel continues to evaluate the current status.
County Sage Mitigation Area	7	Prohibit Access – continue to prohibit vehicle access to mitigation deck.	Upper entrance has a locked gate, no further action is required.

County Sage Mitigation Area	8	Employee Awareness – conduct employee awareness training.	This is currently being done as part of our Environmental Communication efforts.
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### 5.3 Architerra Inspection for City South Sage Mitigation Pilot Project Area – Fourth Quarter 2020

The inspection report is included in Attachment 3 along with photos of the area taken at the photo stations.

### 5.4 Quarterly Assessment of City South Sage Pilot Project Area

The methodology for assessment of the City South Sage Pilot Project Area developed by JMA was included in the first quarter 2015 Vegetation Report. The evaluation report for the fourth quarter of 2020 based on this methodology is included in Attachment 4 and Attachment 5 for Deck C and Deck B, respectively.

## 6.0 Status of Other Vegetated Areas

### Big Cone Douglas Fir Tree Mitigation

As reported in the vegetation report for the first quarter of 2015, 200 Big Cone Douglas fir tree saplings were planted the third week of March 2015. These big cone douglas fir pine trees continue to be monitored and maintenance activities will be conducted in this mitigation area for 2021 and into the future.

### PM10 Berm

Republic Services hosted an Adopt-A-Tree event for employees and their family members. On Saturday, November 14<sup>th</sup>, 2020 at 2:00 pm, Fourteen (14) Coast Live Oak trees were planted in critical areas of the PM10 Berm that was damaged during the Saddleridge Fire. Architerra and JMA assisted in the planting efforts with their expertise and knowledge of tree growth and ideal planting locations. Republic Services will consider hosting more Adopt-A-Tree events in the near future.



Please do not hesitate to contact me at (818) 362-2096 if you have any questions.

Sincerely,

*Tuong Phu Ngo*

Tuong-Phu Ngo, P.E.  
Environmental Manager  
Sunshine Canyon Landfill

Cc: Ms. Dorcas Dee Hanson-Lugo, SCL LEA  
Mr. David Thompson, SCL LEA  
Ms. Tiffany Butler, City of Los Angeles, Department of City Planning  
Ms. Devon Zatorski, City of Los Angeles Department of City Planning  
Ms. Ly Lam, City of Los Angeles, Department of City Planning  
Mr. Nicholas Hendricks, City of Los Angeles, Department of City Planning  
Dr. Wen Yang, Los Angeles Regional Water Quality Control Board  
Ms. Maria Masis, County of Los Angeles, Department of Regional Planning  
Mr. Wayde Hunter, SCL CAC  
Mr. Jim Aidukus, UltraSystems  
County DPW Landfill Unit

### ***Attachments***

Attachment 1	JMA Progress Report, City-Side Sage Mitigation Area
Attachment 2	JMA Progress Report, County-Side Sage Mitigation Area
Attachment 3	Architerra Design Group, Field Observation Report, South City Sage Mitigation Pilot Project – 4Q2020 with Photo Log
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck C Pilot Study, 4Q2020
Attachment 5	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck B Pilot Study, 4Q2020
Attachment 6	JMA Big Cone Douglas Fir Pine Tree Report

### ***Drawing***

Drawing 1	4Q2020 Site Vegetation Status and Activity
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## ATTACHMENT 1



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# SUNSHINE CANYON LANDFILL MITIGATION SITES

## Progress Report

### City-Side Sage Mitigation Area

<b>Submittal Date:</b> March 5, 2021		<b>Inspection Date:</b> February 5, 2021	
<b>To:</b> Tuong-phu Ngo, Environmental Manager		<b>From:</b> Greg Ainsworth, Monitoring Biologist <i>*Prepared on behalf of Republic Services</i>	
<b>Lower Deck</b>			
<b>General Comments:</b> The lower deck (Deck C) and surrounding area burned during the Saddleridge Fire in October, 2019. The fire burned a substantial amount of the lower deck, scorching some of the vegetation entirely and partially burning some of the vegetation. The irrigation within the lower deck also burned in the fire. Several of the native species that were planted via various seeding techniques have reestablished through seed germination and basal regrowth, most notably saltbush ( <i>Atriplex sp.</i> ) and California brittlebush ( <i>Encelia californica</i> ). It is expected that re-establishment of the vegetation within the lower deck will be successional, meaning that herbaceous native and non-native grasses and forbs will dominate the understory within the first two to three years, while seedlings of native shrubs reestablish over a longer period of time. With average rainfall, it the native vegetation of the lower deck should recover; however, based on the amount of rainfall received so far in 2021, supplemental watering could assist in encouraging regrowth, and maintenance of non-native species during this recovery period will be critical.			
<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Minimal	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Herbivory <input checked="" type="checkbox"/> Fire	<b>Height of Native Species:</b> <input type="checkbox"/> 0" – 12" <input type="checkbox"/> 12" – 24" <input checked="" type="checkbox"/> 24" and above	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Weed Conditions</b>			
<input type="checkbox"/> Dense weed coverage <input type="checkbox"/> Moderate weed coverage (seeding in high density) <input checked="" type="checkbox"/> Minimal weed coverage		<input type="checkbox"/> Weeds germinating /vegetative growth <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input checked="" type="checkbox"/> Weed desiccant/dormant	
<b>Comments:</b> Overall weed growth is low due to ongoing weed control activities. Weeds that were present are currently desiccated, and minimal respouting was observed due to low rainfall amounts thus far in 2021.			





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Middle Deck			
<b>General Comments:</b>  The northwest portion of the Middle Deck burned during the October Saddleridge Fire. Other areas of the Middle Deck that did not burn in the fire generally appear dry, with a minimum amount of grasses present when compared to pre-fire conditions. Approximately 35% of the vegetation that was previously planted was dominated by sage scrub plantings/seedlings and 30% by non-native grasses; however, currently many of these areas are barren due to excessively dry soil conditions.			
<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Minimal	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Excessive herbivory <input checked="" type="checkbox"/> Fire	<b>Height of Species:</b> <input type="checkbox"/> 0" – 12" <input type="checkbox"/> 12" – 24" <input checked="" type="checkbox"/> 24" and above	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Weed Conditions			
<input type="checkbox"/> Dense weed coverage <input checked="" type="checkbox"/> Moderate weed coverage (seeding in high density) <input checked="" type="checkbox"/> Minimal weed coverage		<input type="checkbox"/> Weeds germinating /vegetative growth <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input type="checkbox"/> Weed desiccant/dormant	
<b>Comments:</b> A minimal amount of non-native weeds were noted within the sample plots that are being monitored on a quarterly basis within the Middle Deck.			
UPPER DECK			
<b>General Comments:</b> The southern half of the Upper Deck was burned by the Saddleridge Fire. Overall, the upper deck continues to be sparsely covered with native vegetation, and total vegetation coverage is sparse due to compacted and poor soil conditions. Specifically, the soils to the north of the central access road are heavily compacted and gravelly and vegetation coverage in this area is especially sparse. Evidence of previous seeding is no longer discernible.  Desiccated wild oats ( <i>Avena fatua</i> ), brome grasses and mustard ( <i>Brassica nigra</i> ) generally dominate the non-native cover throughout the Upper Deck, along with various patches of Russian thistle ( <i>Kali tragus</i> ). Overall natural recruitment within the Upper Deck is low due to poor soil conditions and a dry soil conditions.			
<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Minimal	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Excessive herbivory	<b>Height of Species:</b> <input type="checkbox"/> 0" – 12" <input type="checkbox"/> 12" – 24" <input checked="" type="checkbox"/> 24" and above	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High





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### Weed Conditions

<input type="checkbox"/> Dense weed coverage	<input checked="" type="checkbox"/> Weeds germinating /vegetative growth
<input checked="" type="checkbox"/> Moderate weed coverage (seeding in high density)	<input checked="" type="checkbox"/> Weeds flowering
<input type="checkbox"/> Minimal weed coverage	<input type="checkbox"/> Weeds setting seed
	<input type="checkbox"/> Weed desiccant/dormant

**Comments:** Weeds continue to grow without any level of control within the Upper Deck. Wild oats, brome grasses, mustard and Russian thistle are currently dominant.

### RECOMMENDATIONS

#### Lower and Middle Decks

• **Weed control.** Implement a year-round weed control program to control non-native species. The weed control program should incorporate both chemical and mechanical control practices. Following weed control, any dead material harboring seeds should be removed to an off-site location to the extent feasible.

A monitoring biologist should be present during weed control activities or flag the native plants that should remain to ensure only non-native species are removed. A biologist should verify that the weed removal methodology is sound and does not encourage re-colonizing of non-natives. Weeding is best performed just before, or at the onset of flowering, but before seed set. If seeds are already present, additional care should be taken to remove the plants with the seeds attached, or the seeds should be removed from the plants prior to the plant removal. A consistent weed abatement schedule will reduce the potential for non-natives to set seed. Soil disturbance should be limited by hand weeding, where possible, and weeds should be disposed of off-site to avoid any reinfestation through reseeding or from plant propagules. If hand weeding is not possible, the monitoring biologist should be consulted regarding the appropriate method of weed removal. If there continues to be high incidence of weed infestation, weed control may need to be increased to every four to six weeks. Otherwise, weeds should continue to be monitored and controlled on a quarterly basis.

• **Prohibit access.** Continue to prohibit vehicle access to mitigation areas.

#### Upper Deck

• **Improve root zone and soil conditions.** Continue to investigate ways to import the soil layer to improve the root penetration and saturation zone to enable plant growth in heavily compacted areas. Consider applying soil in random undulations or uneven mounds to improve soil porosity and filtration and to control soluble salts from leaching from existing layer.

If permissible, prior to seeding (broadcast, hydroseeding, or drilling) native species, incorporate a soil amendment or mulch with high organic content by tilling into the top 12 inches of the existing compacted soils to improve soil texture, drainage, porosity, and aerobic conditions. If an organic mulch or soil amendment is not feasible or available, incorporate available soil from on-borrow sites within the landfill that have the appropriate, so long as these borrowed soils have been determined to not have toxic conditions such as boron or high salinity.



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• **Plant natives in areas dominated with non-natives.** The vegetated areas on the middle deck that are currently dominated with annual, non-native species have decent soil-texture conditions. These areas are not near as compacted as adjacent areas that are gravelly and mostly void of vegetation. In general, the soil texture within the vegetated areas with non-native vegetation is friable down to approximately 8-12 inches in depth. Various planting methods (i.e., planting container plants and hydroseeding) may be used to re-establish native plants on the middle and upper decks where non-natives currently dominate.

• **Weed control.** Implement a year-round weed control program to control non-native species. The weed control program should incorporate both chemical and mechanical control practices. Following weed control, any dead material harboring seeds should be removed to an off-site location to the extent feasible.

A monitoring biologist should be present during weed control activities or flag the native plants that should remain to ensure only non-native species are removed. A biologist should verify that the weed removal methodology is sound and does not encourage re-colonizing of non-natives. Weeding is best performed just before, or at the onset of flowering, but before seed set. If seeds are already present, additional care should be taken to remove the plants with the seeds attached, or the seeds should be removed from the plants prior to the plant removal. A consistent weed abatement schedule will reduce the potential for non-natives to set seed. Soil disturbance should be limited by hand weeding, where possible, and weeds should be disposed of off-site to avoid any reinfestation through reseeding or from plant propagules. If hand weeding is not possible, the monitoring biologist should be consulted regarding the appropriate method of weed removal. If there continues to be high incidence of weed infestation, weed control may need to be increased to every four to six weeks. Otherwise, weeds should continue to be monitored and controlled on a quarterly basis.

