SUNSHINE CANYON Landfill
14747 San Fernando Road
Sylmar, CA 91342

February 4, 2020

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 2019 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 2019. 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. 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 – 4Q2019

During the fourth quarter of 2019, 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, 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.

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 of the Middle Deck burned during the Saddle Ridge Fire in October 2019.

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 2019, 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 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.

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 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 2019 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 2019

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 as part of the pilot project and will continue. A weed control program on Decks B and 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 is 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.

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 2019

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	This recommendation will be considered at a later date.
County Sage Mitigation Area	2	Reseed and plant container plants	This recommendation will be considered at a later date.
County Sage Mitigation Area	3	Plant within view sheds	This recommendation will be considered at a later date.
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.	This recommendation will be considered at a later date.
County Sage Mitigation Area	7	Prohibit Access – continue to prohibit vehicle access to mitigation deck.	This is currently being done, no further effort is planned in the near future.
County Sage Mitigation Area	8	Employee Awareness – conduct employee awareness training.	This is currently being done as part of our Environmental Communication efforts.

5.3 Architerra Inspection for City South Sage Mitigation Pilot Project Area – Fourth Quarter 2019

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 2019 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 trees continue to be monitored and maintenance activities will be conducted in this mitigation area for the remainder of 2020. The report detailing the status of the numbers of Big Cone Douglas Fir and Oaks onsite are included in Attachment 6.

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

Sincerely,

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

Cc: Mr. David Thompson, SCL LEA
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 – 4Q2019
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck C Pilot Study, 4Q2019
Attachment 5	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck B Pilot Study, 4Q2019
Attachment 6	Big Cone and Oak Annual Report 2019

Drawing

Drawing 1	4Q2019 Site Vegetation Status and Activity

ATTACHMENT 1

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

City-Side Sage Mitigation Area

Submittal Date: January 9, 2020	**Inspection Date:** December 30, 2019
To: Tuong-phu Ngo, Environmental Manager	**From:** Greg Ainsworth, Monitoring Biologist **Prepared on behalf of Republic Services*

Lower Deck

General Comments:
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. Because the vegetation has been established for several growing seasons (since 2014), it is expected that there is a substantial seedbank in the top layer of the soil. Based on this most recent inspection, numerous seedlings and basal resprouts of *Encelia californica* in particular were observed throughout the Lower Deck. It is expected that re-establishment of the native 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 re-establish over a longer period of time. With average rainfall, it is expected that the native vegetation of the Lower Deck will recover; however, maintenance of non-native species during this recovery period is critical.

Native Plant Cover:	**Plant Health Issues:**	**Height of Native Species:**	**Native Species Richness:**
[ ] Dense [] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Herbivory [X] Fire	[ ] 0" – 12" [ ] 12" – 24" [X] 24" and above	[X] Low [ ] Medium [ ] High

Weed Conditions

[ ] Dense weed coverage [ ] Moderate weed coverage (seeding in high density) [X] Minimal weed coverage	[ ] Weeds germinating /vegetative growth [ ] Weeds flowering [ ] Weeds setting seed [X] Weed desiccant/dormant

Comments: Overall weed growth is low due to seasonal timing; however, seedlings are starting to germinate and are expected to invade the Lower Deck considerably if weed control activities are not implemented.

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Middle Deck

General Comments:

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 minimum native grasses present; however, annual grasses such as *Poa annua* are beginning to establish in burned areas. The irrigation at the Middle Deck appears to have burned during the fire. Approximately 35% of the vegetation that was previously planted was dominated by sage scrub plantings/seedlings and 30% by non-native grasses; however, a substantial amount of this previously planted portion of the Middle Deck completely burned in the fire. Approximately 40% of the Middle Deck area was planted in the winter/spring of 2019 with native species

Native Plant Cover:	**Plant Health Issues:**	**Height of Species:**	**Native Species Richness:**
[ ] Dense [ ] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory [X] Fire	[ ] 0" – 12" [ ] 12" – 24" [X] 24" and above	[X] Low [ ] Medium [ ] High

Weed Conditions

[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [X] Minimal weed coverage	[ ] Weeds germinating /vegetative growth [ ] Weeds flowering [ ] Weeds setting seed [ ] Weed desiccant/dormant

Comments: Seedlings of unknown weed species are emerging within the burned areas of the Middle Deck; however, in general, the weed cover is generally low.

UPPER DECK

General Comments: 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.

Seedlings of non-native species, presumably of wild oats (*Avena fatua*), brome grasses and mustard (*Brassica nigra*) are emerging throughout the Upper Deck. Buckwheat is the dominant native plant that is present; however, overall natural recruitment within the Upper Deck is low due to poor and a dry soil conditions.

