SUNSHINE CANYON Landfill
14747 San Fernando Road
Sylmar, CA 91342

July 31, 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
Second 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 second 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 – 2Q2020

During the second 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, Horseweed, 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.

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 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.

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 second 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 second 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 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 second 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, Second 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.

During the second quarter of 2020, Architerra met with the Oakridge maintenance personnel to discuss removal of the invasive weeds on both Deck B and C. They walked the decks and 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. Since that meeting Oakridge Landscape have been diligently removing Russian Thistle, Wild Oat, Shortpod Mustard, Red Brome Grass, False Barley, Tree Tobabcco, 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, Second 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	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 – Second 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 second 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 trees continue to be monitored and maintenance activities will be conducted in this mitigation area for the remainder of 2020.

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: Ms. Dorcas Hanson-Lugo, SCL LEA
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 – 2Q2020
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck C Pilot Study, 2Q2020

Attachment 5	JMA Quarterly Monitoring Report - Coastal Sage Scrub Deck B Pilot Study, 2Q2020

Drawing

Drawing 1	2Q2020 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: July 30, 2020	**Inspection Date:** July 14, 2020
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, as did the stakes that marked the corners of the test plots. However, all of the test plots have since been re-staked and are now locatable. A substantial amount of regrowth has occurred following the fire. The most prevalent natives observed within Deck C is currently California sunflower (*Encelia californica*) and saltbush (*Atriplex sp.*), as well as horseweed (Erigeron canadensis) and pockets of wild ryegrass (*Leymus triticoides*). As reported during the Q1 monitoring period, dense mats of non-native brome grasses (*Bromus sp.*) and foxtail barley (*Hordeum jubatum*) were prevalent throughout Deck C, as well as large stands of shortpod mustard (*Hirschfeldia incana*). However, intense weeding efforts implemented by the landfill has greatly reduced the cover of these noxious non-native annual species.

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

Weed Conditions

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

Comments: As reported during the Q1 monitoring period, dense mats of non-native brome grasses (*Bromus sp.*) and foxtail barley (*Hordeum jubatum*) were prevalent throughout Deck C, as well as large stands of shortpod mustard (*Hirschfeldia incana*). However, intense weeding efforts implemented by the landfill has greatly reduced the cover of these noxious non-native annual species.

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Middle Deck

General Comments:

The Middle Deck partially burned during the October Saddleridge Fire, including its irrigation system. Approximately 35% of the vegetation that was previously planted was dominated by sage scrub plantings/seedlings and 30% by non-native grasses. A substantial amount of the planted vegetation on the Middle Deck completely burned in the fire; however, a large amount has resprouted, some of which even flowered this past spring. There is not a lot of natural recruitment of perennial shrubs that has occurred since the fire and most of the ground cover that was dominant during the Q1 monitoring period is now dormant.

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" [X] 12" – 24" [ ] 24" and above	[X] Low [ ] Medium [ ] High

Weed Conditions

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

Comments: The weed cover is generally low-to-moderate and most annual species are currently dormant or have desiccated.

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. However, as observed during previous springtime monitoring events, there is a stand of native California goldfields (*Lasthenia californica*) located in the southern-center of the Upper Deck that is impressive (see photo at end of report). Vegetation is dominant in this portion of the Upper Deck, which includes non-native species, demonstrating that the soils in this portion of the deck are suitable for supporting native vegetation. However, the soils elsewhere on the Upper Deck appear to be heavily compacted and gravelly and vegetation coverage in these areas is especially sparse. Evidence of previous seeding is no longer discernible within the Upper Deck

Non-native herbaceous species that dominate the vegetation on the Upper Deck currently include Russian thistle (*Salsola sp.*). Annual non-native grasses such as wild oats (*Avena fatua*), brome grasses (*Bromus sp.*) and shortpod mustard have dropped seed and are now desiccated. Buckwheat is the dominant perennial woody plant that is present; however, overall natural recruitment within the Upper Deck is low due to poor and a dry soil conditions.

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

Weed Conditions

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

Comments: Weeds continue to grow without any level of control within the Upper Deck. Non-native herbaceous species that dominate the vegetation on the Upper Deck currently include Russian thistle (*Salsola sp*.). Annual non-native grasses such as wild oats (*Avena fatua*), brome grasses (*Bromus sp*.) and shortpod mustard have dropped seed and are now desiccated. Buckwheat is the dominant perennial woody plant that is present; however, overall natural recruitment within the Upper Deck is low due to poor and a dry soil conditions.

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. In particular, dense areas covered with brome grasses and barley should be controlled by removing flowers and immature seeds heads before they drop. These areas should be reseeded with native herbaceous species that are known to grow well in the lower (and middle) decks, particularly *Leymus triticoides* and *Achillea millefolium*.

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. For example, using mechanical equipment to remove flowers and immature seed heads may be appropriate where dense mats of non-native grasses have established. 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.

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• **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. For example, using mechanical equipment to remove flowers and immature seed heads may be appropriate where dense mats of non-native grasses have established. 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.

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• **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. Respouts of *Atriplex* are evident in the foreground.

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

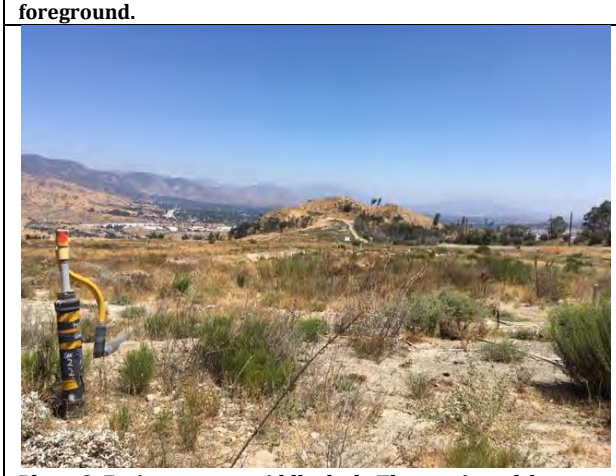

Photo 3. Facing west at middle deck. The portion of the middle deck in the foreground of this photo was not burned in the fire; however, this area is excessively due to a lack of irrigation.

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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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 desiccated wild oats and new sprouts of Russian thistle.

ATTACHMENT 2

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

County-Side Sage Mitigation Area

Submittal Date: July 30, 2020	**Inspection Date:** July 14, 2020
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:

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 is similar to the previous quarterly monitoring reports. The 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.

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)

Comments:

Similar to the hydroseeded areas, the other areas that are moderately covered with vegetation are concentrated. A substantial portion 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.

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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 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).*

OVERALL NATIVE PLANT CONDITIONS

Plant Cover:	**Plant Health Issues:**	**Height:**	**Species Richness:**
[ ] Dense [X] Moderate [ ] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory	[ ] 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. 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.

WEED CONDITIONS

Conditions:	
[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [ ] Minimal weed coverage	[ ] Weeds germinating [X] Weeds flowering [X] Weeds setting seed [ ] 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

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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.

26623 Sierra Vista
Mission Viejo, CA 92692
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Progress Report

County-Side Sage Mitigation Area

Photo Locations

26623 Sierra Vista
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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:	07/8/20
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:	Sunny and Hot 85°
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 Deck C):

- During this last quarter, ADG met with the maintenance personnel to discuss removal of invasive weeds on both Deck B and C. ADG walked the decks and pointed out some of the more aggressive weeds that have flourished since the Saddle Ridge Fire. Since that meeting, Oakridge Landscape has been diligently removing Russian Thistle (*Salsola* ssp.), Wild Oat (*Avena fatua*), Shortpod Mustard (*Hirshfeldia incana*), Red Brome Grass (*Bromus madritensis*), False Barley *(Hordeum murinum),* Tree Tobacco (*Nicotiana glauca*), and Yellow Star Thistle (*Centaurea solstitialis*) that took hold in the burned barren areas of the deck. ADG provided the maintenance contractor images of the invasive weeds listed above to help with identification of these targeted invasive species. Oakridge Landscape and Republic Services understand that until the canopy of native species grows back and "closes", these invasive weeds will continue to germinate each year.

- There has been an abundance of VCCS species germinating and crown-sprouting since the fire. These species include Purple Sage (*Salvia leucophylla*), Coast Sunflower (*Encelia californica*), White Sage (*Salvia apiana*), Creeping Wild Rye (*Leymus triticoides*), Deerweed (*Lotus scoparius*), Black Sage (*Salvia mellifera*), and Mexican Elderberry (*Sambucus mexicana*). Surprisely new species that were part of the original seed mix are now sprouting up in decent numbers. These species include Scarlet Bugler (*Penstemon centranthifolia*), Telegraph Weed (*Heterotheca grandiflora*), Monkey Flower (*Mimulus aurantiacus*) and Smooth-Leaf Yerba Santa (*Eriodictyon trichocalyx*). Deck C, but over time we anticipate the existing stands to expand and seed out seeds each year to help increase the population.