• **Reseeding.** Following the application of soil mounds as previously described, apply native seed (by means of broadcast seeding, hydroseeding or drilling) during the rainy season, between December and March, or prior to a forecasted rain event.

• **Prohibit access.** Continue to prohibit vehicle access to mitigation areas.



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## Progress Report

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### City-Side Sage Mitigation Area

#### Photo Locations







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## Progress Report

### City-Side Sage Mitigation Area



Photo 1. Facing west at lower deck. View of eastern limits that was dominated with *Atriplex* species and California sunflower (*Encelia californica*) prior to the October 2019 Saddleridge Fire.



Photo 2. Facing east at lower deck from western boundary.



Photo 3. Facing west at the easterly-facing slope located between middle and upper decks. The vegetation on the slopes below the upper deck is dominated with mustard and brome grasses.



Photo 5. Facing northeast at upper deck. This area is compacted and gravelly and continues to be problematic for supporting vegetation. Non-native grasses and some CA buckwheat shrubs are evident in the background



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## Progress Report

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### City-Side Sage Mitigation Area



**Photo 6.** Facing southwest at upper deck. The area shown in this photo is dominated by Russian thistle in the foreground, and areas that burned during the Saddleridge Fire are visible in the background.



**Photo 7.** Facing southeast at the upper deck at the disturbed area that is currently dominated with desiccant brome grasses and Russian thistle.

## ATTACHMENT 2



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# SUNSHINE CANYON LANDFILL MITIGATION SITES

## Progress Report

### County-Side Sage Mitigation Area

<b>Submittal Date:</b> March 5, 2021	<b>Inspection Date:</b> February 5, 2021
<b>To:</b> Tuong-phu Ngo, Environmental Manager	<b>From:</b> Greg Ainsworth, Monitoring Biologist <i>*Prepared on behalf of Republic Services</i>
<b>STATUS OF HYDROSEEDING</b>	
<b>Conditions:</b> <input type="checkbox"/> Fully covered <input type="checkbox"/> Moderately covered <input checked="" type="checkbox"/> Barely covered	
<b>Comments:</b> <p>The southern upper half of the county-side mitigation area burned during the October 2019 Saddleridge Fire. Otherwise, conditions on the county-side sage mitigation area remain relatively unchanged. Areas that are moderately covered with native and non-native vegetation are concentrated. A substantial portion of the county-side mitigation area continues to be bare and problematic for establishment of vegetation, primarily because of highly eroded soils, steep slopes and Boron-toxic soils (See Recommendations).</p> <p>Native plant coverage in areas that did not burn in the Saddleridge Fire are similar to the previous quarterly monitoring reports. The lower southern-half of the mitigation area contains the most vegetation, which consists of the highest concentration of native species, mostly California buckwheat (<i>Eriogonum fasciculatum</i>) and California brittlebush (<i>Encelia californica</i>). Native plant coverage is assumed to be a direct result of hydroseeding; however, some natural recruitment is apparent that consists mostly of California brittlebush seedlings. Due to rocky (hydrophobic) soil conditions, soil erosion and Boron-toxic soils on the northern-half of the county-side mitigation area, a minimal amount of plant growth is present.</p>	
<b>SEED MIX</b>	
<b>Conditions:</b> <input type="checkbox"/> No sign of germination <input type="checkbox"/> No cover of native plants from seed mix <input type="checkbox"/> Sparse cover of native plants from seed mix	<input type="checkbox"/> Dense cover of native plants from seed mix <input checked="" type="checkbox"/> Moderate cover of native plants from seed mix (where vegetation is present)
<b>Comments:</b> <p>The lower half of the county-side mitigation area remains to be moderately covered with native vegetation. The northern-half of the county-side mitigation area continues to be bare and problematic for vegetation to become established. However, in areas where vegetation is present, there is a moderate coverage of native species, mostly California buckwheat and California</p>	



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brittlebush.

Germination and plant growth from hydroseeding or seed mix is not discernible. As reported in previous monitoring reports, a moderate cover of native plants exists within vegetated areas. Annual non-native grasses and forbs currently dominate the ground cover in most of the vegetated areas. Desiccated brome grasses (*Bromus sp.*), wild oats (*Avena fatua*) and shortpod mustard (*Hirschfeldia incana*) comprise approximately 25 percent of the absolute plant cover. California buckwheat dominates the native vegetation coverage with California sagebrush and California brittlebush are co-dominants. These native species comprise of approximately 75 percent of the native vegetation cover *in areas where vegetation is present*. Other less dominant native species observed include golden bush (*Ericameria linearifolia*), coyote brush (*Baccharis pilularis*), black sage (*Salvia millifera*) and laurel sumac (*Malosma laurina*).

### OVERALL NATIVE PLANT CONDITIONS

Plant Cover:	Plant Health	Height:	Species Richness:
<input type="checkbox"/> Dense <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Minimal	<b>Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Excessive herbivory <input checked="" type="checkbox"/> Fire	<input type="checkbox"/> 0" – 12" <input checked="" type="checkbox"/> 12" – 24" <input type="checkbox"/> 24" and above	<input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High

### Comments:

It should be noted that the plant cover rating above applies where vegetation is dominant in the southeastern portion of the mitigation area. Vegetation cover is moderate in the southeastern portion of the county-sage mitigation area; whereas it is sparse along the upper slopes where rocky conditions occur. Bare areas and non-native annual grasses are intermixed in the lower areas where vegetation has established. Native vegetation coverage is good in vegetated areas and the amount of non-native grasses that is present is normal when compared to sparsely covered areas of California buckwheat in the region.

As indicated previously, California buckwheat dominates the native cover with *Encelia californica* as a co-dominant. Establishment of vegetation is problematic due to rocky soils with poor soil structure, and boron toxicity has suppressed recruitment of native species (i.e., seed germination and recruitment). The species richness is moderate within vegetated areas; however, species richness is considerably low when considering the entire county-sage mitigation area.

### WEED CONDITIONS

Conditions:	
<input type="checkbox"/> Dense weed coverage <input checked="" type="checkbox"/> Moderate weed coverage (seeding in high density) <input type="checkbox"/> Minimal weed coverage	<input type="checkbox"/> Weeds germinating <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input checked="" type="checkbox"/> Weed desiccant/dormant





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**Comments:**

Annual, non-native weed species consist primarily of brome grasses and wild oats, which are currently desiccated, as well as patches of short-pod mustard. Other established weeds that were observed include red-stemmed filaree (*Erodium cicutarium*) and (native) telegraph weed (*Heterotheca grandiflora*). Russian thistle (*Salsola kali*) is scattered within the vegetated areas, but in less densities than the other non-native species noted above.

**MISCELLANEOUS****Conditions:**☐ Trash☐ Vandalism☐ Erosion**Comments:**

None

**RECOMMENDATIONS**

- **Create benches.** Consider creation of benches throughout the mitigation area to control soil erosion and to improve soil conditions to improve plant establishment and seed dispersal. This technique has been widely used on steep slopes and in areas where soil erosion is problematic. This technique also allows for opportunities to introduce a high quality soil layer above the poor soils that exist.
- **Reseed and plant container plants.** If creation of benches is feasible, planting methods should include Hydroseeding and broadcast seeding just before a forecasted rain event and planting with container plants with supplemental irrigation during the period of establishment. Container plants should only be planted if temporary irrigation source is available.
- **Plant within view sheds.** Consider planting native species on upper portion of the slope that is visible from public view sheds with appropriate native species. Planting should occur prior to fall/winter rains.
- **Use soil amendments.** Incorporate a soil amendment or mulch with high organic content in select areas as determined by a restoration specialist.
- **Signage.** Install signs indicating that the area is undergoing revegetation.
- **Weed control.** Continue weed control program as needed on a quarterly basis.
- **Prohibit access.** Continue to prohibit vehicle access to mitigation area. Extend fencing around southeastern and southern boundary of lower deck and review fencing on the upper deck to determine if additional area can be reasonably enclosed.
- **Employee awareness.** Conduct an employee awareness program to inform staff on the importance of preserving all restoration areas.



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## Progress Report

### County-Side Sage Mitigation Area

#### Photo Locations





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949-367-1000  
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## Progress Report

---

### County-Side Sage Mitigation Area



**Photo 1.** Facing west at the county sage slope. This area is dominated with California buckwheat and California brittlebush.



**Photo 2.** Facing west at the northern-half of the county sage hill, where plant growth has been problematic due to poor soil conditions.

## ATTACHMENT 3



**ARCHITERRA DESIGN GROUP**

**FIELD OBSERVATION REPORT**

DATE OF VISIT:	12/20/20
<b>PROJECT:</b>	<b>Sunshine Canyon Mitigation Sites</b>
PROJECT NUMBER:	1214
PROJECT MANAGER:	Gregg Denson
SITE INSPECTION #:	
PURPOSE OF VISIT:	Review site conditions/Photo Catalog
TIME OF SITE VISIT:	10:00am
WEATHER/TEMPERATURE:	Sunny 75° and Breezy
ESTIMATED % COMPLETED:	100%
CONFORMANCE WITH SCHEDULE (+, -)	

WORK IN PROGRESS:	Weed abatement / Monitoring Period /Construction Observation
PRESENT ON SITE:	Gregg Denson

A site visit review and evaluation has been completed to review the Venturan CSS vegetation establishment on the Trial Site (Deck C), Deck B and County Mitigation Slopes. Additional items noted during the site visit are as follows:

**City-Side Sage Mitigation (Trial Site Deck C):**

- Deck C has shown lots of improvement over the last year since a good majority of the planting mosaic was destroyed by the Saddleridge Fire. Several Venturan Sage Scrub seedlings germinated during the late winter/early spring rains of 2020 and were able to harden off during the summer. We are encouraged by the abundance of native seedlings that are established and feel confident that the deck will show significant improvement this spring, only 18 months after being burned to the ground.
- Weeding efforts by Oakridge Landscape maintenance personnel have made a difference and opportunistic weed seed germination is minimal. There was a significant rain event earlier in the week and the native plants (especially *Encelia californica*) that were in summer dormancy are beginning to show new vegetative growth and, in some cases, blooming. There is still a large area of the Yellow Star Thistle that needs to be removed. ADG can provide additional guidance and coordination with Oakridge for tagging that area for removal. It has been noted on previous reports that identification can be confusing with some of the native species.
- It will be important during these next 3-4 months to stay on top of the weeding efforts, as there are plenty of weed seeds in the existing soils. We would anticipate that the Brome Grass is already growing pretty aggressive and should be controlled using either mechanical removal or foliage spray applications, prior to the grass setting seed.





Emergence of new growth on California Sunflower (*Encelia californica*)



Emergence of new growth on California Sunflower (*Encelia californica*)





Blooming California Sunflower (*Encelia californica*)



Emerging new foliage of Wild Rye (*Leymus triticoides*)





Section of Yellow Star Thistle (*Centaurea solstitialis*) still remaining on deck



California Sagebrush and Deerweed seedlings





Coyote Bush (*Baccharis pilularis*) crown sprouting new foliage at base



Emerging new foliage on Mexican Elderberry (*Sambucus Mexicana*)





Blooming Black Sage (*Salvia mellifera*)



Blooming Coyote Bush (*Baccharis pilularis*)





Thick Leaf Yerba Santa (*Eriodictyon crassifolium* - foreground) and California Yerba Santa (*Eriodictyon californicum* - background)



New White Sage (*Salvia apiana*) growing at burned area of deck





New Black Sage (*Salvia mellifera*) growing on burned area of deck



Silhouette of deer atop hill overlooking deck



### City-Side Sage Mitigation (Trial Site Deck B):

- Similar to Deck C, Deck B has rebounded over the last 12 months since the Saddleridge Fire and is beginning to fill in where the burned portions of the deck were completely barren. Portions of Deck C that did not burn were able to survive the summer even though the irrigation was not operational. Based off the diversity of species and establishment of plantings, we feel that the temporary irrigation does not need to be repaired for the portion of the Deck B trial site. However, moving forward the mainline and wiring to the controller should be repaired so that other portions of Deck B and Deck C (Slopes) have the ability to utilize irrigation water.
- An access road was created during the fire running east to west. We recommend installing straw wattles along this roadway at 40' o.c. to minimize rill erosion. T-Bar staking should be repaired to discourage any future vehicular access onto the deck at this location.
- There are still areas of this trail site that are open and accessible by vehicles. The perimeter should be restaked with the T-Bar staking to restrict access onto these deck areas.