Native Plant Cover:	**Plant Health Issues:**	**Height of Species:**	**Native Species Richness:**
[ ] Dense [ ] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory	[ ] 0" – 12" [ ] 12" – 24" [X] 24" and above	[X] Low [ ] Medium [ ] High

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Weed Conditions

[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [ ] Minimal weed coverage	[X] Weeds germinating /vegetative growth [X] Weeds flowering [ ] Weeds setting seed [ ] Weed desiccant/dormant

Comments: Weeds continue to grow without any level of control within the Upper Deck. Seedlings of 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.

• **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

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 east at the Middle Deck from the western boundary.

Photo 4. 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 CA buckwheat and annual non-native grasses.

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Progress Report

City-Side Sage Mitigation Area

Photo 5. Facing northeast at upper deck. This area is compacted and gravelly and continues to be problematic for supporting vegetation. Annual non-native grasses and some CA buckwheat shrubs are evident in the background.
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Photo 6. Facing southwest at upper deck. The area shown in this photo is dominated by annual, non-native grasses and Russian thistle in the foreground, and slope that burned during the Saddleridge Fire is visible in the background.

ATTACHMENT 2

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

County-Side Sage Mitigation Area

Submittal Date: January 9, 2020	**Inspection Date:** December 30, 2019
To: Tuong-phu Ngo, Environmental Manager	**From:** Greg Ainsworth, Monitoring Biologist ***Prepared on behalf of Republic Services***

STATUS OF HYDROSEEDING

Conditions:

[ ] Fully covered [ ] Moderately covered [X] Barely covered

Comments:

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).

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 (*Eriogonum fasciculatum*) and California sunflower (*Encelia californica*). Native plant coverage is assumed to be a direct result of hydroseeding; however, some natural recruitment is apparent that consists mostly of California sunflower 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. As noted above, the upper southern half of the county-side mitigation area burned in the Saddleridge Fire.

SEED MIX

Conditions: [ ] No sign of germination [ ] No cover of native plants from seed mix [ ] Sparse cover of native plants from seed mix	[ ] Dense cover of native plants from seed mix [X] Moderate cover of native plants from seed mix (where vegetation is present)

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Comments:

As previously noted, the southern upper half of the county-side mitigation area burned during the October 2019 Saddleridge Fire. 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 sunflower.

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. Emerging seedlings of brome grasses (*Bromus sp.*), wild oats (*Avena fatua*) and shortpod mustard (*Hirschfeldia incana*) are emerging and comprise approximately 25 percent of the absolute plant cover. California buckwheat dominates the native vegetation coverage with California sagebrush and California sunflower (*Encelia californica*) as 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*); and a small cluster of 2 or 3 small arroyo willow (*Salix lasiolepis*) trees are persisting along the v-ditch that extends east-west through the center of the mitigation site.

OVERALL NATIVE PLANT CONDITIONS

Plant Cover:	**Plant Health Issues:**	**Height:**	**Species Richness:**
[ ] Dense [ ] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory [X] Fire	[ ] 0” – 12” [X] 12” – 24” [ ] 24” and above	[ ] Low [X] Medium [ ] 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, which includes the areas that did not burn in the Saddleridge Fire. 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 dominants 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.

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WEED CONDITIONS

Conditions:

[ ] Dense weed coverage
[X] Moderate weed coverage (seeding in high density)
[ ] Minimal weed coverage

[ ] Weeds germinating
[ ] Weeds flowering
[ ] Weeds setting seed
[X] Weed desiccant/dormant

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*) and tree tobacco (*Nicotiana glauca*) are 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.

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• **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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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 sunflower.

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
landscape architecture and planning

ARCHITERRA DESIGN GROUP **FIELD OBSERVATION REPORT**

DATE OF VISIT:	12/17/19
PROJECT:	**Sunshine Canyon Mitigation Sites**
PROJECT NUMBER:	1214
PROJECT MANAGER:	Gregg Denson
SITE INSPECTION #:	
PURPOSE OF VISIT:	Review site conditions/Photo Catalog
TIME OF SITE VISIT:	11:00am
WEATHER/TEMPERATURE:	Extremely Windy 55°
ESTIMATED % COMPLETED:	100%
CONFORMANCE WITH SCHEDULE (+, -)	

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

A site visit walk 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):

- Last quarter, the Saddle Ridge Fire swept through both Deck B and C and burned a good portion of the existing native Venturan CSS vegetation. Efforts to suppress the fire included moving soils and grading parts of Deck C. Post-Fire repairs also included new gas lines placed on the deck area and grading associated with those repairs. PM10 Berm Oak Trees were also severely damaged from the fire. Due to early rains, some crown sprouting has begun, especially amongst the Saltbush species and Coast Sunflower.
- Some sprouting of seeds has occurred, but vegetation is small at this time and difficult to identify. Last season, many of the invasive grasses and Russian Thistle were left on the deck after seeding. One of the biggest challenges in the vegetation recovery effort, especially on Deck C, will be controlling the abundance of exotic weed growth. The maintenance personnel need to be diligent about identifying the correct targeted species for removal and frequency of visits to the site for weed abatement will be key to controlling the spread of undesirable weeds.
- Erosion from the recent events and exposed soils is minimal, however, additional straw wattle will help to collect any surface or floating seeds that have been exposed due to the grading in the disturbed areas. ADG recommended placing straw wattles within the graded/brush clearance areas, perpendicular to the flowline at 25' on-center. Existing straw wattles within these areas have deteriorated or were burnt in the recent fires.
- Photo Station Stakes, while charred from fires, remain in place but should be replaced with new staking. Quadrat sample areas also may need to be restaked this next quarter due to recent grading efforts or fire damage.