- Staking of previous quadrats was completed during this quarter, as many of the stakes were burned or damaged during the Saddle Ridge Fire.

Telegraph Weed (*Heterotheca grandiflora*) on Deck C

Scarlet Bugler (*Penstemon centranthifolia*)

Smooth-Leaf Yerba Santa (*Eriodictyon trichocalyx*) on Deck C

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Laurel Sumac (*Malosma laurina*) at burned portion of Deck C

Laurel Sumac (*Malosma laurina*) and Black Sage (*Salvia mellifera*) on Deck C

Regrowth and new seedlings of Coast Sunflower (*Encelia californica*) on Deck C

Monkey Flower (*Mimulus aurantiacus*) growing on Deck C

California Sagebrush seedling germinated underneath newly placed gas line

California Sagebrush seedling under burned remnants of Saltbush

Mexican Elderberry (*Sambucus Mexicana*) crown-sprouting

Side-blotched Lizard races to escape my presence within burn and broken mainline pipe

Crown-sprouting of Coastal Sunflower (*Encelia californica*)

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

- As mentioned above under the Deck C portion, ADG walked Deck B with Oakridge to point out areas where rapid weed growth had taken over post-fire. Weeding efforts will continue though the summer to minimize areas where they have taken over and during the next rainy season (2020-2021), it will be important to stay on top of those efforts.
- Areas within the Trial Site portion of Deck B have done quite well. There is evidence of desiccation of some of the seedlings (especially the Common Yarrow), and some of the other natives that have recently spouted are beginning to harden off and defoliate. Even though the irrigation system was severely damaged during the Saddle Ridge Fire, we feel that enough native VCCS species germinated and have begun to establish on the deck. By Spring 2021, we will be able to assess if these smaller seedlings endured this period of no irrigation. Irrigation would have been in operation for at least another year had it not been for the damage.
- The plant diversity on Deck B is impressive and many of the species in the seed mix have germinated. Containerized plants also are doing well and are blooming or just finished (White Sage - *Salvia apiana*, Mexican Elderberry - *Sambucus Mexicana*, Menzie's Goldenbush – *Isocoma menziesii* and Prickly Pear – *Opuntia littoralis*).

California Buckwheat – *Eriogonum fasciculatum* seedlings

California Buckwheat – *Eriogonum fasciculatum*

Portion of Deck B that did not burn in Saddle Ridge Fire

Smooth-Leaf Yerba Santa (*Eriodictyon trichocalyx*)

Achillea, California Poppy, California Sagebrush and White Sage (flowering in the background)

California Buckwheat – *Eriogonum fasciculatum* dominating a portion of Deck B

Mexican Elderberry volunteer that germinated on the bladed area used by fire personnel during the Saddle Ridge Fire (notice damaged irrigation)

Signed: Gregg Denson Date: 7/22/20

DISTRIBUTION

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

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

Photo Station #1 - April 2020 (East)

Photo Station #1 - July 2020 (East)

Photo Station #1 - April 2020 (North)

Photo Station #1 - July 2020 (North)

Photo Station #1 - April 2020 (West)

Photo Station #1 - July 2020 (West)

Photo Station #2 - April 2020 (East)

Photo Station #2 - July 2020 (East)

Photo Station #2 - April 2020 (North)

Photo Station #2 - July 2020 (North)

Photo Station #2 - April 2020 (South)

Photo Station #2 - July 2020 (South)

Photo Station #3 - April 2020 (East)

Photo Station #3 - July 2020 (East)

Photo Station #3 - April 2020 (North)

Photo Station #3 - July 2020 (North)

Photo Station #3 - April 2020 (West)

Photo Station #3 - July 2020 (West)

Photo Station #4 - April 2020 (South)

Photo Station #4 - July 2020 (South)

Photo Station #4 - April 2020 (East)

Photo Station #4 - July 2020 (East)

Photo Station #4 - April 2020 (West)

Photo Station #4 - July 2020 (West)

Photo Station #5 - April 2020 (East)

Photo Station #5 - July 2020 (East)

Photo Station #5 - April 2020 (North)

Photo Station #5 - July 2020 (North)

Photo Station #5 - April 2020 (West)

Photo Station #5 - July 2020 (West)

Photo Station #6 - April 2020 (East)

Photo Station #6 - July 2020 (East)

Photo Station #6 - April 2020 (North)

Photo Station #6 - July 2020 (North)

Photo Station #6 - April 2020 (West)

Photo Station #6 - July 2020 (West)

Photo Station #7 - April 2020 (East)

Photo Station #7 - July 2020 (East)

Photo Station #7 - April 2020 (West)

Photo Station #7 - July 2020 (West)

Photo Station #7 - April 2020 (North)

Photo Station #7 - July 2020 (North)

Photo Station #8 - April 2020 (East)

Photo Station #8 - July 2020 (East)

Photo Station #8 - April 2020 (North)

Photo Station #8 - July 2020 (North)

Photo Station #8 - April 2020 (West)

Photo Station #8 - July 2020 (West)

Photo Station #9 - April 2020 (East)

Photo Station #9 - July 2020 (East)

Photo Station #9 - April 2020 (North)

Photo Station #9 - July 2020 (North)

Photo Station #9 - April 2020 (West)

Photo Station #9 - July 2020 (West)

ATTACHMENT 4

memorandum

date July 29, 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 – 2nd Quarter, 2020

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; however, the sample plots have since been re-staked all of the plots are now locatable. With the exception of quadrats A, B E, F and G, the remainder of the quadrats burned extensively during the fire, but have since recovered to some degree with successional species, predominantly horseweed (*Erigeron canadensis*) and non-native annual grasses, including bromes (*Bromus sp*.) and foxtail barley (*Hordeum jubatum)*. The previous monitoring period conducted for the 1st quarter revealed that there was an extensive amount of non-native grasses that had formed dense mats; however, intensive weed control has since been implemented by the landfill that has removed a large amount of these noxious weeds, including stands of short-podded mustard (*Hirschfeldia incana*).

On July 15, 2020, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the 2nd 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 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% (3%)

Percent basil cover (herbs) – 2% (46%)

Percent bare ground – 73% (32%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 24% (12%)

Percent canopy (herb) – 4% (61%)

Average Imprint – Quadrats E, F, G H

Percent basil cover (shrubs) – 10% (6%)

Percent basil cover (herbs) – 4% (24%)

Percent bare ground – 72% (28%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 20% (22%)

Percent canopy (herb) – 2% (49%)

Average Hand Broadcast – Quadrats I, J, K L

(average)

Percent basil cover (shrubs) – 4% (1%)

Percent basil cover (herbs) –7% (45%)

Percent bare ground – 71% (32%)

Percent rock or other – 7% (7%)

Percent canopy (shrub) – 8% (6%)

Percent canopy (herb) – 22% (64%)

**Areas covered in desiccated plant material and leaf litter included as bare ground.*

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.

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

	Plot A		Plot B		Plot C		Plot D	
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Adenostema fasciculatum								
Artemisia californica								
Atriplex lentiformis	6	12%	4	8%				
Atriplex polycarpa								
Atriplex spinosa								
Baccharis pilularis								
Encelia californica	2	4%	12	24%	8	16%	7	14%
Mimulus aurantiacus longiflorus								
Salvia apiana								
Salvia mellifera								
Achillia mellifoluim								
Acmispon glaber							1	2%
Eschscholzia californica								
Leymus triticoides								
Nasella pulchra								
Sisyrinchium bellum								
Vulpia microstachys								
Bromus sp.	9	18%	4	8%	5	10%	7	14%

Centaurea melitensis								
Echinochloa crus-galli								
Erigeron canadensis							9	18%
Erodium cicutarium	1	2%						
Hirschfeldia incana	2	4%			2	4%	4	8%
Hordeum vulgare	28	56%	29	58%	24	48%	11	22%
Salsola kali								
Bare ground	3	6%			11	22%	19	38%

	Plot A	Plot B	Plot C	Plot D	A,B,C,D Percent Cover
Percent Cover Native Shrub	**16%**	**32%**	**16%**	**14%**	**20%**
Percent Cover Native Herb	**0%**	**0%**	**0%**	**2%**	**1%**
Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**	**0%**	**0%**
Percent Cover Non-Native Herb	**80%**	**66%**	**62%**	**62%**	**68%**
Percent Bare Ground	**6%**	**0%**	**11%**	**38%**	**14%**

