

January 31, 2024

Mr. David Nguyen
County of Los Angeles, Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803-1331

Subject: Sunshine Canyon Landfill, Quarterly Vegetation Report
Fourth Quarter 2023 Vegetation Report

Mr. Nguyen,

This report has been prepared in accordance with the following:

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

This report presents the progress of the site's landscaping and revegetation activities for the fourth quarter of 2023. 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 – 4Q2023

During the fourth quarter of 2023, 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 Rincon’s (formerly JMA) 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. Rincon 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. Rincon also noted non-native plant cover has slightly decreased between third and fourth quarter monitoring.

As reported previously, 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 included in the list below:

- Purple Sage (*Salvia leucophylla*)
- Coast Sunflower (*Encelia californica*)
- White Sage (*Salvia apiana*)
- Creeping Wild Rye (*Leymus triticoides*)
- Deerweed (*Lotus scoparius*)
- Black Sage (*Salvia mellifera*)
- Mexican Elderberry (*Sambucus mexicana*)
- Scarlet Bugler (*Penstemon centranthifolia*)
- Telegraph Weed (*Heterotheca grandiflora*)
- Monkey Flower (*Mimulus aurantiacus*)
- Smooth-Leaf Yerba Santa (*Eriodictyon trichocalyx*)
- Thicketleaf Yerba Santa (*Eriodictyon crassifolium*)
- Sunflower (*Helianthus annuus*)
- California Bush Sunflower (*Encelia californica*)
- California Sagebrush (*Artemisia californica*)
- California Buckwheat (*Eriogonum fasciculatum*)
- Quail Bush (*Atriplex lentiformis*)
- Four-Wing Saltbush (*Atriplex canescens*)
- Cattle Spinach (*Atriplex polycarpa*)
- Spinescale (*Atriplex spinifera*)
- Toyon (*Heteromeles arbutifolia*)
- Foothill Needlegrass (*Nassella lepida*)
- Coyote Bush (*Baccharis pilularis*)
- Showy Penstemon (*Penstemon spectabilis*)
- Wright's Cudweed (*Pseudognaphalium microcephalum*)
- White Horehound (*Marrubium vulgare*) Non-Native
- Australian Saltbush (*Atriplex semibaccata*) Non-Native

As reported from Archterra, the abundance of historic level rains last winter and the summer storm Hillary has assisted in the emergence of many of the Ventruan CSS Species. With the warmer temperatures and recent rains, several of the VCSS species have begun emerging several months early. Many species of the Saltbush are in full bloom and new Saltbush plants germinated in once barren areas of the deck most likely due to the extensive winter rains. California Bush Sunflower (*Encelia californica*), California Sagebrush (*Artemisia californica*), Deerweed (*Acmispon glaber*) and several Sage species (*Salvia* sp.) are now beginning summer dormancy response. Typically, Mexican Elderberry (*Sambucus mexicana*) goes dormant by this time of year, but due to the extended winter rains has not and is flowering and developing fruit thus providing a vital resource to many of the birds that visit the deck.

Also noted were continued growth of several invasive species; Shortpod Mustard (*Hirshfeldia incana*), Yellow Star Thistle (*Centaurea solstitialis*), and Russian Thistle (*Salsola* spp.) continues to be problematic. It was recommended maintenance personnel work on removing these before they flower and seed. In Q4, minimal maintenance work was done on removing invasive species and it was also noted the interior of the deck still needed to be weeded. Also noted was to identify native species prior to any invasive removals. In addition, the majority of the Coast Live Oaks at the PM 10 berm have recovered from fire damage in 2020.

4.2 City South Deck B

The Deck B sage mitigation project began on April 9, 2018 and planting was completed by the end of the fourth quarter 2018. Soil samples indicated low pH and high salinity, as a result Deck B underwent a leaching schedule. Additional soil amendments and resampling were completed before planting began, which took place during the fourth quarter 2018. Pacific Restoration Group, Inc (PRG) has been working with Architerra for the completion of project. A summary of the progress is included in Attachment 3. The northwest portion of the Middle Deck burned during the Saddle Ridge Fire in October 2019. Architerra Design Group (ADG) indicated previously Deck B was doing quite well and there was 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 has, in the past, also 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.

During Ricon's observation of Deck B, notable increases in native cover of California sagebrush, California buckwheat, coyote brush, among others was observed. Non native plant also showed a decrease in cover but this is most likely due to seasonal dormancy.

Revegetation efforts have been successful in the establishment of the Venturan Coastal Sage Scrub habitat and evidence of species and age diversity and resprouting of larger species. Architerra also noted Deck B site is similar to those found on Deck C in the growth of the VCSS. Deck B is also dominated by California Buckwheat (*Eriogonum fasciculatum*). However, the downslopes are primarily covered with little to no native species and should be addressed to remove the invasive weeds as soon as possible. The south side of the slope has been overtaken by invasive Slenderleaf Iceplant (*Mesembryanthemum nodiflorum*) and was growing in the revegetation area and has spread northward. Maintenance of the iceplant has been minimal and continues to spread. The northern part of Deck B has been completely filled in and is well established with shading to prevent weed growth. Overall, there is a good species diversity on this deck and planting is responding well with vigorous growth.

4.3 City South Deck A

In December 2022, Conversations with Architerra were started to discuss a plan to address the potential mitigation plans for Deck A. An onsite meeting occurred during May 2023 for an initial assessment of Deck A and determine what will need to be done. We anticipate a tentative schedule to be established in the coming months.

Prior to any mitigation efforts, soil was placed in a large area affected by subsidence and graded for proper drainage. This occurred in June and July 2023 and it is anticipated in quarter four 2024, mitigation plans will commence to address the area.

The Deck A sage mitigation is anticipated to restart mid to late 2024. Recent grading activity on approximately 1.5 acres occurred during the second quarter and into early third quarter 2023. This grading activity was completed in order to fill a low spot resulting from subsidence and which led to ponding during this past winter. The initial plan for Deck A is to partition the approximately 25 acres into more manageable 5-acre plots. The recently graded area will be part of the initial revegetation plot and is expected to start after the first rains to allow the soil to properly leach. Soil sampling was conducted in September, 2023 to determine the viability of the soil. The full report can be found in Attachment 3 of the third quarter report.

4.4 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 Rincon County-Side Sage Mitigation Area report the upper half of the mitigation site was burned in the Saddle Ridge fire in October of 2019. No revegetation activities were conducted in this area during the fourth quarter 2023, and as noted in multiple Rincon progress reports, the conditions in this mitigation area have remained unchanged for some time. Rincon notes in their attached 2023 fourth quarter vegetation report that this area remains problematic for establishment of vegetation due to barren soil. 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 Rincon (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 Rincon Recommendations for City Sage Mitigation Areas

Rincon’s progress reports for the City Sage Mitigation Areas for the fourth quarter of 2023 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.

- The booster pump and power that was destroyed in the Saddleridge Fire will need to be replaced for irrigation to deck A. Architerra’s initial recommendation is to get a team on site to walk the deck and determine best strategy moving forwards to tackle the approximately 25 acres.