Bladderpod (*Isomeris arborea*) blooming on deck





Coast Prickly Pear (*Opuntia littoralis*) managed to sustain fire damage but is regenerating new foliage.



Rill erosion along access used during Fire. Recommend installing straw wattles to eliminate rill erosion (40' o.c.) and closing off west end of access road with T-Bar staking





Invasive California Pepper Trees (*Schinis molle*) that should be removed.







Large portion of previously existing Venturan Sage Scrub recovering from fire. Species include Deerweed (*Acmispon glaber*), California Sagebrush (*Artemesia californica*), California Buckwheat (*Eriogonum fasciculatum*), Black Sage (*Salvia mellifera*), Sawtooth Goldenbush (*Hazardia squarrosa*) and Telegraph Weed (*Heterotheca grandiflora*)

Signed: Gregg Denson

Date: 1/27/21

DISTRIBUTION

Republic Services



Contractor



Project Manager (Gregg Denson)



Other \_\_\_\_\_







**Photo Station #1 - December 2019 (East)**



**Photo Station #1 - December 2020 (East)**



**Photo Station #1 - December 2019 (North)**



**Photo Station #1 - December 2020 (North)**



**Photo Station #1 - December 2019 (West)**



**Photo Station #1 - December 2020 (West)**





**Photo Station #2 - December 2019 (East)**



**Photo Station #2 - December 2020 (East)**



**Photo Station #2 - December 2019 (North)**



**Photo Station #2 - December 2020 (North)**



**Photo Station #2 - December 2019 (South)**



**Photo Station #2 - December 2020 (South)**





**Photo Station #3 - December 2019 (East)**



**Photo Station #3 - December 2020 (East)**



**Photo Station #3 - December 2019 (North)**



**Photo Station #3 - December 2020 (North)**



**Photo Station #3 - December 2019 (West)**



**Photo Station #3 - December 2020 (West)**





**Photo Station #4 - December 2019 (South)**



**Photo Station #4 - December 2020 (South)**



**Photo Station #4 - December 2019 (East)**



**Photo Station #4 - December 2020 (East)**



**Photo Station #4 - December 2019 (West)**







**Photo Station #5 - December 2019 (East)**



**Photo Station #5 - December 2020 (East)**



**Photo Station #5 - December 2019 (North)**



**Photo Station #5 - December 2020 (North)**



**Photo Station #5 - December 2019 (West)**



**Photo Station #5 - December 2020 (West)**





**Photo Station #6 - December 2019 (East)**



**Photo Station #6 - December 2020 (East)**



**Photo Station #6 - December 2019 (South)**



**Photo Station #6 - December 2020 (South)**



**Photo Station #6 - December 2019 (West)**



**Photo Station #6 - December 2020 (West)**





**Photo Station #7 - December 2019 (South)**



**Photo Station #7 - December 2020 (South)**



**Photo Station #7 - December 2019 (West)**



**Photo Station #7 - December 2020 (West)**



**Photo Station #7 - December 2019 (North)**



**Photo Station #7 - December 2020 (North)**





**Photo Station #8 - December 2019 (East)**



**Photo Station #8 - December 2020 (East)**



**Photo Station #8 - December 2019 (North)**



**Photo Station #8 - December 2020 (North)**



**Photo Station #8 - December 2019 (West)**



**Photo Station #8 - December 2020 (West)**





**Photo Station #9 - December 2019 (East)**



**Photo Station #9 - December 2020 (East)**



**Photo Station #9 - December 2019 (South)**



**Photo Station #9 - December 2020 (North)**



**Photo Station #9 - December 2019 (West)**

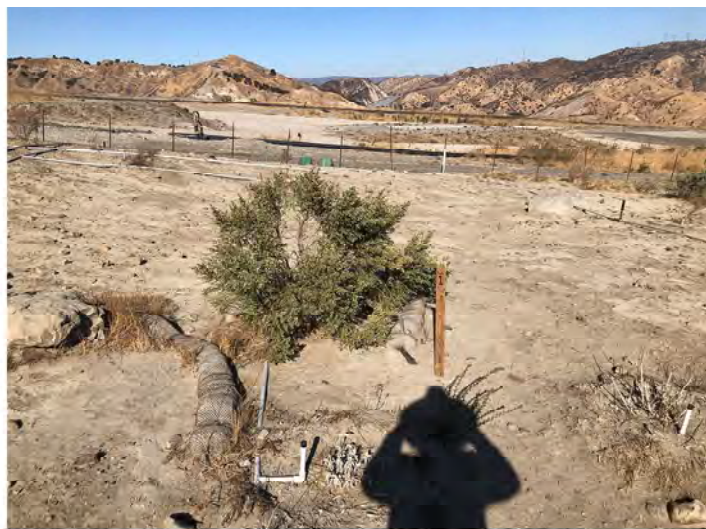


**Photo Station #9 - December 2020 (West)**





**Photo Station #1 - October 2020 (North)**



**Photo Station #1 - December 2020 (North)**



**Photo Station #1 - October 2020 (East)**



**Photo Station #1 - December 2020 (East)**



**Photo Station #1 - October 2020 (West)**



**Photo Station #1 - October 2020 (West)**





**Photo Station #2 - October 2020 (North)**



**Photo Station #2 - December 2020 (North)**



**Photo Station #2 - October 2020 (East)**



**Photo Station #2 - December 2020 (East)**



**Photo Station #2 - October 2020 (West)**



**Photo Station #2 - December 2020 (West)**





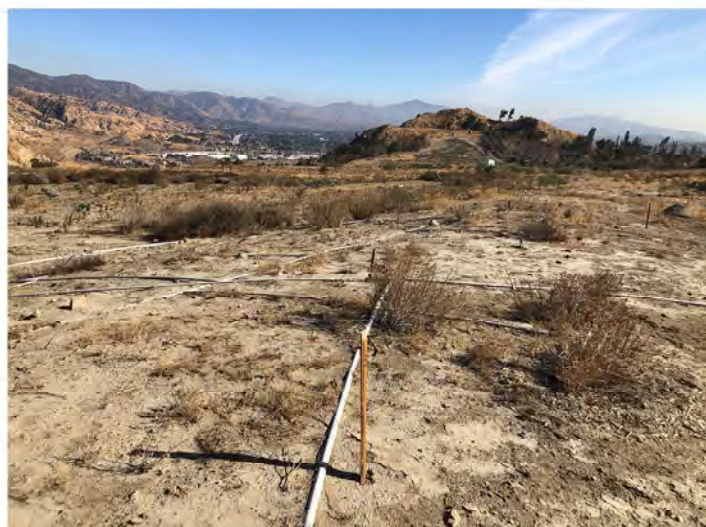
**Photo Station #3 - October 2020 (North)**



**Photo Station #3 - December 2020 (North)**



**Photo Station #3 - October 2020 (East)**



**Photo Station #3 - December 2020 (East)**



**Photo Station #3 - October 2020 (West)**

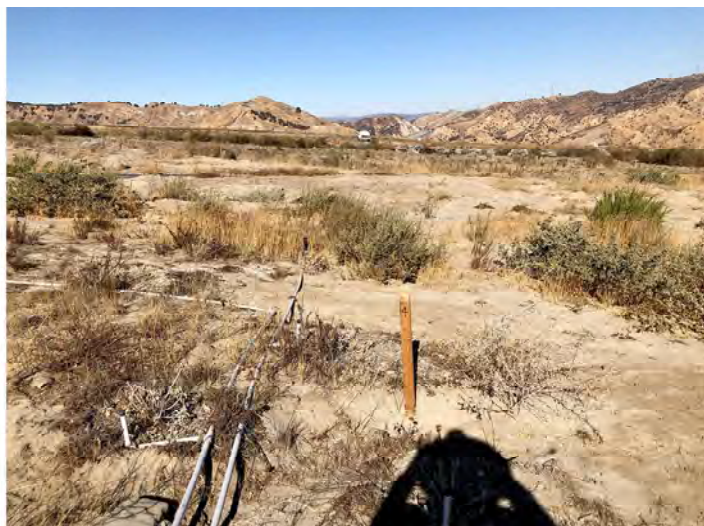


**Photo Station #3 - December 2020 (West)**





**Photo Station #4 - October 2020 (North)**



**Photo Station #4 - December 2020 (North)**



**Photo Station #4 - October 2020 (East)**



**Photo Station #4 - December 2020 (East)**



**Photo Station #4 - October 2020 (West)**



**Photo Station #4 - December 2020 (West)**





**Photo Station #5 - October 2020 (North)**



**Photo Station #5 - December 2020 (North)**



**Photo Station #5 - October 2020 (East)**



**Photo Station #5 - December 2020 (East)**



**Photo Station #5 - October 2020 (West)**



**Photo Station #5 - December 2020 (West)**





**Photo Station #6 - October 2020 (North)**



**Photo Station #6 - December 2020 (North)**



**Photo Station #6 - October 2020 (East)**



**Photo Station #6 - December 2020 (East)**



**Photo Station #6 - October 2020 (West)**

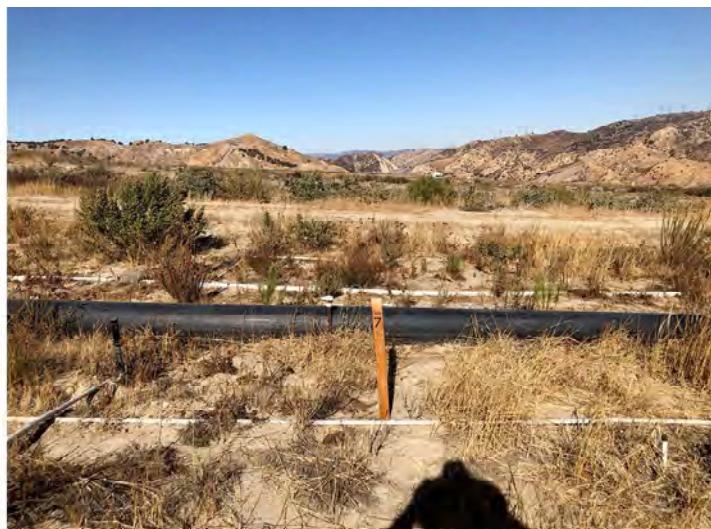


**Photo Station #6 - December 2020 (West)**





**Photo Station #7 - October 2020 (North)**



**Photo Station #7 - December 2020 (North)**



**Photo Station #7 - October 2020 (East)**



**Photo Station #7 - December 2020 (East)**



**Photo Station #7 - October 2020 (West)**



**Photo Station #7 - December 2020 (West)**





**Photo Station #8 - October 2020 (North)**



**Photo Station #8 - December 2020 (North)**



**Photo Station #8 - October 2020 (East)**



**Photo Station #8 - December 2020 (East)**



**Photo Station #8 - October 2020 (West)**



**Photo Station #8 - December 2020 (West)**

## ATTACHMENT 4



# memorandum

date March 8, 2021

to Tuong-phu Ngo, Environmental Manager, Republic Services

from Greg Ainsworth, Consulting Biologist

subject Coastal Sage Scrub City South C Trial Plot Monitoring Report, Sunshine Canyon Landfill – 4<sup>th</sup> Quarter, 2020

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## INTRODUCTION

The majority of the Landfill's City South 'C' Trial Plot area, also referred to as Deck C, substantially burned during the Saddleridge Fire in October 2019. Some regeneration is apparent, but overall, regrowth is low due to excessively dry soil conditions. On December 11, 2020, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the 4<sup>th</sup> quarter monitoring of the Deck C trial plot for 2020. The sample methodology generally followed the *Methodology for Monitoring Percent Cover and Species Richness within Each Seeded Application Method on the Coastal Sage Scrub Pilot Project at the Sunshine Canyon Landfill* (JMA, April 23, 2014). Quadrat sampling of the sage pilot study area consists of four, 50-meter quadrats that are randomly sampled within each of the following three seeded areas: hydroseed, imprint and hand broadcast. The quadrats were randomly selected prior to the first initial monitoring event from a grid that was placed over the entire trial plot, and each quadrat is delineated in the field with wooden stakes. As shown on the attached planting plan, each quadrat that was sampled was given a corresponding letter from A-L.