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

		Plot E		Plot F		Plot G		Plot H	
	Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs	Adenostema fasciculatum								
	Artemisia californica								
	Atriplex lentiformis			3	6%				
	Atriplex polycarpa			2	4%				
	Atriplex spinosa	2	4%						
	Baccharis pilularis								
	Encelia californica	1	2%			5	10%	14	28%
	Mimulus aurantiacus longiflorus								
	Salvia apiana								
	Salvia mellifera								
Native Herbs	Achillia mellifoluim								
	Acmispon glaber								
	Eschscholzia californica								
	Leymus triticoides								
	Nasella pulchra								
	Sisyrinchium bellum								
	Vulpia microstachys								
Non-Native Herbs	Bromus sp.					4	8%	3	6%
	Centaurea melitensis								
	Echinochloa crus-galli								
	Erigeron canadensis					2	4%	7	14%
	Erodium cicutarium			3	6%				
	Hirschfeldia incana	5	10%	1	2%	1	2%		

	Hordeum vulgare	28	56%	25	50%	11	22%	3	6%	
	Salsola kali									
	Bare ground	14	28%	15	30%	27	54%	23	46%	

		Plot E	Plot F	Plot G	Plot H	E,F,G,H Percent Cover
	Percent Cover Native Shrub	**6%**	**10%**	**10%**	**28%**	**14%**
	Percent Cover Native Herb	**0%**	**0%**	**0%**	**0%**	**0%**
	Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**	**0%**	**0%**
	Percent Cover Non-Native Herb	**66%**	**58%**	**36%**	**26%**	**47%**
	Percent Bare Ground	**28%**	**30%**	**54%**	**46%**	**40%**

	Plot A		**Plot B**		**Plot C**		**Plot D**				
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover			*Species*
Adenostema fasciculatum										Native Shrubs	Adenostema f
Artemisia californica											Artemisia calif
Atriplex lentiformis	6	12%	4	8%							Atriplex lentif
Atriplex polycarpa											Atriplex polyc
Atriplex spinosa											Atriplex spino
Baccharis pilularis											Baccharis pilu
Encelia californica	2	4%	12	24%	8	16%	7	14%			Encelia califor
Mimulus aurantiacus longiflorus											Mimulus aura longiflorus
Salvia apiana											Salvia apiana
Salvia mellifera											Salvia mellifer
Achillia mellifoluim										Native Herbs	Achillia mellif
Acmispon glaber							1	2%			Acmispon glab
Eschscholzia californica											Eschscholzia c
Leymus triticoides											Leymus tritico
Nasella pulchra											Nasella pulchr
Sisyrinchium bellum											Sisyrinchium b

Vulpia microstachys											Vulpia microst
Bromus sp.	9	18%	4	8%	5	10%	7	14%		Non-Native Herbs	Bromus sp.
Centaurea melitensis											Centaurea me
Echinochloa crus-galli											Echinochloa cr
Erigeron canadensis							9	18%			Erigeron cana
Erodium cicutarium	1	2%									Erodium cicut
Hirschfeldia incana	2	4%			2	4%	4	8%			Hirschfeldia in
Hordeum vulgare	28	56%	29	58%	24	48%	11	22%			Hordeum vulg
Salsola kali											Salsola kali
Bare ground	3	6%			11	22%	19	38%			Bare ground

	Plot A	Plot B	Plot C	Plot D	A,B,C,D Percent Cover		
Percent Cover Native Shrub	**16%**	**32%**	**16%**	**14%**	**20%**		**Percent Cover**
Percent Cover Native Herb	**0%**	**0%**	**0%**	**2%**	**1%**		**Percent Cover**
Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**	**0%**	**0%**		**Percent Cover Shrub**
Percent Cover Non-Native Herb	**80%**	**66%**	**62%**	**62%**	**68%**		**Percent Cover Herb**
Percent Bare Ground	**6%**	**0%**	**11%**	**38%**	**14%**		**Percent Bare**

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

		Plot I		Plot J		Plot K		Plot L	
	Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs	Adenostema fasciculatum								
	Artemisia californica								
	Atriplex lentiformis								
	Atriplex polycarpa								
	Atriplex spinosa								
	Baccharis pilularis								
	Encelia californica			1	2%			9	18%
	Mimulus aurantiacus longiflorus								
	Salvia apiana								
	Salvia mellifera								
Native Herbs	Achillia mellifoluim								
	Acmispon glaber								
	Eschscholzia californica								
	Leymus triticoides					31	62%		
	Nasella pulchra								
	Sisyrinchium bellum								
	Vulpia microstachys								
Non-Native Herbs	Bromus sp.	21	42%	28	56%			3	6%
	Centaurea melitensis								
	Echinochloa crus-galli								
	Erigeron canadensis							4	8%
	Erodium cicutarium							1	2%
	Hirschfeldia incana	1	2%	1	2%	1	2%		
	Hordeum vulgare	26	52%	8	16%				
	Salsola kali								
	Bare ground	2	4%	10	20%	18	36%	31	62%

		Plot **I**	Plot **J**	Plot **K**	Plot **L**	**I,J,K,L Percent Cover**		
	Percent Cover Native Shrub	**0%**		**2%**		**0%**	**18%**	**5%**
	Percent Cover Native Herb	**0%**		**0%**		**0%**	**0%**	**0%**
	Percent Cover Non-Native Shrub	**0%**		**0%**		**61%**	**0%**	**15%**
	Percent Cover Non-Native Herb	**96%**		**74%**		**2%**	**16%**	**47%**
	Percent Bare Ground	**4%**		**20%**		**18%**	**62%**	**26%**

		Plot A		**Plot B**		**Plot C**		**Plot D**					**Plot E**		**Plot F**		**Plot G**		**Plot H**					**Plot I**		**Plot J**		**Plot K**
	Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover			*Species*	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover			*Species*	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits
Native Shrubs	Adenostema fasciculatum										Native Shrubs	Adenostema fasciculatum										Native Shrubs	Adenostema fasciculatum					
	Artemisia californica											Artemisia californica											Artemisia californica					
	Atriplex lentiformis	6	12%	4	8%							Atriplex lentiformis			3	6%							Atriplex lentiformis					
	Atriplex polycarpa											Atriplex polycarpa			2	4%							Atriplex polycarpa					
	Atriplex spinosa											Atriplex spinosa	2	4%									Atriplex spinosa					
	Baccharis											Baccharis											Baccharis					

	pilularis											pilularis										pilularis						
	Encelia californica	2	4%	12	24%	8	16%	7	14%			Encelia californica	1	2%			5	10%	14	28%			Encelia californica			1	2%		
	Mimulus aurantiacus longiflorus											Mimulus aurantiacus longiflorus											Mimulus aurantiacus longiflorus						
	Salvia apiana											Salvia apiana											Salvia apiana						
	Salvia mellifera											Salvia mellifera											Salvia mellifera						
Native Herbs	Achillia millefoluim										Native Herbs	Achillia millefoluim									Native Herbs	Achillia millefoluim						
	Acmispon glaber							1	2%			Acmispon glaber										Acmispon glaber						
	Eschscholzia californica											Eschscholzia californica										Eschscholzia californica						
	Leymus triticoides											Leymus triticoides										Leymus triticoides						31
	Nasella pulchra											Nasella pulchra										Nasella pulchra						
	Sisyrinchiu											Sisyrinchiu										Sisyrinchiu						

	m bellum											m bellum											m bellum						
	Vulpia microstachys											Vulpia microstachys											Vulpia microstachys						
Non-Native Herbs	Bromus sp.	9	18%	4	8%	5	10%	7	14%		Non-Native Herbs	Bromus sp.					4	8%	3	6%		Non-Native Herbs	Bromus sp.	21	42%	28	56%	
	Centaurea melitensis											Centaurea melitensis											Centaurea melitensis						
	Echinochloa crus-galli											Echinochloa crus-galli											Echinochloa crus-galli						
	Erigeron canadensis							9	18%			Erigeron canadensis					2	4%	7	14%			Erigeron canadensis						
	Erodium cicutarium	1	2%									Erodium cicutarium			3	6%							Erodium cicutarium						
	Hirschfeldia incana	2	4%			2	4%	4	8%			Hirschfeldia incana	5	10%	1	2%	1	2%					Hirschfeldia incana	1	2%	1	2%	1	
	Hordeum vulgare	28	56%	29	58%	24	48%	11	22%			Hordeum vulgare	28	56%	25	50%	11	22%	3	6%			Hordeum vulgare	26	52%	8	16%		
	Salsola kali											Salsola kali											Salsola kali						