- Some existing stands of Venturan CSS vegetation remain and are beginning to flush new growth due to the recent rains.
- Deck and existing surrounding slopes are more exposed due to the vegetation reduction from the fire and trash is more abundant on the deck and should be removed.

Evidence of crown sprouting on Saltbush species

ARCHITERRA DESIGN GROUP
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Phone (909) 484-2800, Fax (909) 484-2802

Regrowth on *Encelia californica* (Coast Sunflower)

Typical fire damage of vegetation (Deck C)

New graded areas with replacement gas lines and wells

Graded areas where T-Bar Stakes and Boulders have been moved

Damaged foliage of PM10 Berm Oak Trees

Close up showing recovery and new vegetative growth

View looking down swale line with new foliage recovery from existing vegetation

Ash and soil collection along swale line

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Phone (909) 484-2800, Fax (909) 484-2802

Boulder displaced during fire event/post-fire grading

New on-grade gas line where previous vegetated swale used to exist

Straw wattle damage from fires

Previous area where straw wattle existed. Note sediment collection build up

City-Side Sage Mitigation (Deck B):

- Similar to Deck C, large portions of the existing vegetation were burned during the fire event. Most of the new vegetation that recently was planted, was left in tack. Unfortunately, most of the irrigation system was either burned or damaged due to fire trunks and equipment access onto the deck. Mainline, laterals and sprinkler heads are not operational. The temporary irrigation system was intended to remain in place and irrigate the new revegetated areas for at least another year. Repairs to the irrigation system will be needed to ensure that the existing vegetation continues to establish. Currently the winter rains are helping to offset the loss of the irrigation system.
- Fire vehicle access and graded has also damaged and removed vegetation that was beginning to establish on the deck. These areas should be reseeded as quickly as possible to take advantage of the winter rains and cooler weather pattern.
- Same concerns of weed abatement exist on Deck B. Contractor needs to remove exotic weed species that have are already taken root. Frequency of visits during the winter and spring months will help to limit the spread of these invasive species.

Vehicle access onto deck and damage of irrigation

Irrigation Damage due to vehicular traffic

Graded areas on Deck B where vegetation used to exist

New on-grade gas lines

Large existing portion of Venturan CSS burned during fire

Signed: Gregg Denson Date: 12-20-19

DISTRIBUTION

Republic Services	☑	Contractor	☑
Project Manager (Gregg Denson)	☑	Other_____	☐

Photo Station #1 - December 2018 (East)

Photo Station #1 - December 2019 (East)

Photo Station #1 - December 2018 (North)

Photo Station #1 - December 2019 (North)

Photo Station #1 - December 2018 (West)

Photo Station #1 - December 2019 (West)

Photo Station #2 - December 2018 (East)

Photo Station #2 - December 2019 (East)

Photo Station #2 - December 2018 (North)

Photo Station #2 - December 2019 (North)

Photo Station #2 - December 2018 (South)

Photo Station #2 - December 2019 (South)

Photo Station #3 - December 2018 (East)

Photo Station #3 - December 2019 (East)

Photo Station #3 - December 2018 (North)

Photo Station #3 - December 2019 (North)

Photo Station #3 - December 2018 (West)

Photo Station #3 - December 2019 (West)

Photo Station #4 - December 2018 (South)

Photo Station #4 - December 2019 (South)

Photo Station #4 - December 2018 (East)

Photo Station #4 - December 2019 (East)

Photo Station #4 - December 2018 (West)

Photo Station #4 - December 2019 (West)

Photo Station #5 - December 2018 (East)

Photo Station #5 - December 2019 (East)

Photo Station #5 - December 2018 (North)

Photo Station #5 - December 2019 (North)

Photo Station #5 - December 2018 (West)

Photo Station #5 - December 2019 (West)

Photo Station #6 - December 2018 (East)

Photo Station #6 - December 2019 (East)

Photo Station #6 - December 2018 (South)

Photo Station #6 - December 2019 (South)

Photo Station #6 - December 2018 (West)

Photo Station #6 - December 2019 (West)

Photo Station #7 - December 2018 (South)

Photo Station #7 - December 2019 (South)

Photo Station #7 - December 2018 (West)

Photo Station #7 - December 2019 (West)

Photo Station #7 - December 2018 (North)

Photo Sation #7 - December 2019 (North)

Photo Station #8 - December 2018 (East)

Photo Station #8 - December 2019 (East)

Photo Station #8 - December 2018 (North)