Table 1 – Rincon Recommendations and Proposed Actions – City Sage Mitigation Areas, Fourth Quarter 2023

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 Decks (Decks C, B)	2	Irrigation – Reinstall irrigation system if drought conditions continue to the areas to alleviate stress on regrowth	Even with above average rainfall this winter, supplemental irrigation systems may be reinstalled to promote germination and growth of native plants if signs of desiccation appear.
Lower, Middle, and Upper Decks (Decks C, B, and A)	3	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	Deck A was partially regraded to fill in ponding locations. Reseeding will start in graded section in Q4 2024 or Q1 2025

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

Architerra and Rincon continue to provide support to the Oakridge maintenance personnel to assist in removal of the invasive weeds on both Deck B and C. Architerra has pointed out some of the more aggressive weeds that have flourished since the Saddle Ridge Fire. Architerra provided them with images of the invasive weeds to help identify and target these invasive species. Oakridge Landscape have been diligently removing Russian Thistle, Wild Oat, Shortpod Mustard, Red Brome Grass, False Barley, Tree Tobacco, and Yellow Star Thistle that took hold in the burned barren areas. During May 2023, An Architerra biologist was present during weeding activities to ensure native species are properly identified within the heavily non-native vegetation.

5.2 Rincon Recommendations for County Sage Mitigation Area

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

Table 2 – Rincon Recommendations and Proposed Actions – County Sage Mitigation Area, Fourth Quarter 2023

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	Rincon and ADG continue to evaluate recommendations from the County Task Force and UltraSystems.
County Sage Mitigation Area	2 Reseed and plant container plants	A trail test pilot plan will be discussed with California Native shrubs.
County Sage Mitigation Area	3 Use soil amendments	A trial test plot would need to be developed. This recommendation will be considered at a later date.
County Sage Mitigation Area	5 Signage – Install signage indicating revegetation efforts.	Due to the slopes, stormwater channel and overall difficulty to access this area, personnel are limited to access this area.

County Sage Mitigation Area	6	Weed Control – Continue weeding as needed on a quarterly basis.	Personnel continues to evaluate the current status.
County Sage Mitigation Area	7	Prohibit Access – continue to prohibit vehicle access to mitigation deck.	Upper entrance has a locked gate, no further action is required.

5.3 Architerra Inspection for City South Sage Mitigation Pilot Project Area – fourth Quarter 2023

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 Rincon (formerly JMA) was included in the first quarter 2015 Vegetation Report. The evaluation report for the fourth quarter of 2023 based on this methodology is included in Attachment 4 and Attachment 5 for Deck C and Deck B, respectively. Concerns for the county-side stability for soil erosion will be addressed in the coming months. Current plans require some regrading and infrastructure repairs due to the extremely heavy rains over this past winter.

6.0 Status of Other Vegetated Areas

Big Cone Douglas Fir Tree Mitigation

As reported in the vegetation report for the first quarter of 2015, 200 Big Cone Douglas fir tree saplings were planted the third week of March 2015. These big cone Douglas fir pine trees continue to be monitored and maintenance activities were conducted in this mitigation area for 2022 and into the future.

A meeting with Rincon biologist was conducted on November 18, 2022 at the Big Cone Mitigation area. We will begin to work with local nurseries to help replace and replant some of the existing dead big cone pine and canyon oak. We are also evaluating a new location for planting more big cone pines and canyon oak in this area, and finally to establish healthy big cone pine and canyon oak in a timely established schedule. Plans to replenish the mitigation bank will commence with seed collection in the fall of 2024. Once the seeds are collected and stratified, seed will then be potted in the spring of 2025 whereas they will be allowed to germinate for a year at a nursery. Once saplings are viable, they will be brought to site to be planted in the mitigation area on site. This planting is anticipated the fall of 2026.

PM10 Berm

Republic Services hosted an Adopt-A-Tree event for employees and their family members. On Saturday, November 14th, 2020, at 2:00 pm, Fourteen (14) Coast Live Oak trees were planted in critical areas of the PM10 Berm that was damaged during the Saddleridge Fire. Architerra and JMA (i.e. Rincon) assisted in the planting efforts with their expertise and knowledge of tree growth and ideal planting locations. Republic Services is actively working on hosting another Adopt-A-Tree event in Q2 of 2024 for Arbor day.



Front Entrance Toe Berm

The proposed project involves the development of a landfill termination berm and construction of a roadway. There were 20 coast live oak trees surveyed within the project footprint by Rincon and project leads. One of the oak trees was dead, and all of them would be removed by the project activities. There are currently 48 coast live oak trees in the landfill's mitigation bank. As noted, the 20 coast live oak trees would be removed by the proposed project, therefore at a mitigation ratio of 2:1, a total of 40 coast live oak trees will be deducted from the landfill's oak tree mitigation bank, leaving 4 oak trees remaining in the bank for future removals at the landfill, if needed. A report detailing the survey is located in Attachment 6.

Donation to Local Community

As part of community outreach, a rancher in the area asked if he could plant some oak trees on his ranch nearby, and Sunshine Canyon agreed it would be a great idea. Thereafter on September 9th 2021, twenty-two (22) coast live oaks and two sycamores were donated from the Sunshine Canyon nursery and given to the rancher. The rancher mentioned the oak trees shall provide shade for his livestock and beautify the surrounding private property and was very pleased with the trees. A planned tree giveaway is tentatively scheduled to occur during Arbor day in April 2024.



Please do not hesitate to contact me at (818) 200-3016 if you have any questions.

Regards,

A handwritten signature in black ink that reads "Paul D. Koster II".

Paul D. Koster II
Environmental Manager
Sunshine Canyon Landfill

Cc: Ms. Dorcas Dee Hanson-Lugo, SCL LEA
Mr. David Thompson, SCL LEA
Ms. Tiffany Butler, City of Los Angeles, Department of City Planning
Ms. Devon Zatorski, City of Los Angeles Department of City Planning
Ms. Ly Lam, City of Los Angeles, Department of City Planning

Mr. Nicholas Hendricks, City of Los Angeles, Department of City Planning
Enrique Casas, 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

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| Attachment 1 | Rincon Progress Report, 4Q2023 City-Side Sage Mitigation Area |
| Attachment 2 | Rincon Progress Report, 4Q2023 County-Side Sage Mitigation Area |
| Attachment 3 | Architerra Design Group, Field Observation Report, South City Sage Mitigation Pilot Project – 4Q2023 with Photo Log |
| Attachment 4 | Rincon Quarterly Monitoring Report - Coastal Sage Scrub Deck C Pilot Study, 4Q2023 |
| Attachment 5 | Rincon Quarterly Monitoring Report - Coastal Sage Scrub Deck B Pilot Study, 4Q2023 |
| Attachment 6 | Rincon Sunshine Canyon Landfill Ultimate Entry Improvement Project, Oak Tree Survey Report |

Drawing

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| Drawing 1 | Site Vegetation Status and Activity |
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ATTACHMENT 1





Rincon Consultants, Inc.

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January 11, 2024
Project No: 21-11086

Paul D. Koster II
Environmental Manager
Republic Services
14747 San Fernando Road
Sylmar, California 91342

Via email: PKoster@republicservices.com

**Subject: Qualitative Monitoring Report for the City-Side Sage Mitigation Area – 4th Quarter 2023
Sunshine Canyon Landfill, Sylmar, California**

Dear Mr. Koster,

On December 13, 2023, Rincon Consultants performed the fourth quarter qualitative monitoring of 2023 for the Republic Services City-Side Sage Mitigation Area. This report qualitatively documents the current conditions of the City-Side Sage Mitigation Area with regards to the Landfill's coastal sage scrub restoration efforts. The City-Side Sage Mitigation Area consists of the Lower Deck, Middle Deck, and Upper Deck (including slope between middle and upper decks), which are discussed in detail below.

General Conditions

Lower Deck

In 2014, the Landfill initiated a pilot study at the Lower Deck (Deck C) to assess three different seeding applications of native species that included hand broadcasting, imprinting, and hydroseeding. Some container plants were also planted at the Lower Deck, but in low quantities. Germination, establishment, and natural recruitment of native plants ensued; however, the Lower Deck 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 fire also burned the irrigation system, and the vegetation has been without supplemental water ever since.