	Bare ground	3	6%			11	22 %	19	38 %			Bare ground	14	28 %	15	30 %	27	54 %	23	46 %			Bare ground	2	4%	10	20 %	18
		Plot A		**Plot B**		**Plot C**		**Plot D**		**A, B,C ,D Percent Cover**			**Plot E**		**Plot F**		**Plot G**		**Plot H**	**E,F ,G, H Percent Cover**			**Plot I**		**Plot J**		**Plot K**
	Percent Cover Native Shrub	**16%**		**32%**		**16%**		**14%**		**20 %**		**Percent Cover Native Shrub**	**6%**		**10%**		**10%**		**28%**		**14 %**		**Percent Cover Native Shrub**	**0%**		**2%**		**0%**
	Percent Cover Native Herb	**0%**		**0%**		**0%**		**2%**		**1%**		**Percent Cover Native Herb**	**0%**		**0%**		**0%**		**0%**		**0%**		**Percent Cover Native Herb**	**0%**		**0%**		**0%**
	Percent Cover Non-Native Shrub	**0%**		**0%**		**0%**		**0%**		**0%**		**Percent Cover Non-Native Shrub**	**0%**		**0%**		**0%**		**0%**		**0%**		**Percent Cover Non-Native Shrub**	**0%**		**0%**		**61 %**
	Percent Cover Non-Native Herb	**80%**		**66%**		**62%**		**62%**		**68 %**		**Percent Cover Non-Native Herb**	**66%**		**58%**		**36%**		**26%**		**47 %**		**Percent Cover Non-Native Herb**	**96%**		**74%**		**2%**

	Percent Bare Ground	**6%**	**0%**	**11%**	**38%**	**14 %**		**Percent Bare Ground**	**28%**	**30%**	**54%**	**46%**	**40 %**		**Percent Bare Ground**	**4%**	**20%**	**18 %**

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. 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; however, the quadrats have since been re-staked and are now locatable.

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 bush sunflower, as well as with other native species in less concentrations, such as purple and black sage and California buckwheat. Seedlings of native sages are prevalent, and *Atriplex* species have recovered somewhat since the last monitoring period. The dense mats of non-native grasses comprised of bromes (*Bromus sp.*) and barley (*Hordeum vulgare*) have been removed by maintenance personal, which has significantly reduced the cover of these noxious species. It is expected that the successional regrowth of herbaceous species and native shrubs will continue and a substantial increase of native horseweed (*Erigeron canadensis*) is prevalent throughout Deck C. A noticeable amount of California sunflower is scattered throughout Deck C as well.

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.

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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.

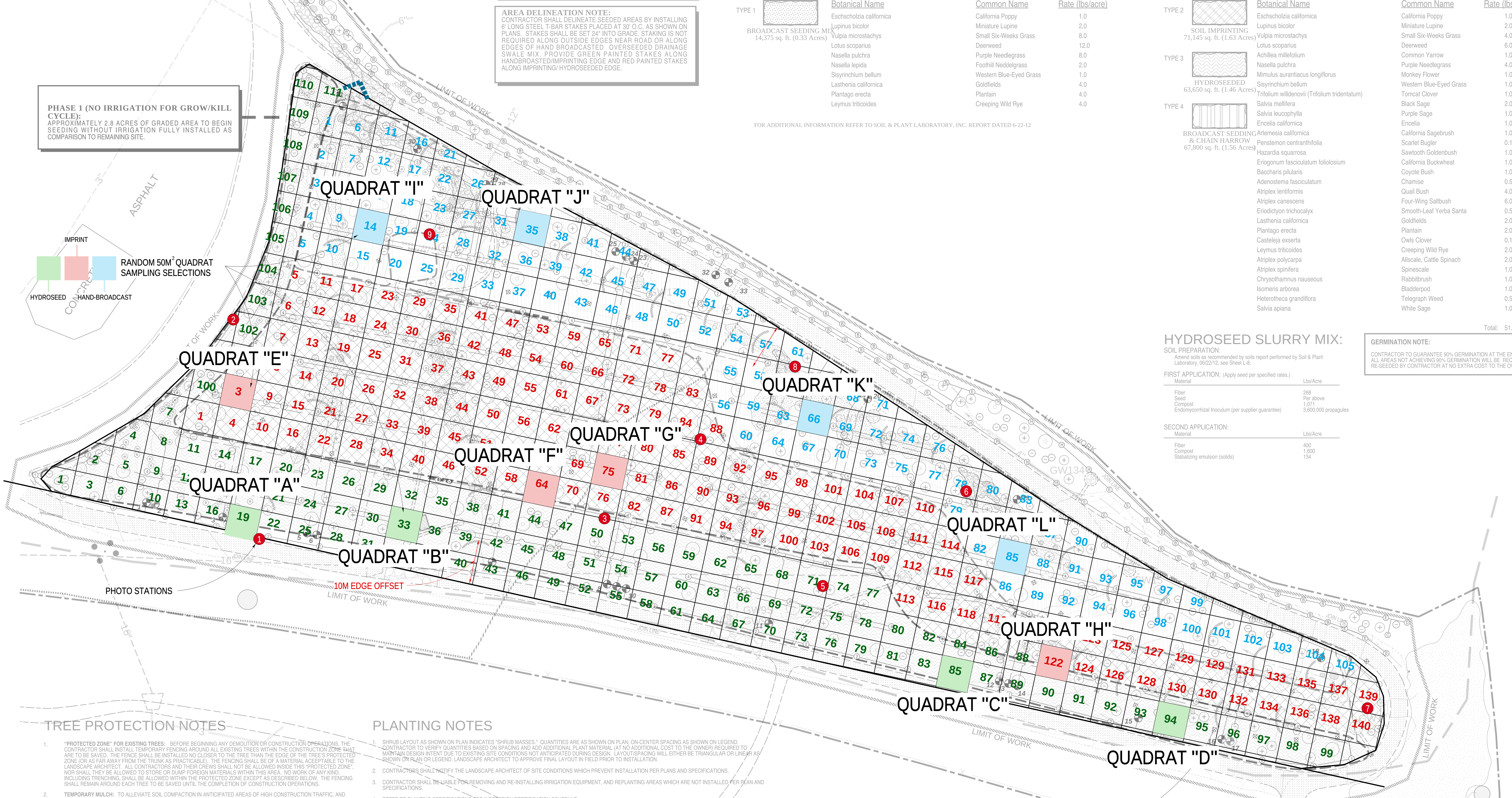
Quadrat I. Facing northeast from southwest corner.

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



PHASE 1 (NO IRRIGATION FOR GROW/KILL CYCLE):
APPROXIMATELY 2.8 ACRES OF GRADED AREA TO BEGIN SEEDING WITHOUT IRRIGATION FULLY INSTALLED AS COMPARISON TO REMAINING SITE.

TYPE 2 SEED MIX NOTE:
CONTRACTOR TO COORDINATE TIMING OF SOIL IMPRINT WITH IRRIGATION LATERAL LINE LAYOUT SO THAT IMPRINTING EQUIPMENT CAN OPERATE WITHOUT CONFLICT. CONTRACTOR MAY TEMPORARILY DELAY PORTIONS OF FINAL LATERAL CONNECTIONS TO ALLOW FOR CIRCULATION AND ACCESS ACROSS AREA SHOWN.

AREA DELINEATION NOTE:
CONTRACTOR SHALL DELINEATE SEEDED AREAS BY INSTALLING 6' LONG STEEL T-BAR STAKES PLACED AT 30' O.C. AS SHOWN ON PLANS. STAKES SHALL BE SET 24" INTO GRADE. STAKING IS NOT REQUIRED ALONG OUTSIDE EDGES NEAR ROAD OR ALONG EDGES OF HAND BROADCASTED OVERSEEDED DRAINAGE SWALE MIX. PROVIDE GREEN PAINTED STAKES ALONG HANDBROASTED/IMPRINTING EDGE AND RED PAINTED STAKES ALONG IMPRINTING/ HYDROSEEDED EDGE.