Photo Station #8 - December 2019 (North)

Photo Station #8 - December 2018 (West)

Photo Station #8 - December 2019 (West)

Photo Station #9 - December 2018 (East)

Photo Station #9 - December 2019 (East)

Photo Station #9 - December 2018 (South)

Photo Station #9 - December 2019 (South)

Photo Station #9 - December 2018 (West)

Photo Station #9 - December 2019 (West)

ATTACHMENT 4

memorandum

date January 8, 2020

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 – 4th Quarter, 2019

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. Most of the stakes that marked to corners of the sampling plots (i.e., quadrats) were removed by fire equipment and personnel or were burned from the fire. With the exception of quadrats A, B E, F and G, the remainder quadrats entirely burned as depicted in the photographs provided at the end of this report. Fire equipment, such as bulldozers, removed and/or crushed the vegetation that did not burn in quadrats A, B E, F and G.

On December 27, 2019, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the 4th quarter monitoring of the Deck C trial plot for 2019. 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) – 2% (2%)

Percent basil cover (herbs) – 5% (0%)

Percent bare ground – 83% (87%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 8% (8%)

Percent canopy (herb) – 6% (0%)

Average Imprint – Quadrats E, F, G H

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

Percent basil cover (herbs) – 5% (3%)

Percent bare ground – 65% (69%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 27% (23%)

Percent canopy (herb) – 7% (3%)

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

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

Percent basil cover (herbs) –4% (0%)

Percent bare ground – 88% (93%)

Percent rock or other – 7% (7%)

Percent canopy (shrub) – 5% (0%)

Percent canopy (herb) – 5% (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)

Species	% Cover Shrub	% Cover Herb
Acmispon glaber		
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica		
Atriplex lentiformis	4%	
Atriplex polycarpa	2%	
Atriplex spinosa	1%	
Baccharis pilularis		
Centaurea melitensis		
Encelia californica	7%	
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		
Salvia mellifera		
Sisyrinchium bellum		
Vulpia microstachys		
Echinochloa crus-galli		
Salsola kali		
Hordeum vulgare		
Bromus sp.		
Unknown grasses		15%

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

Species	% Cover Shrub	% Cover Herb
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica		
Atriplex lentiformis	9%	
Atriplex polycarpa	8%	
Atriplex spinosa		
Baccharis pilularis		
Encelia californica	9%	
Eschscholzia californica		
Eriogonum fasciculatum		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Sisyrinchium bellum		

Salvia apiana		
Salvia leucophylla		
Salvia mellifera		
Echinochloa crus-galli		
Salsola kali		
Bromus sp.		
Hirshfeldia incana		
Centaurea melitensis		
Leymus triticoides		
Common barley		
Unknown grasses		7%

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

Species	**% Cover Shrub**	**% Cover Herb**
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	2%	
Atriplex lentiformis		
Atriplex polycarpa		
Atriplex spinosa		
Baccharis pilularis		
Encelia californica	3%	
Eriogonum fasciculatum		
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Salsola kali		
Salvia apiana		
Salvia leucophylla		
Salvia mellifera		
Sisyrinchium bellum		
Hirshfeldia incana		
Vulpia microstachys		
Hordeum vulgare		
Bromus sp.		
Unknown grasses		5%

DISCUSSION

As noted in the Introduction, the majority of the Landfill's City South 'C' Trial Plot area burned during the Saddleridge Fire in October 2019. With the exception of quadrats A, B E, F and G, the remainder quadrats entirely burned as depicted in the photographs provided at the end of this report. Fire equipment, such as bulldozers, removed and/or crushed the vegetation that did not burn in quadrats A, B E, F and G. Most of the stakes that marked to corners of the sampling quadrats were removed by fire equipment and personnel or were burned from the fire; therefore, the locations of the quadrats that did not burn were approximated.

The City South ‘C’ area was planted in 2014 and prior to the Saddleridge Fire had become relatively densely covered with native vegetation that was dominated with saltbush and California sunflower, as well as with other native species in less concentrations, such as purple and black sage and California buckwheat. It is expected that the regeneration that occurred over the past 5 years has established a seed bank within the topsoil that may germinate seedlings as soon as spring 2020. Some of the vegetation that burned may also “reestablish” from basal sprouts, and a noticeable amount of California sunflower is currently resprouting. Wildfires in Southern California have become more common in recent years and has 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, recommend focusing efforts on weed control for reestablishing restoration sites, including previously undisturbed areas. Successional regrowth on 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.

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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.

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

ATTACHMENT 5

memorandum

date January 8, 2020

to Tuong-phu Ngo, Environmental Manager, Republic Services

from Greg Ainsworth, Consulting Biologist

subject Deck B Coastal Sage Scrub Revegetation Monitoring Report, Sunshine Canyon Landfill – 4th Quarter, 2019

INTRODUCTION

On December 27, 2019, biologist Greg Ainsworth monitored the Deck B Coastal Sage Scrub Revegetation at the Landfill, which constitutes the 4th quarter monitoring for 2019. 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 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-I.