A total of 200 meters were sampled for each of the three seeded areas and the following data was collected in each quadrat that was sampled:

- **Percent basil cover (shrubs)** – Visual estimate of the amount of basil cover within each quadrat for all shrub species.
- **Percent basil cover (herbs)** – Visual estimate of the amount of basil cover within each quadrat for all herb species.
- **Percent bare ground** – Visual estimate of the amount of available bare ground with no vegetation, but suitable for plant growth.
- **Percent rock or other** – Visual estimate of the amount of unavailable ground for supporting plant growth. Inhibitors generally included rocks and boulders, irrigation lines and valve boxes, and mulch.
- **Percent canopy** – Visual estimate of the percent canopy of each shrub and herbaceous species.
- **Photographs** – A photograph was taken from the southwest corner (facing northeast) of each quadrat.

To obtain estimate cover of each species, the point intercept method was used on quadrats A, B E, F and G, which consisted of data collection points every 0.5 meter along the perimeter of each quadrat. Sampling began at the



southwest corner of each quadrat and continued around the quadrat in a clockwise direction. The species located precisely at every 0.5-meter point was tallied, including areas of bare ground, rock and other.

## RESULTS

Below are the average data collected for the hydroseed, imprint, and hand broadcast application areas. The number in parenthesis represents the previous quarterly monitoring results.

### Quadrat Sampling:

#### *Average Hydroseed – Quadrats A, B, C, D*

Percent basil cover (shrubs) – 5% (2%)

Percent basil cover (herbs) – 10% (0%)

Percent bare ground – 34% (87%)

Percent rock or other – 6% (5%)

Percent canopy (shrub) – 24% (8%)

Percent canopy (herb) – 24% (0%)

#### *Average Imprint – Quadrats E, F, G H*

Percent basil cover (shrubs) – 14% (10%)

Percent basil cover (herbs) – 19% (3%)

Percent bare ground – 28% (69%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 36% (23%)

Percent canopy (herb) – 26% (3%)

#### *Average Hand Broadcast – Quadrats I, J, K L (average)*

Percent basil cover (shrubs) – 13% (0%)

Percent basil cover (herbs) – 56% (0%)

Percent bare ground – 18% (93%)

Percent rock or other – 3% (7%)

Percent canopy (shrub) – 25% (0%)

Percent canopy (herb) – 65% (0%)

**Point Intercept:**

The representation of each species within a quadrat was estimated by broad cover classes (<1%, 1-5%, 5-25%, 25-50%, 50-75% and >75%). The percent cover of each species based on the point intercept method is as follows:

***Hydroseed– Quadrats A, B, C, D (average)***

<b>Species</b>	<b>% Cover Shrub</b>	<b>% Cover Herb</b>
Acmispon glaber		
Adenostema fasciculatum		
Achillia mellifolium		
Artemisia californica		
Atriplex lentiformis	6%	
Atriplex polycarpa	7%	
Atriplex spinosa	1%	
Baccharis pilularis		
Centaurea melitensis		
Encelia californica	15%	
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		33%
Salvia mellifera		
Sisyrinchium bellum		
Vulpia microstachys		
Echinochloa crus-galli		
Salsola kali		
Hordeum vulgare		
Bromus sp.		
Hirshfeldia incana/Brassica nigra		

***Imprint – Quadrats E, F, G H (average)***

<b>Species</b>	<b>% Cover Shrub</b>	<b>% Cover Herb</b>
Adenostema fasciculatum		
Achillia mellifolium		
Artemisia californica		
Atriplex lentiformis	8%	
Atriplex polycarpa	10%	
Atriplex spinosa	1%	
Baccharis pilularis		
Encelia californica	29%	
Eschscholzia californica		
Eriogonum fasciculatum	1%	
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		26%

Sisyrinchium bellum  
 Salvia apiana  
 Salvia leucophylla  
 Salvia mellifera  
 Echinochloa crus-galli  
 Salsola kali  
 Bromus sp.  
 Hirshfeldia incana  
 Centaurea melitensis  
 Leymus triticoides  
 Common barley

***Hand Broadcast – Quadrats I, J, K L (average)***

<b>Species</b>	<b>% Cover Shrub</b>	<b>% Cover Herb</b>
Adenostema fasciculatum		
Achillia mellifolium		
Artemisia californica	1%	
Atriplex lentiformis	4%	
Atriplex polycarpa	3%	
Atriplex spinosa		
Baccharis pilularis	1%	
Encelia californica	19%	
Eriogonum fasciculatum		
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		50%
Salsola kali		
Salvia apiana		
Salvia leucophylla	1%	
Salvia mellifera	1%	
Sisyrinchium bellum		
Hirshfeldia incana		
Vulpia microstachys		
Hordeum vulgare		
Bromus sp.		
Leymus triticoides		15%

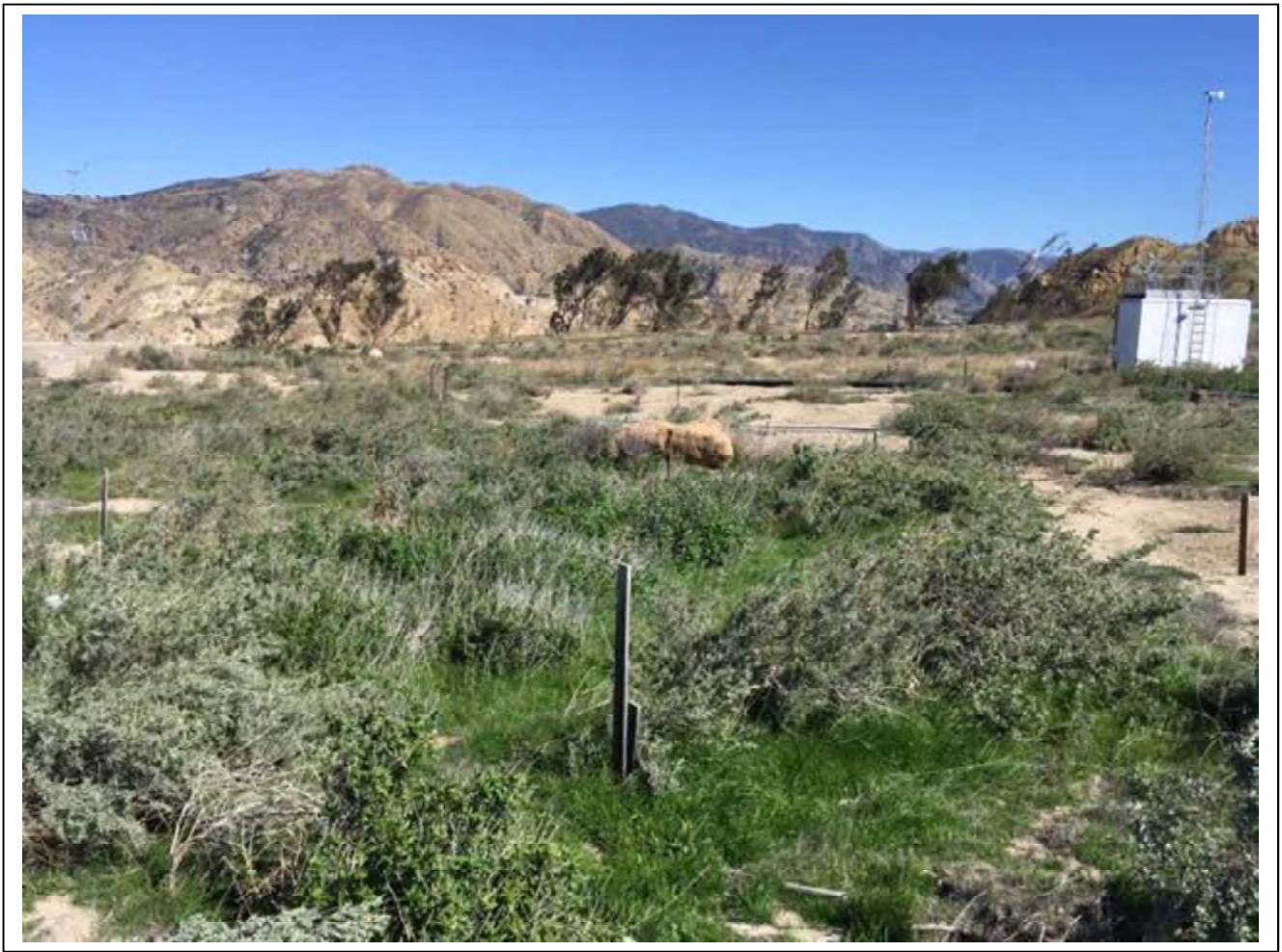
**DISCUSSION**

The City South ‘C’ area was planted in 2014 and prior to the Saddleridge Fire. The area had become relatively densely covered with native vegetation that was dominated with saltbush and California brittlebush, as well as with other native species in less concentrations, such as purple and black sages and California buckwheat. It was expected that the regeneration that occurred prior to the fire had established a seed bank within the topsoil that would germinate seedlings as soon as spring 2020, and that some of the vegetation that burned would also “reestablish” from basal sprouts. Based on the recent monitoring, some regeneration was evident, most notably by



California brittlebush. Wildfires in Southern California have become more common in recent years and has had an impact on the native landscape, as well as established restoration sites. Direction that has been provided from such organizations and the California Department of Fish and Wildlife Service and the California Society of Ecological Restoration, recommend focusing efforts on weed control for reestablishing restoration sites, including previously undisturbed areas. Successional regrowth of herbaceous non-native species is to be expected within the first two to three years following a wildfire, and native shrubs will recover over a longer period of time through germination of existing seed within the topsoil and basal growth from charred plants. This successional of herbaceous species is important for providing natural erosion of topsoil. As the native shrubs begin to sprout, it is essential to control the spread the non-native herbaceous layer to minimize competition for water, nutrients, and sunlight. Therefore, during the first two to three years' following the fire, weed maintenance should occur no less than every four months, and special attention should be afforded to minimizing impacts to native seedlings and resprouts.

## Photograph Log



Quadrat A. Facing northeast from southwest corner.





Quadrat B. Facing northeast from southwest corner.



Quadrat C. Facing northeast from southwest corner.





Quadrat D. Facing northeast from southwest corner.



Quadrat E. Facing northeast from southwest corner.





Quadrat F. Facing northeast from southwest corner.



Quadrat G. Facing northeast from southwest corner.





Quadrat H. Facing northeast from southwest corner.



Quadrat I. Facing northeast from southwest corner.





Quadrat J. Facing northeast from southwest corner.



Quadrat K. Facing northeast from southwest corner.