APPLICATION METHOD
OVERSEEDED DRAINAGE SWALES (TYPE 1 ONLY)

ALL AREAS INDICATED WITH THE FOLLOWING SYMBOLS ARE TO BE SEEDED WITH THE FOLLOWING:

TYPE 1 — BROADCAST SEEDING MIX 14,375 sq. ft. (0.33 Acres)

Botanical Name	Common Name	Rate (lbs/acre)
Eschscholzia californica	California Poppy	1.0
Lupinus bicolor	Miniature Lupine	2.0
Vulpia microstachys	Small Six-Weeks Grass	8.0
Lotus scoparius	Deerweed	12.0
Nasella pulchra	Purple Needlegrass	8.0
Nasella lepida	Foothill Neddelgrass	2.0
Sisyrinchium bellum	Western Blue-Eyed Grass	1.0
Lasthenia californica	Goldfields	4.0
Plantago erecta	Plantain	4.0
Leymus triticoides	Creeping Wild Rye	4.0

FOR ADDITIONAL INFORMATION REFER TO SOIL & PLANT LABORATORY, INC. REPORT DATED 6-22-12

APPLICATION METHOD
SEED MIX (TYPES 2, 3, 4)

ALL AREAS INDICATED WITH THE FOLLOWING SYMBOLS ARE TO BE SEEDED WITH THE FOLLOWING:

TYPE 2 — SOIL IMPRINTING 71,145 sq. ft. (1.63 Acres)
TYPE 3 — HYDROSEEDED 63,650 sq. ft. (1.46 Acres)
TYPE 4 — BROADCAST SEDDING & CHAIN HARROW 67,800 sq. ft. (1.56 Acres)

Botanical Name	Common Name	Rate (lbs/acre)
Eschscholzia californica	California Poppy	1.0
Lupinus bicolor	Miniature Lupine	2.0
Vulpia microstachys	Small Six-Weeks Grass	4.0
Lotus scoparius	Deerweed	6.0
Achillea millefolium	Common Yarrow	1.0
Nasella pulchra	Purple Needlegrass	4.0
Mimulus aurantiacus longiflorus	Monkey Flower	1.0
Sisyrinchium bellum	Western Blue-Eyed Grass	1.0
Trifolium willdenovii (Trifolium tridentatum)	Tomcat Clover	1.0
Salvia mellifera	Black Sage	2.0
Salvia leucophylla	Purple Sage	1.0
Encelia californica	Encelia	1.0
Artemesia californica	California Sagebrush	1.0
Penstemon centranthifolia	Scarlet Bugler	0.1
Hazardia squarrosa	Sawtooth Goldenbush	1.0
Eriogonum fasciculatum foliolosium	California Buckwheat	1.0
Baccharis pilularis	Coyote Bush	1.0
Adenostema fasciculatum	Chamise	0.5
Atriplex lentiformis	Quail Bush	4.0
Atriplex canescens	Four-Wing Saltbush	6.0
Eriodictyon trichocalyx	Smooth-Leaf Yerba Santa	0.5
Lasthenia californica	Goldfields	2.0
Plantago erecta	Plantain	2.0
Casteleja exserta	Owls Clover	0.1
Leymus triticoides	Creeping Wild Rye	2.0
Atriplex polycarpa	Allscale, Cattle Spinach	2.0
Atriplex spinifera	Spinescale	1.0
Chrysothamnus nauseous	Rabbitbrush	1.0
Isomeris arborea	Bladderpod	1.0
Heterotheca grandiflora	Telegraph Weed	0.5
Salvia apiana	White Sage	1.0
	Total:	51.7

HYDROSEED SLURRY MIX:

SOIL PREPARATION:
Amend soils as recommended by soils report performed by Soil & Plant Laboratory, 06/22/12, see Sheet L-8.

FIRST APPLICATION: (Apply seed per specified rates.)

Material	Lbs/Acre
Fiber	268
Seed	Per above
Compost	1,071
Endomycorrhizal Inoculum (per supplier guarantee)	3,600,000 propagules

SECOND APPLICATION:

Material	Lbs/Acre
Fiber	400
Compost	1,600
Stabalizing emulsion (solids)	134

GERMINATION NOTE:
CONTRACTOR TO GUARANTEE 90% GERMINATION AT THE END OF 90 DAYS. ALL AREAS NOT ACHIEVING 90% GERMINATION WILL BE REQUIRED TO BE RE-SEEDED BY CONTRACTOR AT NO EXTRA COST TO THE OWNER.

TREE PROTECTION NOTES

1. **"PROTECTED ZONE" FOR EXISTING TREES:** BEFORE BEGINNING ANY DEMOLITION OR CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING AROUND ALL EXISTING TREES WITHIN THE CONSTRUCTION ZONE THAT ARE TO BE SAVED. THE FENCE SHALL BE INSTALLED NO CLOSER TO THE TREE THAN THE EDGE OF THE TREE'S PROTECTED ZONE (OR AS FAR AWAY FROM THE TRUNK AS PRACTICABLE). THE FENCING SHALL BE OF A MATERIAL ACEEPTABLE TO THE LANDSCAPE ARCHITECT. ALL CONTRACTORS AND THEIR CREWS SHALL NOT BE ALLOWED INSIDE THIS "PROTECTED ZONE", NOR SHALL THEY BE ALLOWED TO STORE OR DUMP FOREIGN MATERIALS WITHIN THIS AREA. NO WORK OF ANY KIND, INCLUDING TRENCHING, SHALL BE ALLOWED WITHIN THE PROTECTED ZONE EXCEPT AS DESCRIBED BELOW. THE FENCING SHALL REMAIN AROUND EACH TREE TO BE SAVED UNTIL THE COMPLETION OF CONSTRUCTION OPERATIONS.
2. **TEMPORARY MULCH:** TO ALLEVIATE SOIL COMPACTION IN ANTICIPATED AREAS OF HIGH CONSTRUCTION TRAFFIC, AND ONLY WHERE FENCING CANNOT BE SET OUTSIDE OF THE DRIPLINE, THE CONTRACTOR SHALL INSTALL A LAYER OF MULCH, 9" THICK MINIMUM, OVER ALL EXPOSED EARTH FROM THE TREE TRUNK TO 5' OUTSIDE OF THE DRIPLINE. THIS LAYER SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. WHEN PLANTING OPERATIONS ARE COMPLETED, THE MULCH SHALL BE REDISTRIBUTED THROUGHOUT ALL PLANTING AREAS IN A 3" THICK "PERMANENT" MULCH LAYER.
3. **NECESSARY WORK:** WHEN IT BECOMES NECESSARY TO ENTER THE "PROTECTED ZONE", SUCH AS FOR FINE GRADING, IRRIGATION INSTALLATION, AND PLANTING OPERATIONS, THE CONTRACTOR SHALL STRICTLY ADHERE TO THE FOLLOWING RULES:
   - A. EVERY EFFORT SHALL BE MADE TO PRESERVE THE EXISTING GRADE AROUND LARGE TREES IN AS WIDE AN AREA AS POSSIBLE.
   - B. TRENCHING WITHIN THE DRIPLINE OF EXISTING TREES SHALL BE PERFORMED BY HAND, AND WITH EXTREME CARE NOT TO SEVER ROOTS 1-1/2" IN DIAMETER AND LARGER. WHERE ROOTS 1-1/2" IN DIAMETER AND LARGER ARE ENCOUNTERED, THE CONTRACTOR SHALL TUNNEL UNDER SAID ROOTS. EXPOSED ROOTS THAT HAVE BEEN TUNNELED UNDER SHALL BE WRAPPED IN WET BURLAP AND KEPT MOIST WHILE THE TRENCH IS OPEN.
   - C. WHERE ROOTS 2" IN DIAMETER OR LARGE MUST BE CUT DUE TO EXTENSIVE GRADE CHANGES, THOSE ROOTS MUST BE EXPOSED BY HAND DIGGING AND CUT CLEANLY. RAGGED CUTS GENERALLY DO NOT HEAL PROPERLY, AND MAY LEAVE THE TREE OPEN TO PESTS AND PATHOGENS.
   - D. WHERE TRENCHING NEAR TREES HAS ALREADY OCCURRED FROM PREVIOUS CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CONFINE HIS TRENCHING OPERATIONS TO THE PREVIOUSLY-CREATED TRENCHES, WHILE ADHERING TO THE CONDITIONS SET FORTH IN 3B.
4. **POTENTIAL CONFLICTS:** THE CONTRACTOR SHALL NOTIFY THE OWNER AND ARBORIST SHOULD ANY POTENTIAL CONFLICTS ARISE BETWEEN THESE SPECIFICATIONS AND/OR LARGE ROOTS ENCOUNTERED IN THE FIELD, AND CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL NOT TAKE ANY ACTION IN SUCH CONFLICTS WITHOUT THE ARBORIST'S WRITTEN APPROVAL. THE ARBORIST SHALL HAVE FINAL AUTHORITY OVER ALL METHODS NECESSARY TO HELP ENSURE THE PROTECTION AND SURVIVAL OF EXISTING TREES.
6. **LANDSCAPE AND IRRIGATION (NATIVE OAKS ONLY):** ANY FUTURE LANDSCAPE AND IRRIGATION SHOULD ADHERE TO THE FOLLOWING GUIDELINES:
   - A. NO IRRIGATION OR PLANTING SHOULD OCCUR CLOSER THAN 8'-10' FROM THE TRUNK.
   - B. WHERE IRRIGATION DOES OCCUR WITHIN THE PROTECTED ZONE, DRIP IRRIGATION SHOULD BE USED WHEREVER POSSIBLE. ADDITIONALLY, ONLY LOW-WATER USING PLANTS SHOULD BE PLANTED WITHIN THE PROTECTED ZONE, SPACED FAR APART CLOSE TO THE TREE. PLANTS MAY BE SPACED CLOSER TOGETHER NEAR THE EDGE OF THE PROTECTED ZONE.