A total of 450 square meters were sampled 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.
- **Average absolute percent cover** - A quantitative assessment was completed using the point-intercept method.
- **Photographs** – A photograph was taken from the southwest corner (facing northeast) of each quadrat.

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 A – Soil imprinting (with hand broadcast overseeded drainage swales)

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
A		50	3%	2%	75%	5%		
	Baccharis pilularis						3%	
	Baccharis salicifolia						1%	
	Isocoma menziesii						3%	
	Achillea millefolium							4%
						Relative Cover of Native	**7%**	**4%**
	Annual grass seedlings							2%
						Relative Cover of Non-Native		**2%**

Quadrat B – Soil imprinting

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
B		50	6%	12%	25%	5%		
	Artemisia californica						12%	
	Ambrosia dumosa						1%	
	Baccharis pilularis						2%	
	Encelia californica						3%	
	Sambucas nigra ssp. caerulea						1%	
	Heterotheca grandiflora							6%
	Hazardia squarosa						1%	
	Yucca whipplei						1%	
	Achillea millefolium							55%
	Stipa pulchra							
	Lasthenia californica							
	Salvia apiana						9%	
	Salvia mellifera						4%	
	Trifolium wildenovii (tridentatum)							
						Relative Cover of Native	**34%**	**61%**
	Annual grass seedlings							2%
	Solanum sp.							
						Relative Cover of Non-Natives		**2%**

Quadrat C – Broadcast seeding

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
C		50	6%	5%	65%	4%		
	Achillea millefolium							12%
	Artemisia californica						5%	
	Atriplex lentiformis						7%	
	Salvia apiana						3%	
	Opuntia littoralis						4%	
	Eriogonum fasciculatum foliosium						1%	
	Baccharis pilularis						1%	
	Lasthenia californica							
	Eschscholzia californica							
	Vulpia microstachys							
	Isocoma menziesii						1%	
	Heterotheca grandiflora							2%
						Relative Cover of Native	**22%**	**14%**
	Annual grass seedlings							2%
						Relative Cover of Non-Natives		**3%**

Quadrat D – Broadcast seeding (with soil imprinting)

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
D		50	2%	5%	45%	4%		
	Achillea millefolium							10%
	Artemisia californica							
	Atriplex lentiformis						5%	
	Eriogonum fasciculatum						1%	
	Lasthenia californica							
	Heterotheca grandiflora							
	Eschscholzia californica							
	Vulpia microstachys							
	Leymus triticoides							
	Sambucas nigra ssp. caerulea							
	Salvia apiana						2%	
						Relative Cover of Native	**8%**	**10%**
	Annual grass seedlings							5%
						Relative Cover of Non-Natives		**5%**

Quadrat E – Soil imprinting and hand broadcast

Quadrat	Species	Size (sq. meters)	% Basal (shrub)	% Basal (herb)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
E		50	3%	10%	55%	5%		
	Lotus scoparius						1%	
	Artemisia californica						2%	
	Eriogonum fasciculatum foliosium						4%	
	Atriplex lentiformis						4%	
	Atriplex polycarpa						2%	
	Vulpia microstachys							
	Achillea millefolium							8%
	Festuca californica							
	Solanum sp.							
						Relative Cover of Native	**13%**	**8%**
	Annual grass seedlings							2%
						Relative Cover of Non-Natives		**2%**

Quadrat F – Soil imprinting

Quadrat	Species	Size (sq. meters)	% Basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
F		50	2%	25%	45%	5%		
	Baccharis pilularis						2%	
	Artemisia californica						1%	
	Atriplex lentiformis						4%	
	Atriplex polycarpus						4%	
	Vulpia microstachys							
	Solanum sp.							
	Achillea millefolium							25%
	Leymus triticoides							
	Eschscholzia californica							
	Lasthenia californica Isomeris arborea Lotus scoparius						1%	10%
						Relative Cover of Native	**12%**	**65%**
						Relative Cover of Non-Natives		**0%**

Quadrat G – Soil imprinting (with hand broadcast overseeded drainage swales)

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
G		50	2%	5%	75%	10%		
	Achillea millefolium							5%
	Baccharis pilularis						2%	
	Atriplex lentiformis						4%	
	Eschscholzia californica							
	Artemisia californica						1%	
	Vulpia microstachys							
	Lotus scoparius							
	Leymus triticoides							

	Lasthenia californica							
	Nassella pulchra							
	Sisyrinchium bellum							
						Relative Cover of Native	**7%**	**5%**
	Annual grass seedlings.							2%
	Nicotiana glauca						1%	
						Relative Cover of Non-Natives	**1%**	**2%**