Quadrat L. Facing northeast from southwest corner.

## Quadrat Method: Raw Data

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
A			5%		5%	3%	40%	40%	
	Encelia californica						15%		
	Atriplex lentiformis						15%		
	Atriplex polycarpa						10%		
	Nonnative grasses/forbs			30%				40%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
B			3%	20%	15%	7%	24%	25%	
	Encelia californica						15%		
	Atriplex lentiformis						4%		
	Atriplex polycarpa						5%		
	Leymus triticoides								
	Nonnative grasses/forbs							25%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
C			0%	0%	90%	10%	0%	0%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
D			10%	20%	25%	5%	37%	30%	
	Encelia californica						30		
	Atriplex lentiformis						5%		
	Atriplex polycarpa						2%		
	Artemisia californica								
	Black sage								
	Nonnative grasses/forbs							30%	
<b>AVERAGE</b>			<b>5%</b>	<b>10%</b>	<b>34%</b>	<b>6%</b>	<b>25%</b>	<b>24%</b>	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
E			2%	25%	15%	3%	10%	35%	
	Atriplex lentiformis								
	Atriplex polycarpa						10%		
	Encelia californica						5%		
	Atriplex spinosa						1%		
	Nonnative grasses/forbs							35%	



Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
F			10%	20%	30%	3%	35%	30%	
	Atriplex lentiformis						20		
	Atriplex polycarpa						10%		
	Encelia californica						5%		
	Nonnative grasses/forbs							30%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
G			25%	20%	30%	2%	35%	30%	
	Atriplex lentiformis								
	Atriplex polycarpa						15%		
	Encelia californica						25%		
	Nonnative grasses/forbs							30%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
H			20%	10%	35%	12%	65%	10%	
	Atriplex lentiformis						10		
	Atriplex polycarpa						5%		
	Encelia californica						55%		
	Buckwheat/CA Artemisia						5%		
	Nonnative grasses/forbs							10%	
<b>AVERAGE</b>			<b>14%</b>	<b>19%</b>	<b>28%</b>	<b>5%</b>	<b>36%</b>	<b>26%</b>	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
I			10%	75%	10%	3%	25%	85%	
	Atriplex lentiformis								
	Atriplex polycarpa						10%		
	Encelia californica						25%		
	Purple sage						3%		
	Black sage						2%		
	Artemisia californica						5%		
	Nonnative grasses/forbs							85%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
J			10%	85%	5%	3%	21%	90%	
	Atriplex lentiformis								
	Atriplex polycarpa						3%		
	Atriplex spinosa						3%		
	Encelia californica						15%		

	Nonnative grasses/forbs							90%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
K			2%	55%	10%	2%	5%	75%	
	Atriplex polycarpa								
	Artemisia californica								
	Atriplex lentiformis						3%		
	Coyote bush						5%		
	Leymus triticoides							60%	
	Nonnative grasses/forbs							15%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
L			30%	8%	45%	2%	50%	10%	
	Atriplex polycarpa								
	Atriplex lentiformis						5%		
	Artemisia californica						5%		
	Encelia californica						35%		
	Coyote bush						5%		
	Nonnative grasses/forbs							10%	
<b>AVERAGE</b>			<b>13%</b>	<b>56%</b>	<b>18%</b>	<b>3%</b>	<b>25%</b>	<b>65%</b>	





## **City South 'C' Trial Plot Planting Plan and Quadrat Layout**





## ATTACHMENT 5

# memorandum

date March 8, 2020

to Tuong-phu Ngo, Environmental Manager, Republic Services

from Greg Ainsworth, Consulting Biologist

subject Coastal Sage Scrub City South B Trial Plot Monitoring Report, Sunshine Canyon Landfill – 4<sup>th</sup> Quarter, 2020

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## 1.0 METHODS

On December 11, 2020, biologist Greg Ainsworth monitored the Deck B Coastal Sage Scrub Revegetation at the Landfill, which constitutes the 4<sup>th</sup> quarter monitoring for 2020. The sample methodology generally followed the *Methodology for Monitoring Percent Cover and Species Richness within Each Seeded Application Method on the Coastal Sage Scrub Pilot Project at the Sunshine Canyon Landfill* (JMA, April 23, 2014). Quadrat sampling of the revegetation area consists of nine, 50-meter quadrats that are randomly sampled throughout the revegetation area. The quadrats were randomly selected prior to the first initial monitoring event from a grid that was placed over the entire trial plot, and each quadrat was given a letter (A-I) and delineated in the field with wooden stakes. As shown on the attached planting plan, five different planting methods were used as follows:

- Soil imprinting with hand broadcast overseeded drainage swales (Quadrats A and G)
- Soil imprinting (Quadrats B, F and H)
- Broadcast seeding (Quadrat C)
- Broadcast seeding with soil imprinting (Quadrat D and I)
- Soil imprinting and hand broadcast (Quadrat E)

### 1.1 Absolute Cover

The following data was collected in each quadrat to determine the absolute cover of native and non-native herbaceous and woody species:

- **Percent basil cover (shrubs)** – Visual estimate of the amount of basil cover within each quadrat for all shrub species.
- **Percent basil cover (herbs)** – Visual estimate of the amount of basil cover within each quadrat for all herb species.
- **Percent bare ground** – Visual estimate of the amount of available bare ground with no vegetation, but suitable for plant growth.



- **Percent rock or other** – Visual estimate of the amount of unavailable ground for supporting plant growth. Inhibitors generally included rocks and boulders, irrigation lines and valve boxes, and mulch.
- **Percent canopy** – Visual estimate of the percent canopy of each shrub and herbaceous species.
- **Photographs** – A photograph was taken from the southwest corner (facing northeast) of each quadrat.

## 1.2 Percent Cover

The following data was collected in each quadrat to determine the percent cover of native and non-native species.

- **Point intercept method** - Sampling began at the southwest corner of each quadrat and continued around the quadrat in a clockwise direction. The species located precisely at every 0.5-meter point was tallied, including areas of bare ground, rock and other.

## 2.0 RESULTS

Below are the average data collected for each planting method.

### 2.1 Quadrat Sampling

#### ***Soil imprinting with hand broadcast overseeded drainage swales - Quadrats A and G (average)***

Percent basil cover (shrubs) – 4%

Percent basil cover (herbs) – 20%

Percent bare ground – 78%

Percent rock or other – 4%

Percent canopy (shrub) – 9%

Percent canopy (herb) – 35%

#### ***Soil imprinting - Quadrats B, F and H (average)***

Percent basil cover (shrubs) – 4%

Percent basil cover (herbs) – 37%

Percent bare ground – 35%

Percent rock or other – 3%

Percent canopy (shrub) – 19%

Percent canopy (herb) – 57%

#### ***Broadcast seeding - Quadrat C***

Percent basil cover (shrubs) – 2%

Percent basil cover (herbs) – 7%

Percent bare ground – 80%

Percent rock or other – 3%

Percent canopy (shrub) – 18%

Percent canopy (herb) – 26%

***Broadcast seeding with soil imprinting - Quadrat D and I (average)***

Percent basil cover (shrubs) – 2%

Percent basil cover (herbs) – 45%

Percent bare ground – 35%

Percent rock or other – 7%

Percent canopy (shrub) – 9%

Percent canopy (herb) – 78%

***Soil imprinting and hand broadcast - Quadrat E***

Percent basil cover (shrubs) – 3%

Percent basil cover (herbs) – 27%

Percent bare ground – 25%

Percent rock or other – 3%

Percent canopy (shrub) – 14%

Percent canopy (herb) – 64%

*\*Percent bare ground includes desiccated plant material*



## 2.2 Point Intercept

The representation of each species within a quadrat was estimated by broad cover classes (<1%, 1-5%, 5-25%, 25-50%, 50-75% and >75%). The percent cover of each species based on the point intercept method is presented in the following tables.

**Table 1. Soil imprinting with hand broadcast overseeded drainage swales - Quadrats A and G (average)**

		Quadrat A		Quadrat G		
	<i>Species</i>	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Native Shrubs	Adenostema fasciculatum					
	Artemisia californica					
	Atriplex lentiformis			1	2%	
	Atriplex polycarpa					
	Atriplex spinosa					
	Baccharis pilularis					
	Encelia californica					
	Eriogonum fasciculatum			2	4%	
	Mimulus aurantiacus longiflorus					
	Salvia apiana					
	Salvia mellifera					
Native Herbs	Achillia mellifolium					
	Acmispon glaber					
	Eschscholzia californica					
	Leymus triticoides					
	Nasella pulchra					
	Sisyrinchium bellum					
	Vulpia microstachys					
Non-Native Herbs	Bromus sp.					
	Centaurea melitensis					
	Echinochloa crus-galli					
	Erodium cicutarium					
	Hirschfeldia incana					
	Hordeum vulgare					
	Salsola kali					
	Bare ground/desiccated plant material	50	100%	47	94%	

		Quadrat A		Quadrat G		
	<i>Species</i>	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
		Quadrat A		Quadrat G		A and G (% cover)
	Percent Cover Native Shrub	0%		6%		3%
	Percent Cover Native Herb	0%		0%		0%
	Percent Cover Non-Native Shrub	0%		0%		0%
	Percent Cover Non-Native Herb	0%		0%		0%
	Percent Bare Ground/Desiccated Plant Material	100%		94%		97%



*Table 2. Soil imprinting - Quadrats B, F and H (average)*

	Quadrat B		Quadrat F		Quadrat H		
<i>Species</i>	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Adenostema fasciculatum							
Artemisia californica	8	16%					
Atriplex lentiformis			1	2%	4	8%	
Atriplex polycarpa							
Atriplex spinosa							
Baccharis pilularis					1	2%	
Encelia californica	3	6%					
Encelia farinosa	5	10%					
Eriogonum canadensis	3	6%					
Eriogonum fasciculatum	5	10%	4	8%	2	8%	
Mimulus aurantiacus longiflorus							
Salvia apiana							
Salvia mellifera	4	8%					
Achillia mellifolium							
Acemison glaber							
Eschscholzia californica							
Leymus triticoides							
Nasella pulchra							
Sisyrinchium bellum							
Vulpia microstachys							
Bromus sp.							
Centaurea melitensis							
Echinochloa crus-galli							
Erodium cicutarium							
Hirschfeldia incana							
Hordeum vulgare							
Salsola kali							
Unknown annual grass	4	8%					
Bare ground/desiccated plant material	18	36%	45	90%	43	86%	
	Quadrat B		Quadrat F		Quadrat H		B,F,H (% cover)
Percent Cover Native Shrub	28%		10%		18%		19%
Percent Cover Native Herb	0%		0%		0%		0%

	Quadrat B		Quadrat F		Quadrat H		
<i>Species</i>	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
<b>Percent Cover Non-Native Shrub</b>	<b>0%</b>		<b>0%</b>		<b>0%</b>		<b>0%</b>
<b>Percent Cover Non-Native Herb</b>	<b>4%</b>		<b>0%</b>		<b>0%</b>		<b>1%</b>
<b>Percent Bare Ground/Desiccated Plan Material</b>	<b>36%</b>		<b>90%</b>		<b>86%</b>		<b>71%</b>