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PLANTING NOTES

1. SHRUB LAYOUT AS SHOWN ON PLAN INDICATES "SHRUB MASSES." QUANTITIES ARE AS SHOWN ON PLAN, ON-CENTER SPACING AS SHOWN ON LEGEND. CONTRACTOR TO VERIFY QUANTITIES BASED ON SPACING AND ADD ADDITIONAL PLANT MATERIAL (AT NO ADDITIONAL COST TO THE OWNER) REQUIRED TO MAINTAIN DESIGN INTENT DUE TO EXISTING SITE CONDITIONS NOT ANTICIPATED DURING DESIGN. LAYOUT/SPACING WILL EITHER BE TRIANGULAR OR LINEAR AS SHOWN ON PLAN OR LEGEND. LANDSCAPE ARCHITECT TO APPROVE FINAL LAYOUT IN FIELD PRIOR TO INSTALLATION.
2. CONTRACTORS SHALL NOTIFY THE LANDSCAPE ARCHITECT OF SITE CONDITIONS WHICH PREVENT INSTALLATION PER PLANS AND SPECIFICATIONS.
3. CONTRACTOR SHALL BE LIABLE FOR REMOVING AND RE-INSTALLING IRRIGATION EQUIPMENT, AND REPLANTING AREAS WHICH ARE NOT INSTALLED PER PLAN AND SPECIFICATIONS.
4. REFER TO PLANTING SPECIFICATIONS FOR INSPECTION/CERTIFICATION SCHEDULE.
5. IRRIGATION SYSTEM SHALL BE INSTALLED AND OPERATIONAL PRIOR TO INSTALLATION OF PLANT MATERIALS.
6. TREES AND SHRUBS SHALL BE PLANTED AFTER GRAVEL PLACEMENT, BUT NOT BEFORE IRRIGATION COVERAGE TEST NO. 1 HAS BEEN APPROVED. (SEE SPECIFICATIONS).
7. LANDSCAPE CONTRACTOR SHALL TAKE FOUR (4) SOIL SAMPLES FROM THE SITE AT LOCATIONS APPROVED BY THE LANDSCAPE ARCHITECT. THE SAMPLES SHALL BE TAKEN AT A DEPTH OF 6" AFTER ROUGH GRADING AND SUBMITTED TO AN APPROVED SOIL AND PLANT LABORATORY FOR AGRICULTURAL SUITABILITY TESTING. THE COST OF TESTING SHALL BE INCLUDED IN THE CONTRACTOR'S BID.
8. THE RECOMMENDATIONS OF THE SOIL REPORT SHALL SUPERSEDE THE SOIL PREPARATION AND BACKFILL MIX SPECIFICATIONS (SEE SPECIFICATIONS). THE CONTRACTOR SHALL SUBMIT A COPY OF ALL SOILS REPORTS TO THE LANDSCAPE ARCHITECT PRIOR TO MODIFICATION OF THESE SPECIFICATIONS.
9. SHREDDED MULCH INSTALLATION: INSTALL SHREDDED MULCH WITHIN BASINS OF ALL TREE AND SHRUB CONTAINER PLANTS PERDETAILS AND SPECIFICATIONS UNLESS OTHERWISE INDICATED ON PLANS.
10. CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS AND/OR REPLACEMENT OF ANY DAMAGED LANDSCAPE AREAS BEYOND THE LIMIT OF WORK, INCLUDING REPAIRING ANY IRRIGATION LINES/SPRINKLER HEADS, THAT IS A DIRECT RESULT OF THE LANDSCAPE CONSTRUCTION AND/OR HIS SUB-CONTRACTOR. REPLACEMENT ITEMS SHALL BE EXACT DUPLICATION OF ORIGINAL WORK OR PLANTS, UNLESS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT.
11. CLEAN-UP SHALL TAKE PLACE ON A DAILY BASIS UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL GRADES AND FLOW LINES AS SHOWN ON THE GRADING PLAN.
13. SOIL AMENDMENTS SHALL BE PLACED AND INCORPORATED INTO SOILS AS DESIGNATED IN THE SOILS TEST COMPLETED BY SOILS AND PLANT LABORATORY, INC. DATED JUNE 22, 2012 PRIOR TO INSTALLATION OF PLANTS AND SEEDING. ANY ADDITIONAL SOIL AMENDMENTS NEEDED AS A RESULT OF THE SOIL TESTING, AS REQUIRED BY CONTRACTOR, SHALL BE PLACED PRIOR TO SEEDING AND PLANTING OF CONTAINER PLANTS.
14. PLANT MATERIAL SHALL BE FROM LOCAL SOURCES, AND WHERE POSSIBLE, FROM WITHIN SUNSHINE CANYON REGION.
15. CONTAINER PLANTS SHALL BE OBTAINED FROM A LOCAL SUPPLIER OR COMMERCIAL NURSERY EXPERIENCED IN THE PROPAGATION OF NATIVE PLANT SPECIES. PRIOR TO DELIVERY, THE ROOT SYSTEMS OF THE PLANTS WILL BE INSPECTED BY THE RESTORATION SPECIALIST TO ENSURE THAT ROOTS ARE STRAIGHT AND WELL ESTABLISHED. ROOT-BOUND PLANTS (THOSE WITH COILED ROOTS) WILL NOT BE ACCEPTED.
16. CONTAINER PLANTS SHALL BE INSTALLED ONLY BETWEEN NOVEMBER 1 AND MARCH 1 AND WHEN NATURAL RAINFALL OR IRRIGATION HAS MOISTENED THE SOIL. IN ALL PLANTING AREAS THE SOIL SURFACE WILL CONTAIN RESIDUAL MOISTURE WITHIN THE ROOT ZONE OF THE CONTAINER PLANTS TO BE INSTALLED. IF THE SOIL DOES NOT CONTAIN SUFFICIENT MOISTURE, THEN PRIOR TO INSTALLATION THE PLANTING AREA WILL BE WATERED FOR THREE CONSECUTIVE DAYS TO ADEQUATELY SATURATE THE SOIL TO A MINIMUM DEPTH OF ONE AND ONE-HALF TIMES THE DEPTH OF THE CONTAINERS TO BE PLANTED. WHEN THE SOIL HAS DRAINED TO FIELD CAPACITY (FULL MOISTURE CONTENT AFTER DRAINAGE OF SOIL PORE SPACE), AND WHEN THE SOIL IS DRY ENOUGH TO SUPPORT FOOT TRAFFIC, THE PLANTS INDICATED FOR THE SITE WILL BE PLANTED USING THE FOLLOWING PROCEDURE:
    - WITH A STANDARD EXCAVATION DEVICE (SHOVEL, AUGER, ETC.) EXCAVATE A HOLE SOMEWHAT WIDER THAN THE CONTAINER AND ONE INCH LESS THAN THE DEPTH OF THE CONTAINER TO THE CROWN OF THE ROOT BALL.
    - EACH PLANTING HOLE WILL BE FILLED WITH WATER AND ALLOWED TO DRAIN UNTIL NO FREE MOISTURE REMAINS IN THE HOLE.
    - IMMEDIATELY AFTER DRAINING, THE PLANT WILL BE REMOVED CAREFULLY FROM ITS CONTAINER AND THE ROOT VOLUME LOOSENED SOMEWHAT WITH GENTLE PRESSURE ON THE SIDES OF THE ROOT MASS.
    - THE PLANT WILL IMMEDIATELY BE PLACED IN THE PLANTING HOLE SO THAT THE TOP OF THE CONTAINER SURFACE WILL BE SLIGHTLY HIGHER THAN THE SOIL SURFACE AFTER REFILLING.
    - BACKFILL THE HOLE WITH NATIVE SOIL, MINIMIZING LARGE ORGANIC AND ROCK MATTER THAT MAY INHIBIT ROOT GROWTH.
    - FIRMLY PRESS DOWN SOIL AROUND THE ROOT-BALL TO ELIMINATE AIR SPACE WITHIN THE SOIL AND TO ENSURE GOOD ROOT TO SOIL CONTACT.
    - MAKE SURE THAT THE CROWN OF THE ROOT MASS IS AT OR SLIGHTLY ABOVE GRADE.
    - CREATE A STRUCTURAL BASIN AT THE OUTSIDE EDGE OF THE ROOT BALL TO SEQUESTER RAINWATER IN A LOCATION WHERE IT WILL INFILTRATE THE ROOT BALL.
    - DO NOT CREATE A DEPRESSION THAT WILL CAUSE WATER TO POND IN DIRECT CONTACT WITH THE STEM OF THE PLANT.