Quadrat H – Soil imprinting

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
H		50	3%	20%	75%	5%		
	Achillea millefolium							20%
	Baccharis pilularis						3%	
	Sambucas nigra ssp. caerulea						3%	
	Atriplex polycarpa						2%	
	Atriplex lentiformis						3%	
	Eriogonum fasciculatum foliosium						3%	
	Festuca californica							
	Vulpia microstachys							
	Achillea millefolium							
	Lasthenia californica							
	Eschscholzia californica							
	Sisyrinchium bellum							
	Heterotheca grandiflora							
	Leymus triticoides							
	Lotus scoparius							
						Relative Cover of Native	**14%**	**20%**
						Relative Cover of Non-Natives		**0%**

Quadrat I – Broadcast seeding (with soil imprinting)

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
I		50	2%	15%	65%	3%		
	Baccharis pilularis						3%	
	Eriogonum fasciculatum foliosium						1%	
	Atriplex lentiformis						5%	
	Plantago erecta							7%
	Vulpia microstachys							
	Achillea millefolium							8%
	Sisyrinchium bellum							
	Yucca whipplei						1%	
						Relative Cover of Native	**10%**	**15%**
	Echinochloa crus-galli							5%
	Solanum sp.							
	Centaurea melitensis							
						Relative Cover of Non-Natives		**5%**

DISCUSSION

The Deck B Revegetation Area was planted in November 2018. The recent Saddleridge Fire in October 2019 scorched a lot of the Deck B area, but spared the sample plots. However, the intense heat from the fire appears to have 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. Winter rains in December has instigated germination of grass seedlings. Non-native weeds seedlings are currently germinating throughout Deck B. The native plants within the areas that burned are expected to recover from seed germination and basal respouts. Regular weed maintenance of the Deck B area over the next year will be essential in maximizing the potential for native to recover.

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.

Deck B Revegetation Quadrat Sampling Map

ATTACHMENT 6

SUNSHINE CANYON LANDFILL

Oak Tree and Bigcone Douglas-Fir
Monitoring Report No. 27

Prepared for:

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

Prepared by:

John Minch and Associates, Inc.
26623 Sierra Vista
Mission Viejo, CA 92692
949-367-1000

Contact Person:
Greg Ainsworth
Certified Arborist (I.S.A. # WE-7473A)
(818) 564-5544

January 28, 2020

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Sunshine Canyon Landfill
Oak Tree and Bigcone Douglas Fir Monitoring Report – No. 27

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Oak Trees

Coast live oak

No coast live oak trees removed in 2019

Current balance of coast live oaks in the mitigation bank	**48**

Canyon oak

No canyon oak trees removed in 2019

Number of canyon oaks required for removals prior to 2019	**40**

Big Cone Douglas Fir Trees

No big cone Douglas fir trees removed in 2019

Number of big cone Douglas firs required for removals prior to 2019	**119**
Number of living big cone Douglas fir trees currently being monitored	**38**
Number of big cone Douglas fir trees needed to fulfill mitigation	**81**

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 27th 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 - 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. 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 - 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 – 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

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, the majority of the remaining plantings perished in the October 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 as a result of removals that occurred prior to 2010 through 2018. No big cone firs were removed in 2019.

Table. 1 Big Cone Douglas Fir Removals and Mitigation Requirement

Removals	No. of Big Cone Trees Removed	Mitigation Ratio	Total Mitigation Trees
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
		Subtotal	**295**
Number of big cone Douglas fir trees that have completed 7-year monitoring period			176
		Total needed for mitigation	**119**

3.0 Methods

Data for this monitoring report (No. 27) was collected by Certified Arborist Greg Ainsworth on January 29, 2020. 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 in comparison of 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.

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. 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 38 big cone Douglas fir trees over 0.5 inches in (trunk) diameter that are alive (43 were alive in 2018). 9 big cones are in excellent [A] condition (compared to 27 in 2018), 7 are in good [B] condition (compared to 12 in 2018), 10 are in fair [C] condition (compared to 4 in 2018), 11 are in poor [D] condition (compared to none in 2018), and 7 big cone Douglas firs have died since the last monitoring period, mostly due to the 2019 Saddleridge Fire.

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

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	5.4	A	2.5	6.1	A		5/23/13
1402	3.0	6.1	A	3.0	6.8	A		5/23/2013
1403	3.0	6.5	A	3.0	6.8	A		5/23/2013
1404	3.0	6.4	A	3.0	6.6	A	Partially burned	5/23/2013
1405	3.4	6.5	A	3.4	7.5	B	Partially burned	5/23/2013
1406	4.5	7.0	A	4.5	9.0	C	Substantially burned	5/23/2013
1407	4.5	7.0	A	--	--	Dead	Completely burned	5/23/2013
1408	--	--	Dead	--	--	Dead		--
1409	--	--	Dead	--	--	Dead		--
1410	--	--	Dead	--	--	Dead		--
1411	--	--	Dead	--	--	Dead		--
1412	3.0	7.0	B	3.0	8.0	C	Partially burned	5/23/2013
1413	2.8	5.6	A	2.8	6.0	A		12/11/2014
1414	2.0	5.0	B	2.0	5.0	B		5/23/2013
1415	--	--	Dead	--	--	Dead		--
1416	2.0	5.2	B	2.0	5.2	D	Substantially burned	5/23/2013
1417	2.2	6.0	A	2.2	6.0	C	Substantially burned	5/23/2013
1418	2.9	6.0	A	2.9	6.4	C	Partially burned	5/23/2013
1419	3.1	6.11	A	3.1	8.0	B	Partially burned	5/23/2013
1420	4.0	7.2	A	4.0	9.0	C	Partially burned	5/23/2013
1421			Dead	--	--	Dead		--
1422	2.5	6.1	A	--	--	Dead	Completely burned	5/23/2013
1423	--	--	Dead	--	--	Dead		--