**Table 3. Broadcast seeding - Quadrat C**

	<b>Quadrat C</b>	
<i>Species</i>	Number of Hits	Percent Cover
<i>Adenostema fasciculatum</i>		
<i>Artemisia californica</i>	5	10%
<i>Atriplex lentiformis</i>		
<i>Atriplex polycarpa</i>	2	4%
<i>Atriplex spinosa</i>		
<i>Baccharis pilularis</i>		
<i>Encelia californica</i>		
<i>Eriogonum fasciculatum</i>		
<i>Mimulus aurantiacus longiflorus</i>		
<i>Salvia apiana</i>		
<i>Salvia mellifera</i>		
<i>Achillia mellifolium</i>		
<i>Acemison glaber</i>		
<i>Eschscholzia californica</i>		
<i>Leymus triticoides</i>		
<i>Nasella pulchra</i>		
<i>Sisyrinchium bellum</i>		
<i>Vulpia microstachys</i>		
<i>Bromus sp.</i>		
<i>Centaurea melitensis</i>		
<i>Echinochloa crus-galli</i>		
<i>Erodium cicutarium</i>	20	40%
<i>Hirschfeldia incana</i>		
<i>Hordeum vulgare</i>		
<i>Salsola kali</i>		
Unknown grass/forb	10	20%
Bare ground/desiccated plant material	13	26%
	<b>Quadrat C (% cover)</b>	
<b>Percent Cover Native Shrub</b>	<b>14%</b>	
<b>Percent Cover Native Herb</b>	<b>0%</b>	
<b>Percent Cover Non-Native Shrub</b>	<b>0%</b>	
<b>Percent Cover Non-Native Herb</b>	<b>60%</b>	
<b>Percent Bare Ground/Desiccated Plan Material</b>	<b>26%</b>	

**Table 4. Broadcast seeding with soil imprinting - Quadrat D and I (average)**

	Quadrat D		Quadrat I		
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Adenostema fasciculatum					
Artemisia californica					
Atriplex lentiformis	2	4%	2	4%	
Atriplex polycarpa			1	2%	
Atriplex spinosa					
Baccharis pilularis					
Encelia californica					
Eriogonum fasciculatum	5	10%	2	4%	
Mimulus aurantiacus longiflorus					
Salvia apiana					
Salvia mellifera					
Achillia mellifolium					
Acmispon glaber					
Eschscholzia californica					
Leymus triticoides					
Nasella pulchra					
Sisyrinchium bellum					
Vulpia microstachys					
Bromus sp.					
Centaurea melitensis					
Echinochloa crus-galli					
Erodium cicutarium					
Hirschfeldia incana					
Hordeum vulgare					
Salsola kali					
Unknown grass/forb	4	8%	6	12%	
Bare ground/Desiccated plant material	39	78%	39	78%	
	Quadrat D		Quadrat I		D and I (% cover)
Percent Cover Native Shrub	14%		12%		13%
Percent Cover Native Herb	0%		0%		0%
Percent Cover Non-Native Shrub	0%		0%		0%
Percent Cover Non-Native Herb	4%		12%		8%
Percent Bare Ground/Desiccated Plan Material	78%		78%		78%



**Table 5. Soil imprinting and hand broadcast - Quadrat E**

	<b>Quadrat E</b>	
<i>Species</i>	Number of Hits	Percent Cover
Adenostema fasciculatum		
Artemisia californica	3	6%
Atriplex lentiformis	5	10%
Atriplex polycarpa		
Atriplex spinosa		
Baccharis pilularis		
Encelia californica		
Eriogonum fasciculatum	4	8%
Mimulus aurantiacus longiflorus		
Salvia apiana		
Salvia mellifera		
Achillia mellifolium		
Acemisson glaber		
Eschscholzia californica		
Leymus triticoides		
Nasella pulchra		
Sisyrinchium bellum		
Vulpia microstachys		
Bromus sp.		
Centaurea melitensis		
Echinochloa crus-galli		
Erodium cicutarium		
Hirschfeldia incana		
Hordeum vulgare		
Salsola kali		
Unknown grass/forb	5	10%
Bare ground	33	66%
	<b>Quadrat E (% cover)</b>	
<b>Percent Cover Native Shrub</b>	<b>24%</b>	
<b>Percent Cover Native Herb</b>	<b>0%</b>	
<b>Percent Cover Non-Native Shrub</b>	<b>0%</b>	
<b>Percent Cover Non-Native Herb</b>	<b>10%</b>	
<b>Percent Bare Ground</b>	<b>66%</b>	

### 3.0 DISCUSSION

Table 6 below provides a summary of the percent cover of native and non-native shrubs and herbs, including areas of bare ground.

**Table 6. Summary of Percent Cover for Each Planting Method**

	Soil imprinting w/ hand broadcast overseeded drainage swales	Soil imprinting	Broadcast seeding	Broadcast seeding w/ soil imprinting	Soil imprinting and hand broadcast
Percent Cover Native Shrub	3%	19%	14%	13%	24%
Percent Cover Native Herb	0%	0%	0%	1%	0%
Percent Cover Non-Native Shrub	0%	0%	0%	0%	0%
Percent Cover Non-Native Herb	0%	1%	60%	8%	10%
Percent Bare Ground	97%	71%	26%	78%	66%

The Deck B Revegetation Area was planted in November 2018. The 2019 Saddleridge Fire scorched a lot of the Deck B area, but largely spared the sample plots. However, the intense heat from the fire dried out a lot of the vegetation within the sample plots and the irrigation throughout the Deck B area was damaged and no longer appears to be functioning. A complete lack of rain in the fall through December has resulted in minimal germination; however, non-native grass and forb seedlings are apparent in some of the plots. Some natural recruitment is occurring in plots B and C, whereas a small amount of recruitment is occurring in the other plots due to very dry soil conditions. Providing supplemental watering during dry winter months will aid in increasing germination, recruitment, and native plant cover.

Wildfires in Southern California have become more common in recent years and have impacted on the native landscape including established restoration sites. Direction that has been provided from such organizations as the California Department of Fish and Wildlife Service and the California Society of Ecological Restoration, recommending that revegetation efforts be focused on non-native weed control for reestablishing restoration sites, including previously undisturbed areas. Successional regrowth of herbaceous non-native species is to be expected within the first two to three years following a wildfire, and native shrubs will recover over a longer period of time through germination of existing seed within the topsoil and basal growth from charred plants. Successional growth of herbaceous species is important for providing natural erosion of topsoil. As the native shrubs begin to sprout, it is essential to control the spread the non-native herbaceous layer to minimize competition for water, nutrients and sunlight. Therefore, during the first two to three years following the fire, weed maintenance should occur no less than every four months, and special attention should be afforded to minimizing impacts to native seedlings and resprouts.



## Photograph Log



Quadrat A. Facing northeast from southwest corner.



Quadrat B. Facing northeast from southwest corner.





Quadrat C. Facing northeast from southwest corner.



Quadrat D. Facing northeast from southwest corner.





Quadrat E. Facing northeast from southwest corner.



Quadrat F. Facing northeast from southwest corner.





Quadrat G. Facing northeast from southwest corner.



Quadrat H. Facing northeast from southwest corner.



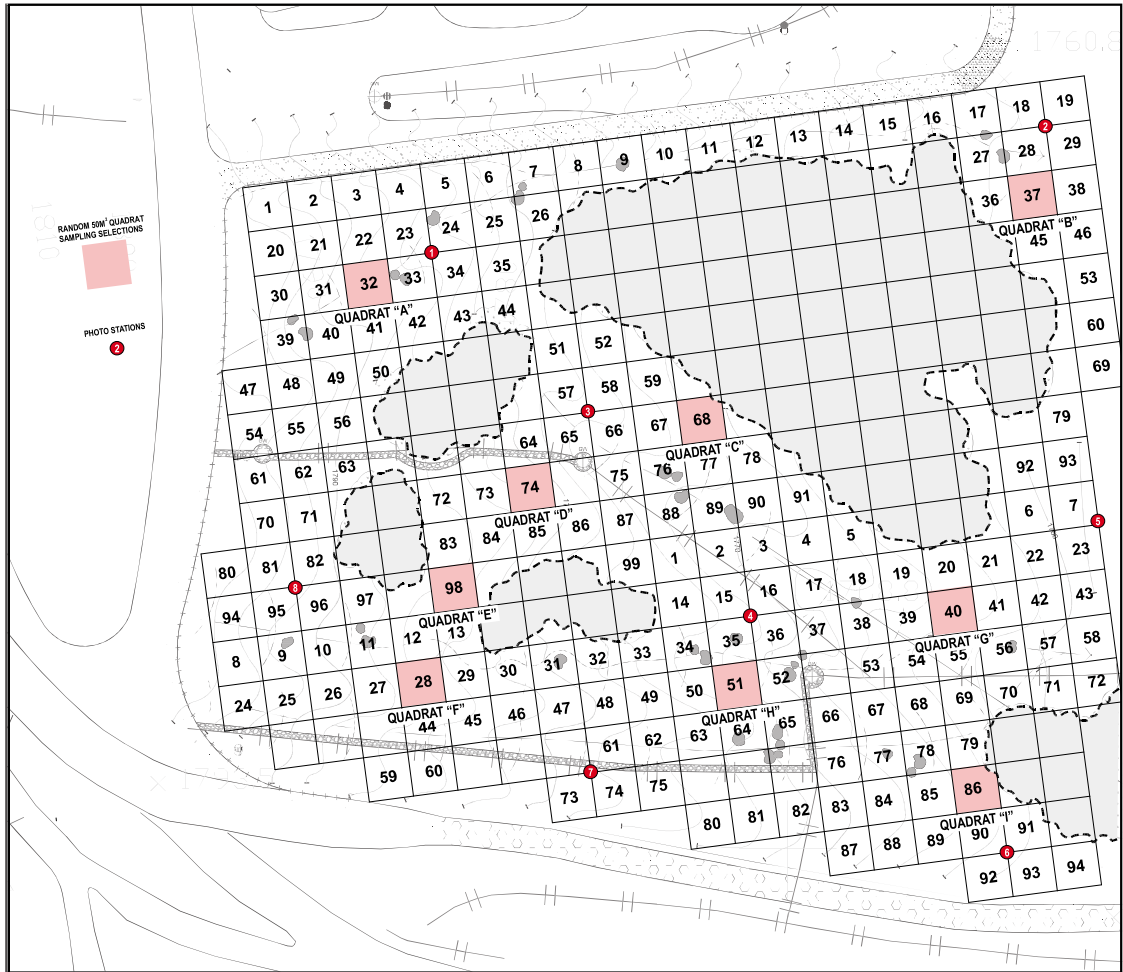


Quadrat I. Facing northeast from southwest corner.



## **City South ‘C’ Trial Plot Planting Plan and Quadrat Layout**





## ATTACHMENT 6



# **SUNSHINE CANYON LANDFILL**

**Oak Tree and Bigcone Douglas-Fir  
Monitoring Report No. 28**

**Prepared for:**

**Sunshine Canyon Landfill  
Republic Services, Inc.  
14747 San Fernando Road  
Sylmar, CA 91342**

**Prepared by:**



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Greg Ainsworth  
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**March 8, 2021**

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### Appendices

Appendix A: Bigcone Douglas Fir Mitigation Tree Map



## 1.0 Executive Summary

### *Oak Trees*

#### **Coast live oak**

No coast live oak trees removed in 2019

<b>Current balance of coast live oaks in the mitigation bank</b>	<b>48</b>
--	-----------

#### **Canyon oak**

No canyon oak trees removed in 2019

<b>Number of canyon oaks required for removals prior to 2020</b>	<b>40</b>
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### *Big Cone Douglas Fir Trees*

No big cone Douglas fir trees removed in 2020

<b>Number of big cone Douglas firs removed prior to 2020</b>	<b>119</b>
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<b>Number of living big cone Douglas fir trees currently being monitored</b>	<b>31</b>
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<b>Number of big cone Douglas fir trees needed to fulfill mitigation</b>	<b>88</b>
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## 2.0 Background

This monitoring report has been prepared to meet the requirements of Conditional Use Permit (CUP) and Oak Tree Permit (OTP) #86312-(5), dated February 19, 1991 for the Sunshine Canyon Landfill Extension Project. This is the 28<sup>th</sup> annual monitoring report that has been prepared in accordance with the OTP.