HYDROSEEDED AREA AND SOIL IMPRINT AREA DELINEATION, RED MARKER POSTS SHALL BE PLACED AT 30' O.C. SEE AREA DELINEATION NOTE ABOVE.

PLANTING LEGEND:

SYMBOL CALLOUT	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS					
S-1	Artemisia californica	California Sagebrush	1 gal.	50/Acre	234
S-2	Baccharis pilularis	Coyote Bush	1 gal.	45/Acre	210
S-3	Mimulus auranticus longiflorus	Monkey Flower	1 gal.	30/Acre	140
S-4	Sambucus mexicana	Blue Elderberry	5 gal.	15/Acre	70
EX-1	Existing Vegetation to remain				

PHOTO SUBMITTAL NOTE:
ALL PLANT MATERIAL, INCLUDING TREES, SHRUBS, AND VINES, SHALL BE INSPECTED AND APPROVED BY THE RESTORATION SPECIALIST AND/OR LANDSCAPE ARCHITECT, VIA PHOTO SUBMITTALS, PRIOR TO DELIVERY TO SITE. PHOTO SUBMITTALS SHALL INCLUDE NURSERY SUPPLIER AND DATE OF PHOTOS. ANY MATERIAL DELIVERED TO SITE WITHOUT APPROVAL IS SUBJECT TO REJECTION. PHOTO SUBMITTALS SHALL BE SENT TO RESTORATION SPECIALIST AND/OR LANDSCAPE ARCHITECT A MINIMUM OF 48 HOURS PRIOR TO SHIPMENT OF MATERIAL. SUBMITTALS SHOULD INCLUDE SOME TYPE OF SCALE REFERENCE IN PHOTO (I.E. PERSON, MEASURING TAPE, ETC.). TREES SHALL BE NOTED WITH HEIGHT (FROM FINISH GRADE IN CONTAINER) AND CANOPY HEAD SIZE. LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF SCHEDULED NURSERY DELIVERY TIMES A MINIMUM OF 24 HOURS PRIOR TO SHIPMENT. REFER TO PLANTING SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS REGARDING QUALITY OF NURSERY STOCK.

SPOTTING OF THE PLANTS:
ALL PLANTS SHALL BE SPOTTED IN GROUPS THROUGHOUT THE SEEDED SITE FOR A NATURAL APPEARANCE AS SHOWN. UNDER THE DIRECTION OF THE RESTORATION SPECIALIST AND/OR THE LANDSCAPE ARCHITECT, MODIFICATIONS MAY BE MADE TO EACH AREA TO ENSURE STRUCTURAL DIVERSITY BASED ON THE SPECIES AND PLANT SIZES. THE SPACING DISTANCES GIVEN IN THE PLANTING PALETTE CAN BE USED AS GUIDELINES FOR AVERAGE DISTANCES, BUT THE LANDSCAPE CONTRACTOR SHALL AVOID REGULAR PATTERNS TO ENSURE A NATURAL APPEARANCE.

LIMITS OF CITY SOUTH C

PLAN CROSS REFERENCES

FOR NOTES AND LEGENDS, SEE THIS SHEET
FOR DETAILS, SEE SHEET L-8
FOR CORRESPONDING GRADING PLAN SEE SHEET L-2
FOR CORRESPONDING IRRIGATION PLAN SEE SHEET L-5

NORTH

ARCHITERRA DESIGN GROUP
LANDSCAPE ARCHITECTURE
SITE PLANNING
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Fax (909) 484-2802
Richard Krumwiede
CA Lic. # 2834
AZ Lic. # 29115
NV Lic.# 446
TX. Lic.# 1884

L.A. SEAL

LICENSED LANDSCAPE ARCHITECT — Richard W. Krumwiede 2834 — Signature — 7-31-14 Renewal Date — 9-28-12 Date — STATE OF CALIFORNIA

PROJECT / CLIENT

CITY SOUTH C TRIAL PLOT
SUNSHINE CANYON LANDFILL
14747 SAN FERNANDO ROAD
SYLMAR, CA 91342

SHEET TITLE

PLANTING PLAN

REVISIONS

DRAWN BY: GPD/JGG
CHECKED BY: JRC
DATE: 9/28/12
SCALE: 1" = 30'
JOB NUMBER: 1214
SHEET NUMBER: L-7

ATTACHMENT 5

memorandum

date July 31, 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 – 2nd Quarter, 2020

1.0 METHODS

On July 15, 2020, biologist Greg Ainsworth monitored the Deck B Coastal Sage Scrub Revegetation at the Landfill, which constitutes the 1st 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)

	Soil *imprinting with hand broadcast overseeded drainage swales*						
		Quadrat A	Quadrat G				
	Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover		
Native Shrubs	Adenostema fasciculatum						
	Artemisia californica						
	Atriplex lentiformis			4	8%		
	Atriplex polycarpa						
	Atriplex spinosa						
	Baccharis pilularis						
	Encelia californica						
	Mimulus aurantiacus longiflorus						
	Salvia apiana						
	Salvia mellifera						
Native Herbs	Achillia mellifoluim	3	6%				
	Acmispon glaber						
	Eschscholzia californica						
	Leymus triticoides	4	8%	21	42%		

	Nasella pulchra					
	Sisyrinchium bellum					
	Vulpia microstachys					
Non-Native Herbs	Bromus sp.					
	Centaurea melitensis					
	Echinochloa crus-galli					
	Erodium cicutarium					
	Hirschfeldia incana	2	4%			
	Hordeum vulgare					
	Salsola kali					
	Bare ground	40	80%	30	60%	

		Quadrat A	**Quadrat G**	**A and G (% cover)**
	Percent Cover Native Shrub	**0%**	**8%**	**4%**
	Percent Cover Native Herb	**16%**	**42%**	**29%**
	Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**
	Percent Cover Non-Native Herb	**4%**	**0%**	**2%**
	Percent Bare Ground	**80%**	**60%**	**70%**

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

	Quadrat B		Quadrat F		Quadrat H		
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Adenostema fasciculatum							
Artemisia californica	1	2%	1	2%			
Atriplex lentiformis			2	4%			
Atriplex polycarpa							
Atriplex spinosa							
Baccharis pilularis					1	2%	
Encelia californica	1	2%					
Encelia farinosa	4	8%					
Erigonum canadensis	3	6%					
Eriogonum fasciculatum			4	8%	5	10%	
Mimulus aurantiacus longiflorus							
Salvia apiana							
Salvia mellifera	6	12%					
Achillia mellifoluim							
Acmispon glaber							
Eschscholzia californica							
Leymus triticoides							
Nasella pulchra							
Sisyrinchium bellum							
Vulpia microstachys							
Bromus sp.							
Centaurea melitensis							
Echinochloa crus-galli							
Erodium cicutarium							

	Quadrat B		Quadrat F		Quadrat H		
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Hirschfeldia incana							
Hordeum vulgare							
Salsola kali	2	4%					
Unknown annual grass							
Bare ground/desiccated plant material	33	66%	43	86%	44	88%	

	Quadrat B	Quadrat F	Quadrat H	B,F,H (% cover)
Percent Cover Native Shrub	**24%**	**14%**	**12%**	**17%**
Percent Cover Native Herb	**12%**	**0%**	**0%**	**4%**
Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**	**0%**
Percent Cover Non-Native Herb	**0%**	**0%**	**0%**	**0%**
Percent Bare Ground/Desiccated Plan Material	**66%**	**86%**	**88%**	**80%**