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	6.7	A	3.1	6.8	D	Substantially burned	5/23/2013
1425	--	--	Dead	--	--	Dead		--
1426	--	--	Dead	--	--	Dead		--
1427	3.0	6.10	B	3.1	7.3	A		5/23/2013
1428	--	--	Dead	--	--	Dead		--
1429	2.8	7.0	A	3.0	8.0	C	Partially burned	5/23/2013
1430	3.0	1.2	A	--	--	Dead	Completely burned	12/30/2015
1431	5.0	10.0	A	5.0	15.0	D	Substantially burned	5/23/2013
1432	3.0	7.5	A	3.2	7.5	B		5/23/2013
1433	--	--	Dead	--	--	Dead		--
1434	2.6	5.11	A	2.6	5.11	D	Substantially burned	5/23/2013
1435	--	--	Dead	--	--	Dead		--
1436	1.1	4.0	A	--	--	Dead	Completely burned	12/30/2015
1437	--	--	Dead	--	--	Dead		--
1438	--	--	Dead	--	--	Dead		--
1439	2.6	6.4	A	2.6	7.0	D	Substantially burned	5/23/2013
1440	--	--	Dead	--	--	Dead		--
1441	2.5	5.11	B	2.5	6.1	C	Partially burned	5/23/2013
1442	2.6	6.8	B	2.6	8.0	C		5/23/2013
1443	--	--	Dead	--	--	Dead		--
1444	4.0	6.8	A	4.0	6.8	A		5/23/2013
1445	3.5	7.10	A	3.5	7.10	D	Substantially burned	5/23/2013
1446	--	--	Dead	--	--	Dead		--
1447	6.0	12.0	A	6.0	12.0	A		5/23/2013
1448	--	--	Dead	--	--	Dead		--
1449	--	--	Dead	--	--	Dead		--

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	6.9	A	3.6	8.5	B	Partially burned	5/23/2013
1452	--	--	Dead	--	--	Dead		--
1453	2.4	6.5	B	2.5	7.0	D	Partially burned, herbivory damage	5/23/2013
1454	2.8	6.2	B	2.8	6.4	C	Partially burned	5/23/2013
1455	--	--	Dead	--	--	Dead		--
1456	--	--	Dead	--	--	Dead		--
1457	2.3	6.0	B	2.5	6.5	B		5/23/2013
1458	2.6	6.0	B	2.6	7.8	B		5/23/2013
1459	--	--	Dead	--	--	Dead		--
1460	--	--	Dead	--	--	Dead		--
1461	--	--	Dead	--	--	Dead		--
1462	--	--	Dead	--	--	Dead		--
1463	2.0	5.4	B	2.0	6.1	D	Substantially burned	5/23/2013
1464			Dead			Dead		--
1465	3.0	7.1	C	3.0	7.1	D	Substantially burned	5/23/2013
1466	--	--	Dead	--	--	Dead		--
1467	2.6	6.2	B	2.6	6.6	D	Substantially burned	5/23/2013
1468	--	--	Dead	--	--	Dead		--
1469	--	--	Dead	--	--	Dead		--
1470	--	--	Dead	--	--	Dead		--
1471	1.8	4.0	C	--	--	Dead	Completely burned	5/23/2013
1472	2.2	4.0	C	--	--	Dead	Completely burned	5/23/2013
1473	3.0	5.6	C	3.0	5.6	D	Substantially burned	5/23/2013
1474	--	--	Dead	--	--	Dead		--

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	3.1	7.0	A	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	4.8	C	2.3	5.0	C		5/23/2013
1488	2.5	5.9	B	2.5	6.1	A		5/23/2013
1489	1.9	4.6	B	--	--	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, re-tag all of the mitigation trees for identification purposes.