### Oak Trees

As of 2007, all oak trees planted on the “city-side” of the Sunshine Canyon Landfill (Landfill) for city-side mitigation had met their minimum size requirement. Therefore, the monitoring period for city-side coast live oak mitigation is completed. Below is summary of oak tree removals, required mitigation, and oak trees remaining in the Landfill’s oak tree mitigation bank.

#### *Coast live oaks*

A surplus of coast live oak (*Quercus agrifolia*) trees was previously planted in the Landfill’s mitigation areas, which now serves as a mitigation bank for the Landfill to draw from for future removals of coast live oak trees located on the “county-side” of the Landfill.

- 2018 - 24 coast live oaks were removed for the CC-4 project
- 2019/2020 - no coast live oak trees removed.

The mitigation ratio for coast live oaks is 2:1 (10:1 for heritage-size trees). Prior to 2018, there were 96 coast live oak trees remaining in the Landfill’s mitigation bank. 24 coast live oak tree were removed in 2018, no coast live oak trees were removed in 2019 or 2020. There are 48 coast live oaks remaining in the mitigation bank.

#### *Canyon live oaks*

- 2011 - 7 canyon live oaks, and one (1) heritage-size canyon live oak, were removed for the construction of a detention basin.
- 2016 – 1 canyon live oak removed for the SCE Power Pole project.
- 2018 – 7 canyon live oaks were removed for the CC4 Buttress project.
- 2019 and 2020 - no canyon live oak trees removed.

The mitigation ratio for canyon live oaks is 2:1, and 10:1 for heritage-size trees. 40 canyon oaks are required to be planted to meet the Landfill’s mitigation requirement.

### Big Cone Douglas Fir Trees

- Prior to 2010 - 40 big cone Douglas fir trees were removed from the County-side of the Landfill.
- 2011 - 11 big cone Douglas fir trees were removed from the Landfill for the construction of a detention basin.
- 2015 - one big cone fir was removed during the construction of the Flare 8 Project
- 2018 – 7 big cone Douglas fir trees removed for the CC4 Buttress project.
- 2019 and 2020 – no big cone Douglas fir trees removed.

According to the CUP and OTP, the required mitigation ratio for big cone Douglas fir removals is 5:1. Each big cone Douglas fir mitigation tree must be a minimum of 0.5-inches in diameter and monitored



**Sunshine Canyon Landfill**  
**Oak Tree and Big Cone Monitoring Report No. 28**

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for a 7-year period for mitigation to be deemed complete. 200 big cone Douglas fir mitigation trees were planted at the Landfill's Mitigation Area 7B for the removals that occurred prior to 2010. Based on monitoring conducted prior to 2010, it was determined that 176 big cone Douglas firs had completed the 7-year monitoring period; however, 24 big cone trees are still required to complete the 7-year monitoring period for the initial 40 that were removed prior to 2010 (See Table 2). As indicated above, 19 big cone Douglas firs were removed in 2011, 2015 and 2018, respectively, requiring an additional 95 big cone Douglas firs needed for mitigation. The current total of big cone Douglas fir trees required for mitigation is 119.

Approximately 250 big cone fir saplings were planted in Mitigation Area 7B in 2015, all of which had a trunk diameter less than 0.5 inches during the monitoring conducted in 2018. Based on the 2018 annual survey, several of these plantings have died due to a lack of adequate irrigation. Additionally, most of the remaining plantings perished in the 2019 Saddleridge Fire that burned through a substantial portion of the Landfill. Table 1 below summarizes the big cone Douglas fir trees that are required for mitigation because of removals that occurred prior to 2010 through 2018. No big cone firs were removed in 2019 or 2020.

**Table. 1 Big Cone Douglas Fir Removals and Mitigation Requirement**

<b>Removals</b>	<b>No. of Big Cone Trees Removed</b>	<b>Mitigation Ratio</b>	<b>Total Mitigation Trees</b>
Prior to 2010	40	5:1	200
Detention Basin Project (2011)	11	5:1	55
Flare 8 Project (2015)	1	5:1	5
CC-4 Buttress Project (2018)	7	5:1	35
<b>Subtotal</b>			<b>295</b>
Number of big cone Douglas fir trees that have completed 7-year monitoring period			176
<b>Total needed for mitigation</b>			<b>119</b>

## 3.0 Methods

Data for this monitoring report (No. 28) was collected by Certified Arborist Greg Ainsworth on February 12, 2021. Tree locations and survey data were collected from the base of each tree. A health assessment was performed that included an evaluation of vigor based on such parameters as amount of new growth, leaf color, abnormal bark, dead wood, evidence of wilt, excessive necrosis or leaf necrosis, thinning of crown, and severe fire damage. The tree's overall health was determined based on these factors and compared to the typical archetype tree of this species.

A subjective alphabetical ranking ("A" being best and "F" being worst) was assigned for the overall health of each tree. Below are the definitions used to define each health rating.

- A = Excellent: Healthy, vigorous tree, free of signs of stress, disease, or pest infestation. Minimal signs or symptoms of biotic or abiotic related damage.
- B = Good: Less than 25% of the tree affected by signs of stress, disease/pest infestation, herbivory, or fire damage. Some maintenance measures may need to be implemented, such as pruning of dead wood due to biotic or abiotic related damage, including damage from the 2019 Saddleridge Fire
- C = Fair: Overall appearance healthy, 25-50% of tree shows evidence of stress, disease/pest infestation, herbivory, or fire damage. A substantial amount of maintenance may be needed or tree exhibits sign or symptoms of biotic or abiotic related damage, including damage from the 2019 Saddleridge Fire.
- D = Poor: Greater than 50% of tree shows signs of stress, disease/pest infestation, appears to be in state of rapid decline, or exhibits sign or symptoms of severe biotic or abiotic related damage, including damage from the 2019 Saddleridge Fire. Degree of decline may vary. A substantial amount of maintenance may be needed.
- F = Dead; exhibits no sign of recovery.

## 4.0 Results

### Coast Live Oak Trees

A total of 24 coast live oak trees were removed for the 2018 CC-4 Buttress Project. At a 2:1 mitigation ratio, a total of 48 coast live oaks have been deducted from the Landfill's oak mitigation bank, leaving 48 remaining in the bank. No coast live oaks were removed in 2019 or 2020.

### Canyon Oak Trees

In 2011, 7 canyon live oaks, and one Heritage-size canyon live oak tree were removed for the construction of a detention basin; in 2016, one canyon live oak was removed for the SCE Power Pole project; and 7 canyon live oaks were removed for the 2018 CC4 Buttress project. No canyon oaks were removed in 2019 or 2020. The mitigation ratio for canyon live oaks is 2:1, and 10:1 for Heritage-size trees; therefore, a total of 24 canyon oaks are needed for mitigation.



### Bigcone Douglas Fir Trees

As indicated in Table 1, a total of 119 big cone Douglas fir trees are needed for mitigation. Several big cone mitigation trees partially burned, substantially burned or completely burned during the 2019 Saddleridge Fire. As indicted in **Table 2**, there are 31 big cone Douglas fir trees over 0.5 inches in (trunk) diameter that are alive (38 were alive in 2019). Seven big cones are in excellent [A] condition (compared to nine in 2019), thirteen are in good [B] condition (compared to seven in 2019), six are in fair [C] condition (compared to ten in 2019), four are in poor [D] condition (compared to eleven in 2018), and seven big cone Douglas firs have died since the last monitoring period in 2019, mostly due to the 2019 Saddleridge Fire.

Data collected for the big cone Douglas fir trees are provided below in Table 2.

Sunshine Canyon Landfill  
Oak Tree and Big Cone Monitoring Report No. 28

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Table 2. Bigcone Douglas Fir Monitoring Data

Tree No.	Previous Monitoring Data (12/14/2018)			Current Monitoring Data (1/28/2020)			Comments	Start Date of 7-Year Monitoring
	Dia (inches)	Height (feet)	Grade	Dia (inches)	Height (feet)	Grade		
1400			Dead			Dead		--
1401	2.5	6.1	A	3.0	6.1	A		5/23/13
1402	3.0	6.8	A	3.0	7.0	A		5/23/2013
1403	3.0	6.8	A	3.5	8.0	A		5/23/2013
1404	3.0	6.6	A	4.0	8.0	A	Partially burned	5/23/2013
1405	3.4	7.5	B	5.0	9.0	B	Partially burned	5/23/2013
1406	4.5	9.0	C	6.0	4.0	C	Cut	5/23/2013
1407	--	--	Dead	--	--	Dead	Completely burned	5/23/2013
1408	--	--	Dead	--	--	Dead		--
1409	--	--	Dead	--	--	Dead		--
1410	--	--	Dead	--	--	Dead		--
1411	--	--	Dead	--	--	Dead		--
1412	3.0	8.0	C	4.0	8.0	B	Partially burned	5/23/2013
1413	2.8	6.0	A	3.0	7.0	A		12/11/2014
1414	2.0	5.0	B	2.0	6.0	B		5/23/2013
1415	--	--	Dead	--	--	Dead		--
1416	2.0	5.2	D	2.5	7.0	C	Substantially burned	5/23/2013
1417	2.2	6.0	C	2.5	7.0	B	Substantially burned	5/23/2013
1418	2.9	6.4	C	3.0	10.0	B	Partially burned	5/23/2013
1419	3.1	8.0	B	4.0	10.0	B	Partially burned	5/23/2013
1420	4.0	9.0	C	5.0	9.0	C	Partially burned	5/23/2013
1421	--	--	Dead	--	--	Dead		--
1422	--	--	Dead	--	--	Dead	Completely burned	5/23/2013
1423	--	--	Dead	--	--	Dead		--



Sunshine Canyon Landfill  
Oak Tree and Big Cone Monitoring Report No. 28

Tree No.	Previous Monitoring Data (12/14/2018)			Current Monitoring Data (1/28/2020)			Comments	Start Date of 7-Year Monitoring
	Dia (inches)	Height (feet)	Grade	Dia (inches)	Height (feet)	Grade		
1424	3.1	6.8	D	--	--	Dead	Substantially burned	5/23/2013
1425	--	--	Dead	--	--	Dead		--
1426	--	--	Dead	--	--	Dead		--
1427	3.1	7.3	A	--	--	Dead		5/23/2013
1428	--	--	Dead	--	--	Dead		--
1429	3.0	8.0	C	--	--	Dead	Partially burned	5/23/2013
1430	--	--	Dead	--	--	Dead	Completely burned	12/30/2015
1431	5.0	15.0	D	6.0	15.0	B	Substantially burned	5/23/2013
1432	3.2	7.5	B	4.0	9.0	B		5/23/2013
1433	--	--	Dead	--	--	Dead		--
1434	2.6	5.11	D	2.6	5.11	D	Substantially burned	5/23/2013
1435	--	--	Dead	--	--	Dead		--
1436	--	--	Dead	--	--	Dead	Completely burned	12/30/2015
1437	--	--	Dead	--	--	Dead		--
1438	--	--	Dead	--	--	Dead		--
1439	2.6	7.0	D	2.6	7.0	D	Substantially burned	5/23/2013
1440	--	--	Dead	--	--	Dead		--
1441	2.5	6.1	C	2.7	6.1	C	Partially burned	5/23/2013
1442	2.6	8.0	C	3.0	9.0	B		5/23/2013
1443	--	--	Dead	--	--	Dead		--
1444	4.0	6.8	A	4.0	9.0	A		5/23/2013
1445	3.5	7.10	D	--	--	Dead	Substantially burned	5/23/2013
1446	--	--	Dead	--	--	Dead		--
1447	6.0	12.0	A	6.5	14.0	A		5/23/2013
1448	--	--	Dead	--	--	Dead		--
1449	--	--	Dead	--	--	Dead		--