A substantial amount of regrowth has occurred following the fire, including germination from the seed bank in the soil and resprouting of below- and above-ground plant parts. The Lower Deck appears to have almost fully recovered from the fire. The most prevalent native plant species observed within the Lower Deck in the fourth quarter of 2023 was California sunflower (*Encelia californica*), followed by big saltbush (*Atriplex lentiformis*), allscale saltbush (*Atriplex polycarpa*), beardless wild rye (*Elymus triticoides*), and annual sunflower (*Helianthus annuus*). Immediately following the Saddleridge Fire, areas that were previously dominated with saltbush species were largely replaced by mats of non-native grasses such as red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), and non-native forbs such as redstem filaree (*Erodium cicutarium*). Native shrub species have



resprouted and are almost fully re-established, and have shown signs of continuous growth since the fire.

Exotic annual plant species, which increased slightly between the fourth quarter of 2022 and first quarter of 2023, have declined between the first and fourth quarters of 2023, likely as a result of reduced water availability in the summer and fall months. A majority of exotic annual plant species were observed in their vegetative state or setting seed in the Lower Deck in the fourth quarter of 2023, with a few mid- to late-season non-native plants (e.g., Russian thistle [*Salsola tragus*]) observed in flower. Exotic annual plants appear to be successfully managed through hand pulling and ongoing weed control activities. However, some native grass species (i.e., beardless wild rye) have also been inadvertently cut in the past and may have been misidentified as non-native species during the weed control activities. Beardless wild rye has shown notable increases in cover between the first and fourth quarters of 2023, indicating that it is recovering from weeding activities. Non-native plant species cover is anticipated to increase throughout the winter months and into the spring of 2024. The majority of non-native vegetation observed at the Lower Deck in the fourth quarter of 2023 consisted of non-native annual grasses, short podded mustard (*Hirschfeldia incana*), redstem filaree, tocalote (*Centaurea melitensis*), and Russian thistle.

Middle Deck

In 2019, the Landfill initiated a pilot study at the Middle Deck (Deck B) to assess germination and establishment rates (e.g., percent cover) of soil imprinting and broadcast seeding methods. Some container plants were also planted at the Middle Deck, but in low quantities. Germination and establishment of native plants ensued; however, there was not much evidence of natural recruitment due to the short timeframe from when the deck was seeded to when it burned during the Saddleridge Fire, which also decimated the irrigation system.

As described in previous monitoring reports, the vegetation composition at the Middle Deck before the Saddleridge Fire was approximately 35 percent of sage scrub plantings/seedlings and 30 percent non-native grasses. The remainder of the area was comprised of bare ground and/or rock substrate. A substantial amount of the planted vegetation on the Middle Deck burned in the fire; however, a large amount has resprouted and appears to have mostly recovered. Native vegetation observed at the Middle Deck consists of woody species such as brittlebush (*Encelia farinosa*), California sunflower (*Encelia californica*), scarlet bugler (*Penstemon centranthifolius*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), coastal goldenbush (*Isocoma menziesii*), white sage (*Salvia apiana*), coyote brush (*Baccharis pilularis*), and herbaceous species such as beardless wild rye. Of all the observed native species, coyote brush, brittlebush, coastal goldenbush, California sagebrush, and deerweed have shown the greatest increase in abundance since the fire. Almost all native shrub species were in their vegetative state or setting seed during the fourth quarter of 2023.

Non-native plant establishment was also observed within the Middle Deck; however, this establishment is lower than what has been observed within the Lower Deck. Non-native plants observed include exotic grasses such as foxtail barley, Mediterranean grass (*Schismus arabicus*), red brome, and forbs such as short podded mustard, tocalote, redstem filaree, and small flowered iceplant (*Mesembryanthemum nodiflorum*). These species were observed in their vegetative state or setting seed during the fourth quarter of 2023. In general, non-native weed cover is low to moderate, and has remained constant since the second quarter of 2023. Small flowered iceplant saw the greatest increase in cover of all non-native



species between the first and fourth quarters of 2023. Non-native plants are anticipated to increase in the spring of 2024.

Upper Deck

Overall, the Upper Deck (Deck A) continues to be sparsely covered with native vegetation, and total vegetation coverage (native and non-native) is generally sparse due to compacted and poor soil conditions. However, in the southern-center of the Upper Deck, vegetation cover is higher than in other areas and includes native species such as California buckwheat, as well as non-native species such as foxtail barley, redstem filaree, and Australian saltbush (*Atriplex semibaccata*). California goldfields (*Lasthenia californica*), which were observed in flower during the first quarter of 2023, have since set seed and are no longer observable. The presence of vegetation in the southern-center portion of the Upper Deck generally demonstrates that the soils in this area are suitable for supporting vegetation, both native and exotic. However, the soils elsewhere on the Upper Deck appear to be heavily compacted and gravelly, and vegetation coverage in these areas is sparse. Evidence of previous seeding is no longer discernible within the portions of the Upper Deck where plant establishment is visibly poor.

Non-native herbaceous species that dominate the Upper Deck currently include wild oats (*Avena fatua*), Russian thistle, ripgut brome, red brome, short podded mustard, and redstem filaree. California buckwheat is the most dominant native perennial woody plant species on the Upper Deck, and it is currently setting seed. However, as described in previous monitoring reports, overall natural recruitment of native plant species within the Upper Deck is low due to poor and dry soil conditions.

Additionally, ground-disturbing activities occurred in the upper deck between the second and third quarters of 2023. An approximately 300-foot-long, 250-foot-wide area was cleared in the southeastern portion of the upper deck. This area is now mostly unvegetated, with some scattered establishment of non-native species such as short podded mustard.

Table 1 Summary of Observations in the Lower, Middle, and Upper Decks in Quarter 4, 2023

Location	Native Plant Vegetation			Exotic Plant Vegetation		
	Native Plant Cover	Plant Health Issues	Height of Native Species	Native Species Richness	Exotic Plant Cover	Phenological State
Lower Deck	Moderate-High	Recovering from fire, drought	12"-48"	Shrubs: Moderate Herbs: Low	Moderate	Vegetative and setting seed
Middle Deck	Moderate	Recovering from fire, drought	12"-48"	Shrubs: Moderate Herbs: Low	Low to Moderate	Vegetative and setting seed
Upper Deck	Minimal	Poor soils, drought	12"-24"	Shrubs: Low Herbs: Low	High	Vegetative and setting seed



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 and should be initiated in the late winter to early spring prior to seed set, which typically occurs between the months of February and April. This will prevent further dispersal of exotic plants within the Lower and Middle Decks.
- Following weed control, any dead material harboring seeds should be removed to an off-site location to the extent feasible. Dense areas covered with red brome, ripgut brome, foxtail barley, and short podded mustard 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, such as beardless wild rye and yarrow (*Achillea millefolium*).
- A qualified biologist should be present during weed control activities or flag the native plants that should remain prior to weed control activities to ensure only non-native species are removed and to minimize damage to native plant species to the greatest extent feasible. If a contractor is responsible for weed control, the contractor should verify with the Landfill that all personnel are experienced in native and non-native plant identification.
- 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, wherever 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.

Irrigation

- The Lower and Middle Decks burned during the Saddleridge Fire in October 2019. The fire burned the irrigation system that was installed prior to the fire, and the vegetation has been without supplemental water ever since. While southern California received above-average rainfall in the winter of 2022 and spring of 2023, supplemental irrigation may be necessary if native plants show signs of desiccation stress. If indicators of drought stress are observed, it is recommended that the irrigation system within the Lower and Middle Decks are re-installed to promote germination and growth of native plant species.