3. Maintain 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.

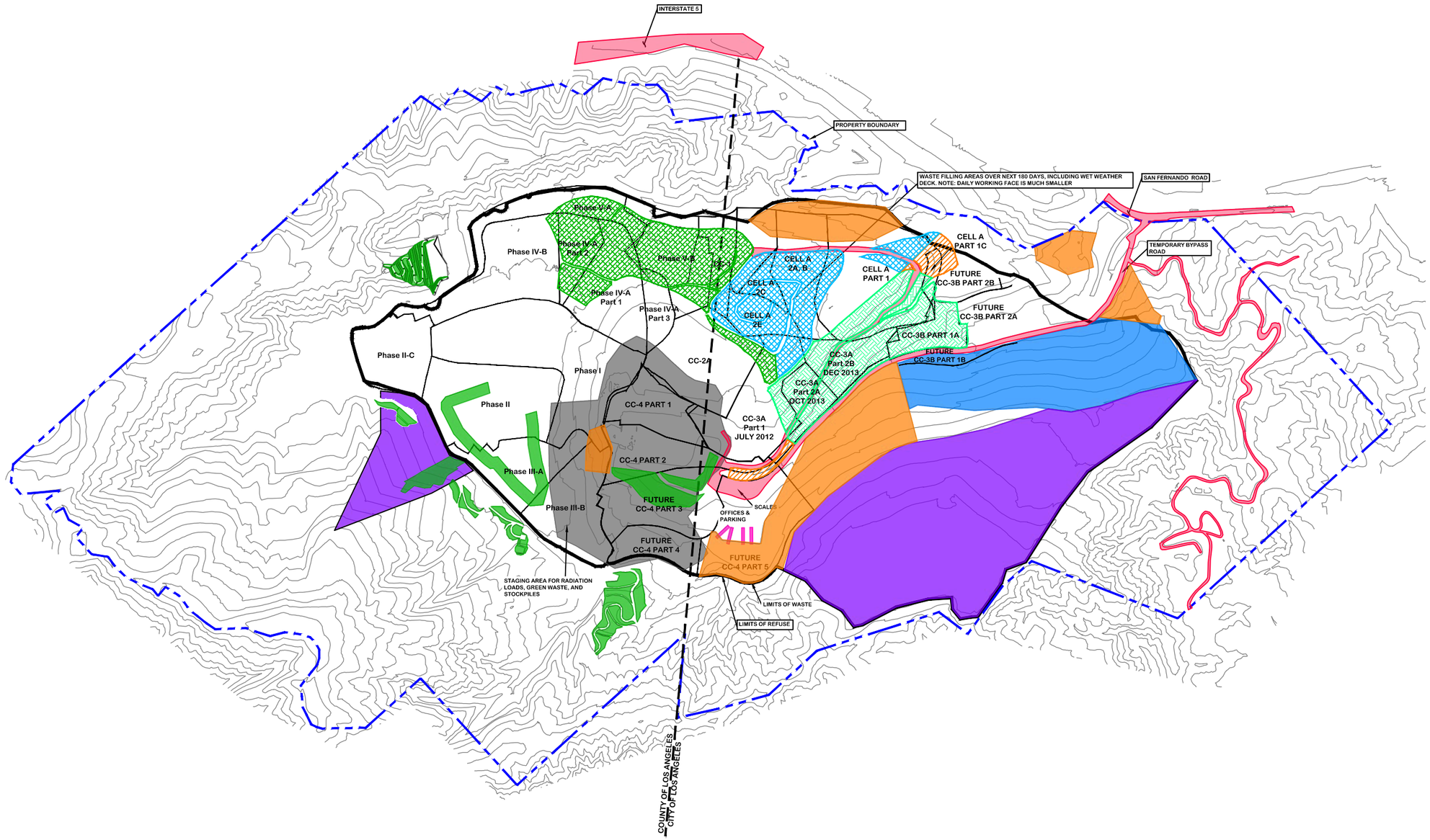
APPENDIX A:
Big Cone Douglas Fir Location Map

Sunshine Canyon Landfill (BFI)

Figure 1

Bigcone Douglas Fir Mitigation Trees in Area 7B

DRAWING 1



NORTH

GRAPHIC SCALE

500' 0' 250' 500' 1000' 2000'

LEGEND

- 1500 — EXISTING 50 FT CONTOUR
- PROPERTY BOUNDARY
- EXISTING APPROVED LINERS
- EXISTING ROADS
- LIMITS OF REFUSE

VEGETATION STATUS MD ACTIVITY THIRD QUARTER 2019	
	NON-PERMANENT CUT SLOPES WITH JUTE MATE OR STRAW WATTLES, SAGE SEED MIX (NOT MITIGATION AREA)
	SAGE MITIGATION AREA, FINAL SLOPES
	INTERIM COVER HYDROSEEDING (PRE-2008)
	CURRENT AND NEXT QUARTER ACTIVE AREAS. ALSO INCLUDES ROADS AND BUILDINGS.
	HYDROSEED APPLICATION
	VEGETATION PILOT PROJECT USING INTERIM SEED MIX
	CLOSURE TURF
	POSI-SHELL INSTALLATION
	VEGETATIVE COVER USING INTERIM SEED MIX
	VEGETATIVE COVER OVER DISKED POSI-SHELL

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REV4	DATE4	DESCRIPTION4	DRAWN4
REV5	DATE5	DESCRIPTION5	DRAWN5
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