Sunshine Canyon Landfill  
Oak Tree and Big Cone Monitoring Report No. 28

Tree No.	Previous Monitoring Data (12/14/2018)			Current Monitoring Data (1/28/2020)			Comments	Start Date of 7-Year Monitoring
	Dia (inches)	Height (feet)	Grade	Dia (inches)	Height (feet)	Grade		
1450	--	--	Dead	--	--	Dead		--
1451	3.6	8.5	B	4.0	10.0	B	Partially burned	5/23/2013
1452	--	--	Dead	--	--	Dead		--
1453	2.5	7.0	D	3.0	7.0	B	Partially burned, herbivory damage	5/23/2013
1454	2.8	6.4	C	2.8	7.0	C	Partially burned	5/23/2013
1455	--	--	Dead	--	--	Dead		--
1456	--	--	Dead	--	--	Dead		--
1457	2.5	6.5	B	2.5	7.0	B		5/23/2013
1458	2.6	7.8	B	3.0	7.8	B		5/23/2013
1459	--	--	Dead	--	--	Dead		--
1460	--	--	Dead	--	--	Dead		--
1461	--	--	Dead	--	--	Dead		--
1462	--	--	Dead	--	--	Dead		--
1463	2.0	6.1	D	--	--	Dead	Substantially burned	5/23/2013
1464			Dead			Dead		--
1465	3.0	7.1	D	3.0	7.1	D	Substantially burned	5/23/2013
1466	--	--	Dead	--	--	Dead		--
1467	2.6	6.6	D	--	--	Dead	Substantially burned	5/23/2013
1468	--	--	Dead	--	--	Dead		--
1469	--	--	Dead	--	--	Dead		--
1470	--	--	Dead	--	--	Dead		--
1471	--	--	Dead	--	--	Dead	Completely burned	5/23/2013
1472	--	--	Dead	--	--	Dead	Completely burned	5/23/2013
1473	3.0	5.6	D	--	--	Dead	Substantially burned	5/23/2013
1474	--	--	Dead	--	--	Dead		--



Sunshine Canyon Landfill  
Oak Tree and Big Cone Monitoring Report No. 28

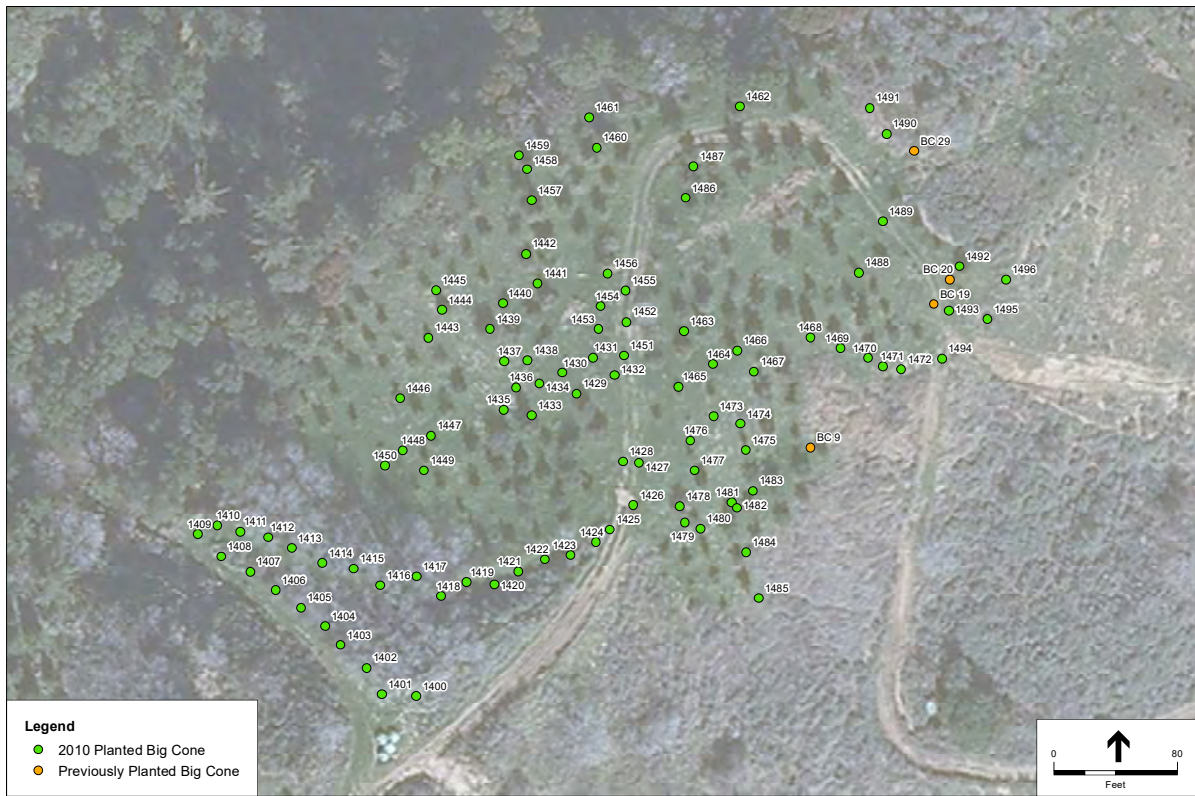
Tree No.	Previous Monitoring Data (12/14/2018)			Current Monitoring Data (1/28/2020)			Comments	Start Date of 7-Year Monitoring
	Dia (inches)	Height (feet)	Grade	Dia (inches)	Height (feet)	Grade		
1475	--	--	Dead	--	--	Dead		--
1476	4.0	8.0	D	4.0	8.0	D	Substantially burned	5/23/2013
1477	--	--	Dead	--	--	Dead		--
1478	--	--	Dead	--	--	Dead		--
1479	--	--	Dead	--	--	Dead		--
1480	--	--	Dead	--	--	Dead		--
1481	--	--	Dead	--	--	Dead		--
1482	--	--	Dead	--	--	Dead		--
1483	--	--	Dead	--	--	Dead		--
1484	--	--	Dead	--	--	Dead		--
1485	--	--	Dead	--	--	Dead		--
1486	--	--	Dead	--	--	Dead		--
1487	2.3	5.0	C	2.3	6.0	C		5/23/2013
1488	2.5	6.1	A	2.7	7.0	B		5/23/2013
1489	--	--	Dead	--	--	Dead	Completely burned	5/23/2013
1490	--	--	Dead	--	--	Dead		--
1491	--	--	Dead	--	--	Dead		--
1492	--	--	Dead	--	--	Dead		--
1493	--	--	Dead	--	--	Dead		--
1494	--	--	Dead	--	--	Dead		--
1495	--	--	Dead	--	--	Dead		--
1496	--	--	Dead	--	--	Dead		--
BC 19	--	--	Dead	--	--	Dead		--
BC 20	--	--	Dead	--	--	Dead		--
BC 21	--	--	Dead	--	--	Dead		--
BC 9	--	--	Dead	--	--	Dead		--

## 5.0 Recommendations

1. Remove herbivore cages around bigcones that are “over crowded” in the cages. Retain cages on smaller trees as determined by the monitoring biologist.
2. Most of the tree tags are missing on the big cone Douglas fir mitigation trees; therefore, retag all of the mitigation trees for identification purposes.
3. Maintain any remaining the big cone Douglas fir trees that were planted in 2015, so that they can be used to mitigate the fir trees that have been removed from the Landfill.
4. Consult with the Los Angeles County Forester on options to fulfil mitigation requirements for canyon oak trees and big cone Douglas fir trees.



**APPENDIX A:**  
**Big Cone Douglas Fir Location Map**

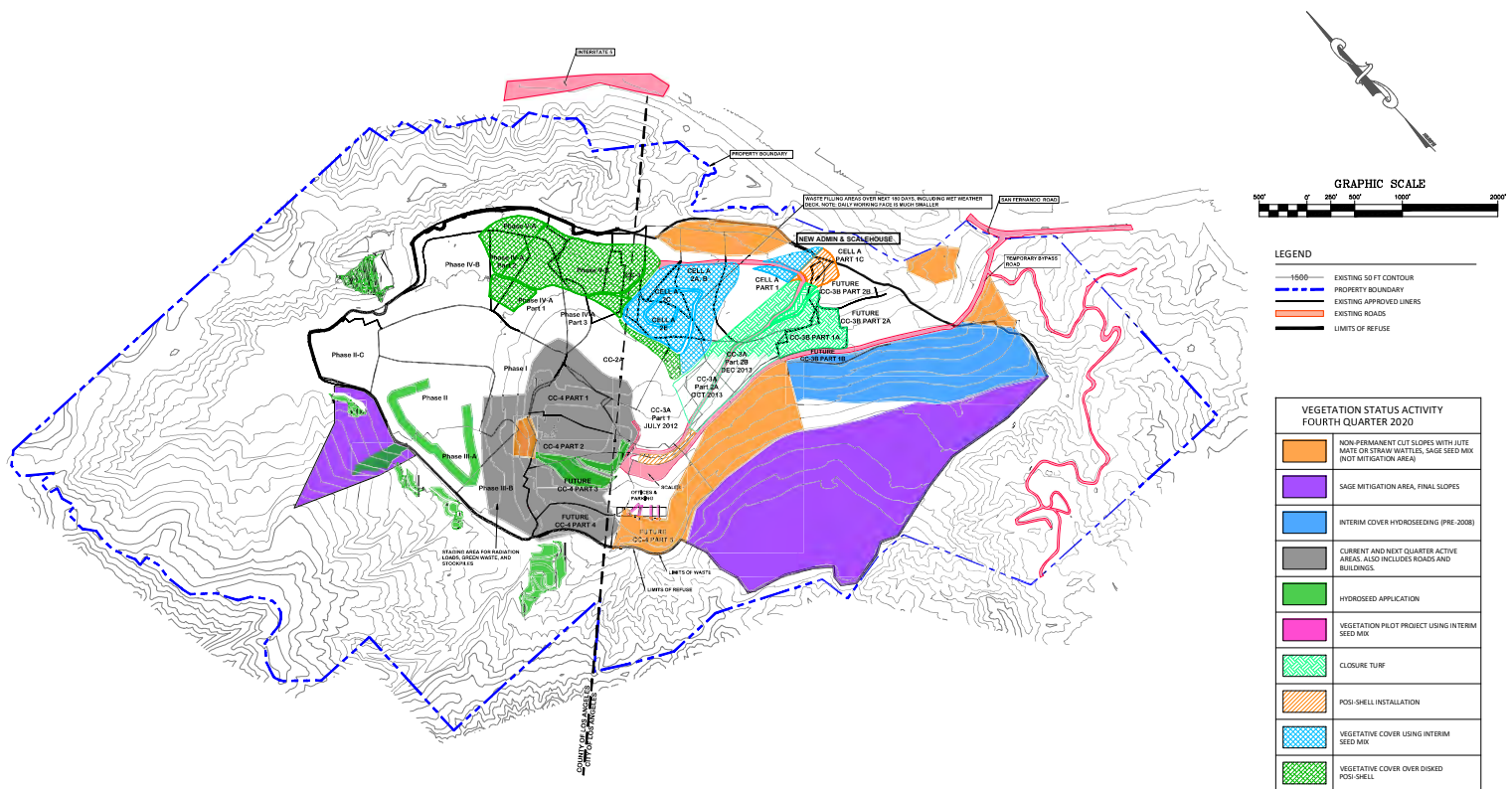


Sunshine Canyon Landfill (BFI)  
**Figure 1**  
Bigcone Douglas Fir Mitigation Trees in Area 7B

## DRAWING 1







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