Table 3. Broadcast seeding - Quadrat C

	Quadrat C	
Species	Number of Hits	Percent Cover
Adenostema fasciculatum		
Artemisia californica	1	2%
Atriplex lentiformis		
Atriplex polycarpa	1	2%
Atriplex spinosa		
Baccharis pilularis		
Encelia californica		
Mimulus aurantiacus longiflorus		
Salvia apiana		
Salvia mellifera		
Achillia mellifoluim		
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		

	Quadrat C	
Species	Number of Hits	Percent Cover
Bare ground/desiccated plant material	48	96%

	Quadrat C (% cover)
Percent Cover Native Shrub	**4%**
Percent Cover Native Herb	**0%**
Percent Cover Non-Native Shrub	**0%**
Percent Cover Non-Native Herb	**0%**
Percent Bare Ground/Desiccated Plan Material	**96%**

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	4	8%			
Atriplex polycarpa					
Atriplex spinosa					
Baccharis pilularis					
Encelia californica					
Eriogonum fasciculatum	1	2%			
Mimulus aurantiacus longiflorus					
Salvia apiana	1	2%			
Salvia mellifera					
Achillia mellifoluim					
Acmispon glaber					

	Quadrat D		Quadrat I		
Species	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
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			1	2%	
Unknown grass					
Bare ground/Desiccated plant material	44	88%	49	99%	

	Quadrat D	Quadrat I	D and I (% cover)
Percent Cover Native Shrub	**12%**	**0%**	**6%**
Percent Cover Native Herb	**0%**	**0%**	**0%**
Percent Cover Non-Native Shrub	**0%**	**0%**	**0%**
Percent Cover Non-Native Herb	**0%**	**2%**	**1%**
Percent Bare Ground/Desiccated Plan Material	**88%**	**99%**	**94%**

Table 5. Soil imprinting and hand broadcast - Quadrat E

	Quadrat E	
Species	Number of Hits	Percent Cover
Adenostema fasciculatum		
Artemisia californica	3	6%
Atriplex lentiformis	1	2%
Atriplex polycarpa		
Atriplex spinosa		
Baccharis pilularis		
Encelia californica		
Eriogonum fasciculatum	2	4%
Mimulus aurantiacus longiflorus		
Salvia apiana		
Salvia mellifera		
Achillia mellifoluim		
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		

	Quadrat E	
Species	Number of Hits	Percent Cover
Bare ground	44	88%

	Quadrat E (% cover)
Percent Cover Native Shrub	**12%**
Percent Cover Native Herb	**0%**
Percent Cover Non-Native Shrub	**0%**
Percent Cover Non-Native Herb	**0%**
Percent Bare Ground	**88%**

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	6%	17%	4%	6%	12%
Percent Cover Native Herb	0%	4%	0%	1%	0%
Percent Cover Non-Native Shrub	0%	0%	0%	0%	0%
Percent Cover Non-Native Herb	0%	0%	0%	0%	0%
Percent Bare Ground	94%	80%	96%	94%	88%

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 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. Winter rains in December and spring rains in April germinated a lot of non-native grass seed. These non-native grasses were prevalent during the previous monitoring period, but have since desiccated. Many of the native plants within the areas that burned appear are still alive, but very little natural recruitment is occurring due to very dry soil conditions.

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.

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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.

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

RANDOM 50M² QUADRAT SAMPLING SELECTIONS

PHOTO STATIONS

QUADRAT "A"

QUADRAT "B"

QUADRAT "C"

QUADRAT "D"

QUADRAT "E"

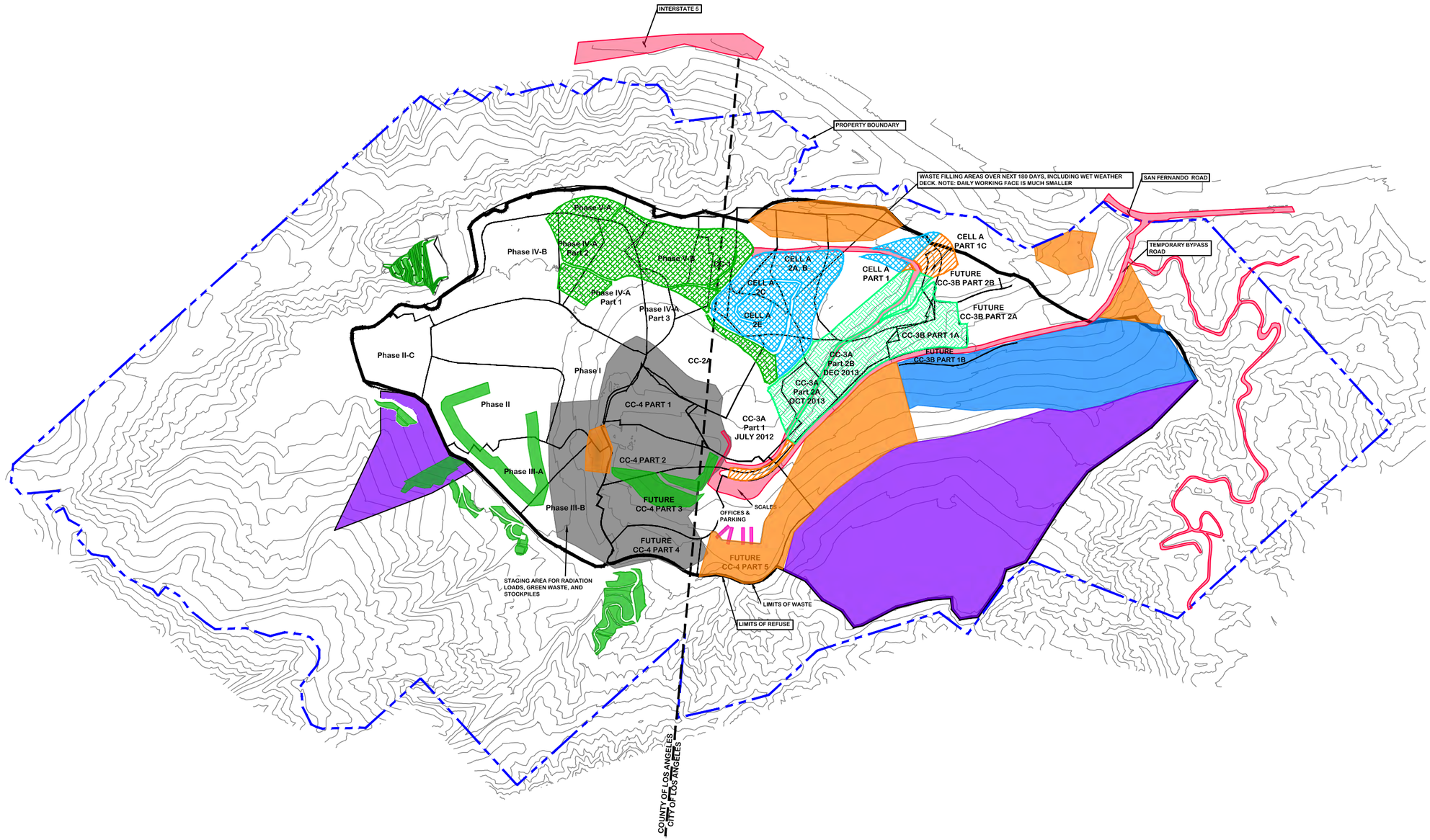
QUADRAT "F"

QUADRAT "G"

QUADRAT "H"

QUADRAT "I"

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 FIRST QUARTER 2020	
	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

FOR_REVIEW_ONLY

EXISTING TOPOGRAPHY PREPARED BY COOPER AERIAL SURVEYS DATED FEBRUARY 5, 2018

REV. NO.	DATE	DESCRIPTION	APPROVED BY
REV1	DATE1	DESCRIPTION	DRAWN1
REV2	DATE2	DESCRIPTION2	DRAWN2
REV3	DATE3	DESCRIPTION3	DRAWN3
REV4	DATE4	DESCRIPTION4	DRAWN4
REV5	DATE5	DESCRIPTION5	DRAWN5
REV6	DATE6	DESCRIPTION6	DRAWN6

DATE OF ISSUE: NOV 2018
DESIGNED BY: C BARRETT
DRAWN BY: C BARRETT
CHECKED BY: C BARRETT
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REPUBLIC SERVICES

SUNSHINE CANYON LANDFILL
SYLMAR, CALIFORNIA
SITE VEGETATION STATUS AND ACTIVITY
Q2 2020

DWG NO. 1

PROJECT NO. SO18.0001

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