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.
- Prior to seeding (broadcast, hydroseeding, or drilling) of native species, incorporate a soil amendment or mulch with high organic content by tilling it 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 borrow sites within the landfill that have the appropriate soil properties, 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 Upper Deck that are currently dominated with non-native annual species have decent soil-texture conditions. These areas are less compacted than adjacent areas that are gravelly and mostly devoid 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 Upper Deck 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 qualified biologist should be present during weed control activities or flag the native plants that should remain prior to weed control activities to ensure only non-native species are removed and to minimize damage to native plant species to the greatest extent feasible. A biologist should verify that the weed removal methodology does not encourage re-colonizing of non-native plant species.
- 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, wherever 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 frequency may need to be increased. Otherwise, weeds should continue to be monitored and controlled on a quarterly basis.

Reseeding

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

Prohibit Access

- Continue to prohibit vehicle access to mitigation areas.

Thank you for the opportunity to work with you on this important project. Please contact Greg Ainsworth if you have questions concerning the contents of this report. He may be reached by telephone at (818) 564-5544, or by email at gainsworth@rinconconsultants.com.

Sincerely,

Rincon Consultants, Inc.

Greg Ainsworth
Natural Resources Director

Kyle Gern
Biologist

Attachments

- Attachment A Figure 1. Photograph Locations
Attachment B Site Photographs

Attachment A

Figure 1. Photograph Locations

Figure 1 Photograph Locations



Imagery provided by Microsoft Bing and its licensors © 2023.
Photo Locations have been georeferenced and are approximate locations.

21-11086 B10
Fig 2 City Sage - Photo Locations

Attachment B

Site Photographs



Photograph 1. Facing west at Lower Deck. View of eastern limits dominated by *Atriplex* spp. and California sunflower (December 13, 2023).



Photograph 2. Lower Deck from western boundary (December 13, 2023).



Photograph 3. Facing east at the Middle Deck from western boundary (December 13, 2023).



Photograph 4. Facing west at the easterly-facing slope located between the Middle and Upper Decks. The vegetation on the slopes between the Upper Deck is dominated by California buckwheat (currently vegetative) and non-native annual grasses (December 13, 2023).



Photograph 5. Facing northeast at the Upper Deck. This area is compacted and gravelly and continues to be problematic for supporting vegetation. Non-native annual grasses and forbs, and California buckwheat shrubs are evident in the background (December 13, 2023).



Photograph 6. Facing southwest at the Upper Deck. This area is primarily dominated by wild oats, brome grasses, redstem filaree, and short podded mustard (December 13, 2023).



Photograph 7. Facing southeast at the western portion of the Upper Deck. This area is dominated by short podded mustard, Australian saltbush, and Russian thistle (December 13, 2023).

ATTACHMENT 2





Rincon Consultants, Inc.

180 North Ashwood Avenue
Ventura, California 93003

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www.rinconconsultants.com

January 11, 2023
Project No: 21-11086

Paul D. Koster II
Environmental Manager
Republic Services
14747 San Fernando Road
Sylmar, California 91342

Via email: PKoster@republicservices.com

**Subject: Qualitative Monitoring Report for the County-Side Sage Mitigation Area – 4th Quarter 2023
Sunshine Canyon Landfill, Sylmar, California**

Dear Mr. Koster,

On September 27, 2023, Rincon Consultants performed the fourth quarter qualitative monitoring of 2023 for the County-Side Sage Mitigation Area (mitigation area). This report documents the current conditions of the mitigation area.

General Conditions

Hydroseeded Areas

Germination and plant growth from hydroseeding that occurred several years ago is not discernible in some portions of the mitigation area. Conditions in the mitigation area remain relatively unchanged since the third quarter of 2023. Areas that are moderately covered with native and non-native vegetation are concentrated in the southeastern portion of the mitigation area. The northern and upper portions of the mitigation area continue to be bare and problematic for establishment of vegetation, primarily because of highly eroded soils, steep slopes, and Boron-toxic soils (See *Recommendations* section). However, there are some small patches of vegetation that have established in the northern-central portion of the mitigation area and include shrubs such as California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber*), and California sagebrush (*Artemisia californica*).

Native plant coverage is similar to the previous quarterly monitoring reports. The southern half of the mitigation area has relatively good coverage of native species, mostly California buckwheat and California sunflower (*Encelia californica*). Established laurel sumac (*Malosma laurina*) individuals are present as well. All native shrub species had already set seed during the monitoring event. The native vegetation coverage is assumed to be a direct result of seeding; however, some natural recruitment of native plant species is apparent based on the various sizes of shrubs and the presence of native shrub seedlings within the understory. Due to rocky (hydrophobic) soil conditions, soil erosion and Boron-toxic soils on the northern-half and upper portions of the mitigation area, minimal plant growth is present. Due to the lack of plant establishment in these areas, erosional features have become prominent, especially following above-average rainfall events during the winter of 2022 and spring of 2023.

Annual non-native grasses and forbs currently dominate the understory and serve as ground cover in most of the vegetated areas. Brome grasses (*Bromus* spp.), wild oats (*Avena fatua*), short podded mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), and tocalote (*Centaurea melitensis*) are



the most dominant non-native species present, and comprise approximately 25 to 30 percent of the total cover. California buckwheat dominates the native vegetation coverage with California sagebrush and California sunflower present as co-dominants. Native species comprise of approximately 75 to 80 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 mellifera*), deerweed, and laurel sumac.

Seed Mix Areas

Like the hydroseeded areas, germination and plant growth from the seed mix areas that occurred several years ago is not discernible. A substantial portion of the mitigation area continues to be bare and problematic, which has inhibited the establishment and growth of vegetation. However, in areas where vegetation is present, there is a moderate coverage of native species (e.g., California buckwheat and California sunflower).

As described in the *Hydroseeded Areas* discussion above, a moderate cover of native plants exists within vegetated areas in the southeastern portion of the mitigation area, and annual non-native grasses and forbs currently dominate the understory.

Native Plant Conditions

The plant cover rating indicated further below in



Table 1 applies where vegetation is dominant in the southeastern portion of the mitigation area. Vegetation cover is moderate in the southeastern portion of the mitigation area and sparse along the upper slopes where rocky and eroded soil conditions occur, and in the northern portion of the mitigation area due to problematic soil conditions. As a result, most of the northern and upper portions of the mitigation area continue to have minimal coverage. Native vegetation coverage is good in vegetated areas and non-native plant cover is relatively low. Bare areas and non-native annual grasses are intermixed; however, as noted the northern and upper areas continue to be mostly bare where erosion and rocks are apparent.

California buckwheat is dominant and California sunflower is sub-dominant. Establishment of vegetation is problematic due to rocky soils with poor soil structure, and Boron toxicity has made plant growth (i.e., seed germination and recruitment) difficult. The species richness is low to medium within vegetated areas; however, species richness is considerably low when considering the entire county-sage mitigation area.

Exotic Plant Conditions

Annual non-native weed species consist primarily of brome grasses, wild oats, and mustards, which are mostly in their vegetative state and/or setting seed. Non-native plant cover is anticipated to increase throughout the winter and into the spring of 2024. Other established weeds that were observed include redstem filaree (*Erodium cicutarium*) and telegraph weed (*Heterotheca grandiflora*; a weedy native plant species).



Table 1 Summary of Native and Exotic Plant Cover in the County-Side Sage Mitigation Area in Quarter 4, 2023

Location	Native Plant Vegetation				Exotic Plant Vegetation	
	Native Plant Cover	Plant Health Issues	Height of Native Species	Native Species Richness	Exotic Plant Cover	Phenological State
County-Side Sage Mitigation Area	Moderate	Drought	12"-36"	Medium	Moderate	vegetative, setting seed

Recommendations

The following recommendations within the County-Side Sage Mitigation are suggested based upon the field survey performed in the fourth quarter of 2023.

- **Create Benches.** Consider creation of several 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 With Irrigation.** If creation of benches is feasible, planting methods should include hydroseeding, broadcast seeding, and/or imprinting no more than 10 days prior to a forecasted rain event, unless an irrigation system is installed. Planting with container plants with supplemental irrigation should also be considered.
- **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.** Prohibit equipment access to mitigation area.

Thank you for the opportunity to work with you on this important project. Please contact Greg Ainsworth if you have questions concerning the contents of this report. He may be reached by telephone at (818) 564-5544, or by email at gainsworth@rinconconsultants.com.

Sincerely,

Rincon Consultants, Inc.

Greg Ainsworth
 Natural Resources Director

Kyle Gern
 Biologist

Attachments

- Attachment A Figure 1. Photograph Locations
- Attachment B Site Photographs

Attachment A

Figure 1. Photograph Locations

Figure 1 Photograph Locations



Imagery provided by Microsoft Bing and its licensors © 2023.
Photo Locations have been georeferenced and are approximate locations.

21-11086 BIO
Fig 1 County Sage - Photo Locations

Attachment B

Site Photographs



Photograph 1. Facing southwest at the County-Side Sage Mitigation Area (December 13, 2023).



Photograph 2. Facing northwest at the northern portion of the County-Side Sage Mitigation Area where plant growth has been problematic due to poor soil conditions (December 13, 2023).

ATTACHMENT 3





ARCHITERRA DESIGN GROUP

FIELD OBSERVATION REPORT

DATE OF VISIT:	1/4/24
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:	12:00pm
WEATHER/TEMPERATURE:	Sunny 90° - Winds 5-10 mph
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 Decks A, B, C, and County Mitigation Slopes. Additional items noted during the site visit are as follows:

City-Side Sage Mitigation (Deck A):

- Weed abatement is currently on-going, with soils amendment, ripping and seeding planned to follow in the next month to take advantage of precipitation this winter/spring. ADG will provide photo stations for the Deck A revegetation improvements.





- There are a number of smaller areas that are holding moisture as a result of subsidence. This year ADG will be working with Republic Services to correct these conditions with new fill dirt and seeding, similar to the repair on Deck A completed last year.



Existing subsidence conditions of Deck A

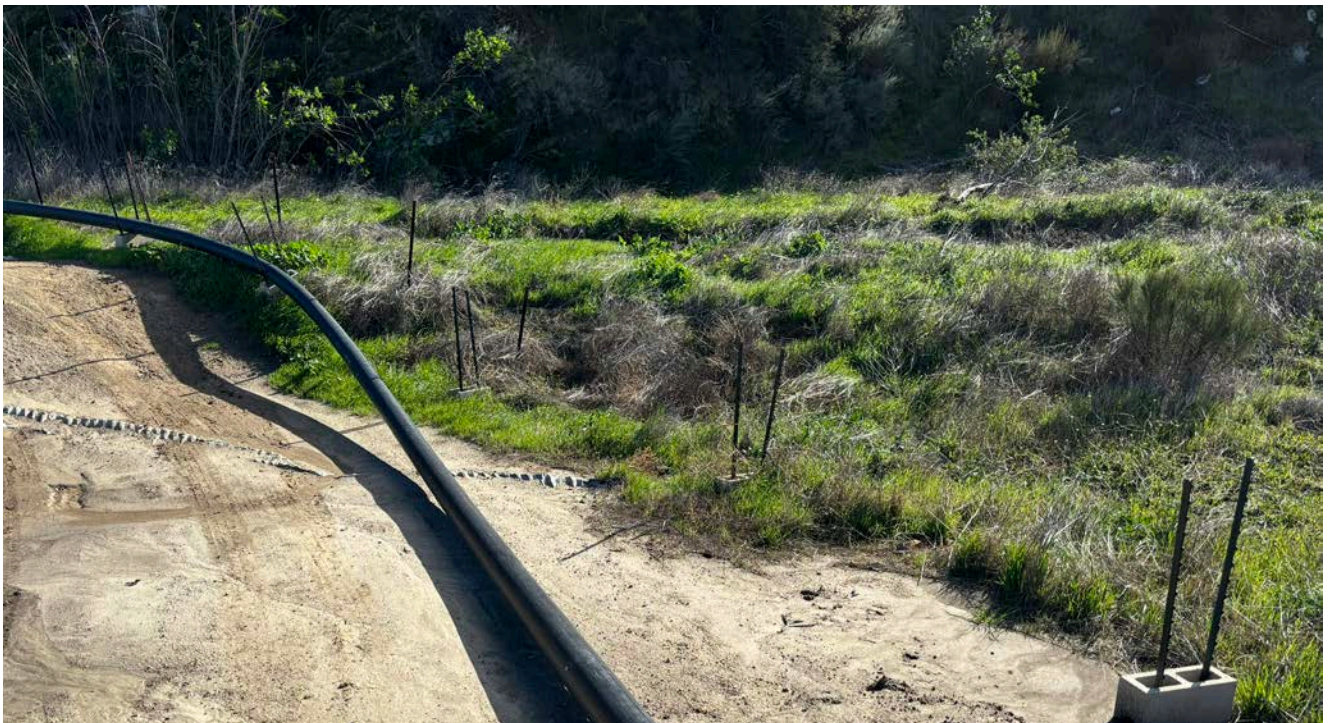


Existing subsidence conditions of Deck A





Existing subsidence conditions of Deck A



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

- Weed growth on Deck B is dominated by Slenderleaf Iceplant (*Mesembryanthemum nodiflorum*) and Shortpod Mustard (*Hirschfeldia incana*). As temperatures increase flowering will of the Shortpod Mustard will be quick. Timing of removals is vital to decrease seeding of the decks. However, careful inspection by the contractor to flag and identify native species is critical, so that seedlings remain and help to fill in the voids within the deck.



- Venturan Coastal Sage Scrub seedlings are being established throughout the deck area. Notable species include, Coast Sunflower (*Encelia californica*), Brittlebush (*Encelia farinosa*), Black Sage (*Salvia mellifera*), Purple Sage (*Salvia leucophylla*), California Sagebrush (*Artemisia californica*), California Buckwheat (*Eriogonum fasciculatum*), Saltbush (*Atriplex* sp.), and Deerweed (*Acmispon glaber*).



Purple Sage (*Salvia leucophylla*)



California Sagebrush (*Artemisia californica*)



Brittlebush (*Encelia farinosa*)

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

Many of the same weed species exist on Deck C, including Russian Thistle (*Salsola* spp.), Horseweed (*Erigeron canadensis*), Tree Tobacco (*Nicotiana glauca*), and Shortpod Mustard (*Hirschfeldia incana*). Shortpod Mustard is beginning to bloom, so the maintenance contractor should focus on removals before it goes to seed. Many of the dense stands of Shortpod Mustard have seedlings of native VCSS, especially Coast Sunflower (*Encelia californica*). California Sagebrush (*Artemisia californica*) seedlings are also present within the Shortpod Mustard patches. Contractor needs to flag these native seedlings so that they are not removed along with the weeds.

- Saltbush species (*Atriplex lentiformis* and *Atriplex canescens*) are also establishing on portions of the deck that previously were barren. Additional moisture from summer storms (Tropical Storm Hilary) along with cool temperatures and improving soils conditions may be what is attributing to this germination. This is a positive sign for future recruitment of VCSS species since the *Atriplex* species has proven to be a pioneer species that provides additional cover and a duff layer for new seedlings to establish.



Invasive Shortpod Mustard (*Hirschfeldia incana*) with Coast Sunflower (*Encelia californica*) intermixed within weed growth



Shortpod Mustard (*Hirschfeldia incana*) flowering and beginning to produce seeds



California Sagebrush (*Artemisia californica*) intermixed within invasive Shortpod Mustard (*Hirschfeldia incana*)



Invasive Tree Tobacco (*Nicotiana glauca*)



Eucalyptus sp. seedlings that need to be removed



Small Eucalyptus Tree that needs to be removed

Semi-dormant Horseweed (*Erigeron canadensis*) that needs to be removed



Mule Deer prints amongst Shortpod Mustard (*Hirschfeldia incana*)



Maintenance access Road weathering on north side of Deck C



Saltbush seedlings found on Deck C area that was previously barren



Close up of newly germinated Saltbush

Signed: Gregg Denson

Date: 1/19/24

DISTRIBUTION

Republic Services



Contractor



Project Manager (Gregg Denson)



Other _____





Photo Station #1 - December 2022 (North)



Photo Station #1 - December 2023 (North)



Photo Station #1 - December 2022 (East)



Photo Station #1 - December 2023 (East)



Photo Station #1 - December 2022 (West)



Photo Station #1 - December 2023 (West)



Photo Station #2 - December 2022 (North)



Photo Station #2 - December 2023 (North)



Photo Station #2 - December 2022 (East)



Photo Station #2 - December 2023 (East)



Photo Station #2 - December 2022 (West)



Photo Station #2 - December 2023 (West)



Photo Station #3 - December 2022 (North)



Photo Station #3 - December 2023 (North)



Photo Station #3 - December 2022 (East)



Photo Station #3 - December 2023 (East)



Photo Station #3 - December 2022 (West)



Photo Station #3 - December 2023 (West)



Photo Station #4 - December 2022 (North)



Photo Station #4 - December 2023 (North)



Photo Station #4 - December 2022 (East)



Photo Station #4 - December 2023 (East)



Photo Station #4 - December 2022 (West)

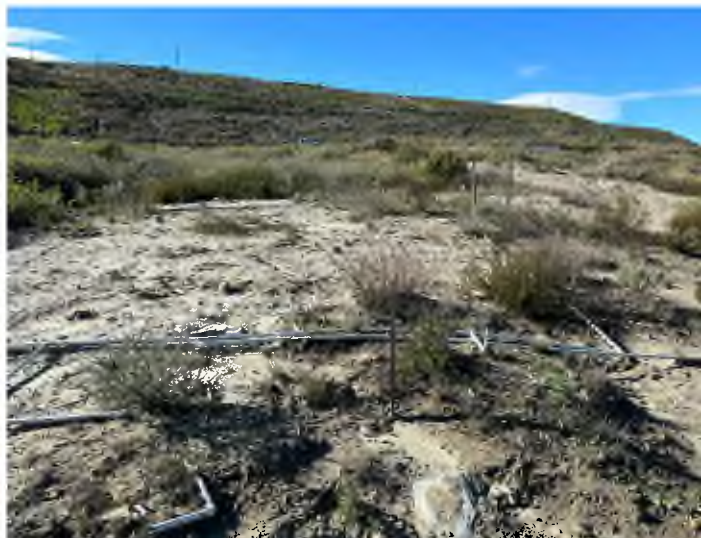


Photo Station #4 - December 2023 (West)



Photo Station #5 - December 2022 (North)



Photo Station #5 - December 2023 (North)



Photo Station #5 - December 2022 (East)



Photo Station #5 - December 2023 (East)



Photo Station #5 - December 2022 (West)



Photo Station #5 - December 2023 (West)



Photo Station #6 - December 2022 (North)



Photo Station #6 - December 2023 (North)



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Photo Station #6 - December 2023 (West)



Photo Station #7 - December 2022 (North)



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Photo Station #9 - December 2022 (East)



Photo Station #9 - December 2023 (East)



Photo Station #9 - December 2022 (South)



Photo Station #9 - December 2023 (South)



Photo Station #9 - December 2022 (West)



Photo Station #9 - December 2023 (West)

ATTACHMENT 4





Rincon Consultants, Inc.

180 North Ashwood Avenue
Ventura, California 93003

805 644 4455 OFFICE AND FAX

info@rinconconsultants.com
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January 11, 2024
Project No: 21-11086

Paul D. Koster II
Environmental Manager
Republic Services
14747 San Fernando Road
Sylmar, California 91342
Via email: PKoster@republicservices.com

Subject: Coastal Sage Scrub City South C Trial Plot 4th Quarter 2023 Monitoring Report, Sunshine Canyon Landfill

Dear Mr. Koster,

This monitoring report has been prepared by Rincon Consultants, Inc. (Rincon) to inform Republic Services on the status of coastal sage scrub restoration at the Sunshine Canyon Landfill located at 14747 San Fernando Road, Sylmar, California 91342. Specifically, this letter report serves to document the abundance of vegetation at the Coastal Sage Scrub City South C Trial Plot in the fourth quarter of 2023.

Methods

On December 13, 2023, Rincon Consultants monitored the Coastal Sage Scrub City South C Trial Plot (trial plot) at the Sunshine Canyon Landfill, which constitutes the fourth quarter of monitoring for 2023. 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 Coastal Sage Scrub City South C Trial Plot consists of four 50-meter² quadrats that are randomly sampled within each of the following three seeded areas: hydroseed, imprint, and hand broadcast. The twelve quadrats sampled 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-L) and delineated in the field with wooden stakes (Attachment A).

As shown in Attachment A, three different seeding methods were used as follows:

- Hydroseed (Quadrats A, B, C, and D)
- Imprint (Quadrats E, F, G, and H)
- Hand broadcast (Quadrats I, J, K, and L)

Absolute Cover

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



- **Percent basal cover (shrubs).** Visual estimate of the amount of basal cover within each quadrat for all shrub species.
- **Percent basal cover (herbs).** Visual estimate of the amount of basal 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.

Percent Cover

The following quantitative 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 meter point was tallied, including areas of bare ground, rock and other.

Field Results

Below are the average data collected for each planting method.

Absolute Cover (Qualitative)

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

- Percent basal cover (shrubs) – 20%
- Percent basal cover (herbs) – 6%
- Percent bare ground – 31%
- Percent rock or other – 3%
- Percent canopy (shrubs) – 57%
- Percent canopy (herbs) – 22%

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

- Percent basal cover (shrubs) – 21%
- Percent basal cover (herbs) – 5%
- Percent bare ground – 38%
- Percent rock or other – 5%
- Percent canopy (shrubs) – 54%
- Percent canopy (herbs) – 8%



Hand broadcast – Quadrats I, J, K, and L (average)

- Percent basal cover (shrubs) – 16%
- Percent basal cover (herbs) – 35%
- Percent bare ground – 26%
- Percent rock or other – 3%
- Percent canopy (shrubs) – 36%
- Percent canopy (herbs) – 43%

Percent Cover (Quantitative)

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 upon the point intercept method is presented in Table 1 through Table 3 below.



Table 1 Hydroseed – Quadrats A, B, C, and D (Average)

Species	Plot A		Plot B		Plot C		Plot D	
	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs								
<i>Acmispon glaber</i>					2	4%		
<i>Artemisia californica</i>								
<i>Atriplex lentiformis</i>	7	14%	8	16%	7	14%	7	14%
<i>Atriplex polycarpa</i>	4	8%	6	12%	3	6%		
<i>Atriplex spinosa</i>			7	14%	6	12%		
<i>Baccharis pilularis</i>								
<i>Diplacus aurantiacus</i>								
<i>Encelia californica</i>	11	22%	10	20%	9	18%	15	30%
<i>Salvia apiana</i>								
<i>Salvia mellifera</i>							1	2%
Native Herbs								
<i>Achillea millefolium</i>								
<i>Cryptantha intermedia</i>								
<i>Helianthus annuus</i>							9	18%
<i>Elymus triticoides</i>			5	10%				
<i>Erigeron canadensis</i>			7	14%				
<i>Sisyrinchium bellum</i>								
<i>Vulpia microstachys</i>								
Non-Native Herbs								
<i>Amaranthus albus</i>								
<i>Bromus rubens</i>					3	6%		
<i>Centaurea melitensis</i>					1	2%		
<i>Erodium cicutarium</i>								
<i>Hirschfeldia incana</i>	7	14%	2	4%	2	4%	7	14%
<i>Hordeum murinum</i>								
<i>Salsola tragus</i>	1	2%	2	4%	1	2%		
Bare ground	20	40%	3	6%	16	32%	11	22%
								A,B,C,D
		Plot A	Plot B	Plot C	Plot D			Percent Cover
Percent Cover Native Shrub		44%	62%	54%	46%			52%
Percent Cover Native Herb		0%	24%	0%	18%			11%
Percent Cover Non-Native Shrub		0%	0%	0%	0%			0%
Percent Cover Non-Native Herb		16%	8%	14%	14%			13%
Percent Bare Ground		40%	6%	32%	22%			25%



Table 2 Imprint – Quadrats E, F, G, and H (Average)

Species	Plot E		Plot F		Plot G		Plot H	
	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs								
<i>Acmispon glaber</i>								
<i>Artemisia californica</i>								
<i>Atriplex lentiformis</i>			10	20%	2	4%	1	2%
<i>Atriplex polycarpa</i>	3	6%	3	6%			3	6%
<i>Atriplex spinosa</i>			9	18%				
<i>Baccharis pilularis</i>								
<i>Diplacus aurantiacus</i>								
<i>Encelia californica</i>	25	50%	11	22%	32	64%	34	68%
<i>Salvia leucophylla</i>								
<i>Salvia mellifera</i>								
Native Herbs								
<i>Achillea millefolium</i>								
<i>Cryptantha intermedia</i>								
<i>Helianthus annuus</i>								
<i>Elymus triticoides</i>								
<i>Nasella pulchra</i>								
<i>Sisyrinchium bellum</i>								
<i>Vulpia microstachys</i>								
Non-Native Herbs								
<i>Amaranthus albus</i>								
<i>Bromus rubens</i>								
<i>Centaurea melitensis</i>								
<i>Erodium cicutarium</i>								
<i>Hirschfeldia incana</i>	5	10%	2	4%				
<i>Hordeum murinum</i>								
<i>Salsola tragus</i>								
Bare ground	17	34%	15	30%	16	32%	12	24%
		Plot E	Plot F	Plot G	Plot H	E,F,G,H Percent Cover		
Percent Cover Native Shrub		56%	66%	68%	76%	67%		
Percent Cover Native Herb		0%	0%	0%	0%	0%		
Percent Cover Non-Native Shrub		0%	0%	0%	0%	0%		
Percent Cover Non-Native Herb		10%	4%	0%	0%	4%		
Percent Bare Ground		34%	30%	32%	24%	30%		



Table 3 Hand Broadcast – Quadrats I, J, K, and L (Average)

Species	Plot I		Plot J		Plot K		Plot L		
	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover	
Native Shrubs									
<i>Acmispon glaber</i>									
<i>Artemisia californica</i>			5	10%					
<i>Atriplex lentiformis</i>	1	2%	7	14%					
<i>Atriplex polycarpa</i>							5	10%	
<i>Atriplex spinosa</i>									
<i>Baccharis pilularis</i>			3	6%			2	4%	
<i>Encelia californica</i>	32	64%	7	14%			22	44%	
<i>Salvia leucophylla</i>									
Non-Native Shrubs									
<i>Atriplex semibaccata</i>									
Native Herbs									
<i>Achillia mellifolium</i>									
<i>Cryptantha intermedia</i>									
<i>Helianthus annuus</i>			3	6%					
<i>Elymus triticoides</i>					29	58%	10	20%	
<i>Erigeron canadensis</i>									
<i>Sisyrinchium bellum</i>									
<i>Vulpia microstachys</i>									
Non-Native Herbs									
<i>Amaranthus albus</i>									
<i>Bromus rubens</i>			7	14%					
<i>Centaurea melitensis</i>			1	2%					
<i>Dittrichia graveolens</i>									
<i>Hirschfeldia incana</i>	4	8%	4	8%	3	6%			
<i>Hordeum murinum</i>									
<i>Salsola tragus</i>									
<i>Sonchus oleraceus</i>									
Bare ground	13	26%	10	20%	18	36%	11	22%	
							I,J,K,L Percent Cover		
Percent Cover Native Shrub		66%		44%		0%		58%	42%
Percent Cover Native Herb		0%		12%		58%		20%	23%
Percent Cover Non-Native Shrub		0%		0%		0%		0%	0%
Percent Cover Non-Native Herb		8%		24%		6%		0%	10%
Percent Bare Ground		26%		20%		36%		22%	26%



Discussion

Table 4 below provides a summary of the vegetation cover of shrubs and herbs, including areas of bare ground. The percent cover of native and non-native species is summarized above in Tables 1-3.

Table 4 Summary of Vegetation Cover for Each Planting Method at the Coastal Sage Scrub City South C Trial Plot

	Hydroseed (Quadrats A, B, C, and D)		Imprint (Quadrats E, F, G, and H)		Hand Broadcast (Quadrats I, J, K, and L)	
	Qualitative	Quantitative	Qualitative	Quantitative	Qualitative	Quantitative
Percent Cover Shrub	57%	52%	54%	67%	36%	42%
Percent Cover Herb	22%	24%	8%	4%	43%	33%
Percent Bare Ground	31%	25%	38%	30%	26%	26%

As discussed in previous reports, most of the trial plot (except for quadrats A, B, E, F, and G) substantially burned during the Saddleridge Fire in October 2019, and much of the vegetation was removed and/or crushed by fire equipment (e.g., bulldozers). Following the fire, non-native species such as brome grasses (*Bromus* spp.), foxtail barley (*Hordeum murinum*), and short podded mustard (*Hirschfeldia incana*) established in areas that were previously dominated by saltbush (*Atriplex* spp.). However, the trial plot has almost fully recovered from the fire, as evidenced by the establishment, growth, and reproduction of native shrub species such as allscale saltbush (*Atriplex polycarpa*), big saltbush (*Atriplex lentiformis*), California sunflower (*Encelia californica*), California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla*), black sage (*Salvia mellifera*), and coyote brush (*Baccharis pilularis*) that previously dominated the trial plot prior to the fire.

The quantitative percent cover of native shrub species currently has an average of 52 percent within the hydroseed quadrats, 67 percent within the imprint quadrats, and 42 percent within the hand broadcast quadrats (Tables 1-3). Native shrub quantitative percent cover increased across all treatments from the first quarter monitoring event in 2023, and have increased slightly since the third quarter of 2023. All shrub species within the trial plot had already set seed during the fourth quarter of 2023. As described in previous monitoring reports from 2022, beardless wild rye (*Elymus triticoides*) was trimmed as part of the weeding effort implemented by Republic Services in spring of 2022; however, this species has recovered from the trimming efforts, indicated by the increase in native herbaceous cover across most treatment types (hydroseed quadrats: 11 percent cover; imprint quadrats: 0 percent cover; hand broadcast quadrats: 23 percent cover).

Non-native plant cover has slightly declined between the third and fourth quarters of 2023 (hydroseed quadrats: 13 percent cover; imprint quadrats: 4 percent cover; hand broadcast quadrats: 10 percent cover). The most abundant non-native herbaceous plants observed within the trial plot during the fourth quarter of 2023 include red brome (*Bromus rubens*), short podded mustard, and Russian thistle (*Salsola tragus*). Short-podded mustard and Russian thistle were in their later flowering stages and beginning to set seed, and most other non-native herbs were either in their vegetative state or had already completed their flowering cycle. Non-native plant species cover is expected to increase throughout the winter months and into the spring of 2024. Total non-native herbaceous cover currently has an average of 13 percent within the hydroseed quadrats (down from 16 percent in the third quarter of 2023), 4 percent within the imprint quadrats (down from 5 percent in the third quarter of 2023), and 10 percent (down from 23 percent in the third quarter of 2023) within the trial plot (Tables 1-3).



Recommendations

Successional Growth and Weed Control

Wildfires in Southern California have become more common in recent years and have impacted the native landscape, including established restoration sites. Non-native weed control is essential in establishing post-fire restoration sites and is recommended by such organizations as the California Department of Fish and Wildlife Service and the California Society of Ecological Restoration. Successional regrowth of herbaceous non-native species is to be expected within the first two to three years following a wildfire, which is currently being observed at the trial plot. Native shrubs are expected to recover over a longer period through germination of existing seed within the topsoil and basal growth from charred plants. Native shrubs have shown notable growth following the fire and appear to be well established in the trial plot.

Successional growth of herbaceous species is also important, as native herbaceous species provide natural erosion of topsoil. To control the spread non-native herbaceous species such as foxtail barley, red brome, and short podded mustard, and minimize competition with native herbaceous and woody species for water, nutrients, and sunlight, weed maintenance should occur no less than every four months, and special attention should be afforded to minimizing impacts to native grasses that may appear to be non-native (i.e., beardless wild rye), native seedlings, and native shrub resprouts. Weed maintenance should be scheduled to maximize removal of non-native species prior to seed set, which typically occurs in spring between the months of February and April, but may also occur throughout the growing season based upon precipitation events.

Supplemental Irrigation

While southern California received above-average rainfall in the winter of 2022 and spring of 2023, supplemental irrigation is a valuable restoration technique to promote re-establishment of native vegetation, particularly during the dry months of the year (i.e., summer and fall). If native herbaceous vegetation continues to be sparse throughout the trial plot, and/or if native shrubs senesce or show indicators of drought stress, the irrigation system within the trial plot should be re-installed to increase water availability and promote seed germination and re-establishment of native vegetation.



References

John Minch and Associates, Inc. (JMA). 2014. 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.

Thank you for the opportunity to work with you on this important project. Please contact Greg Ainsworth if you have questions concerning the contents of this report. He may be reached by telephone at (818) 564-5544, or by email at gainsworth@rinconconsultants.com.

Sincerely,
Rincon Consultants, Inc.

A handwritten signature in black ink, appearing to read "G. Ainsworth".

Greg Ainsworth
Natural Resources Director

A handwritten signature in black ink, appearing to read "Kyle Gern".

Kyle Gern
Biologist

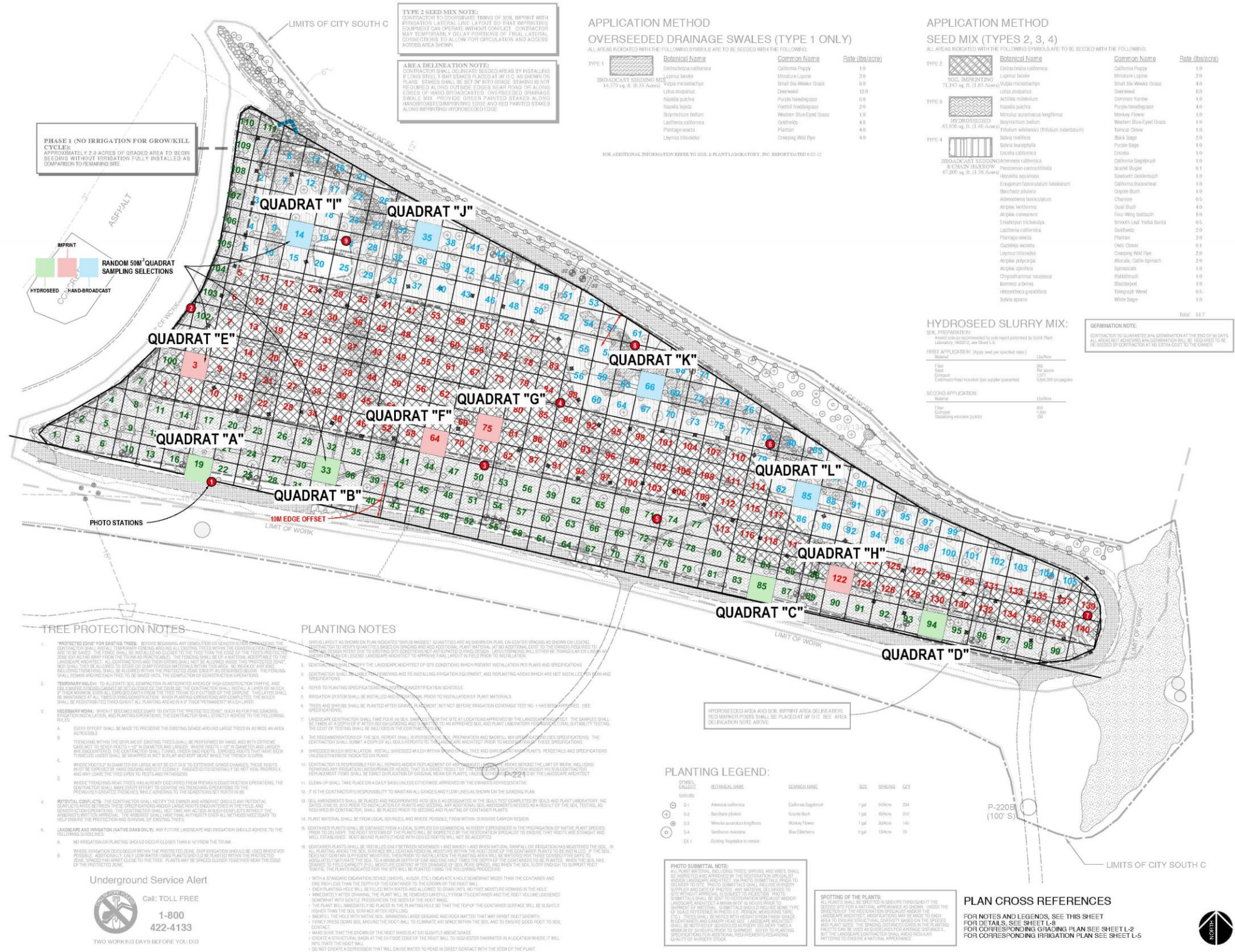
Attachments

- Attachment A Deck C Revegetation Area Quadrat Layout and Planting Plan
- Attachment B Representative Site Photographs

Attachment A

Deck C Revegetation Area Quadrat Layout and Planting Plan

Deck C Revegetation Area Quadrat Layout and Planting Plan



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

SHEET TITLE

PLANTING PLAN

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DRAWN BY: GPD/JGG
CHECKED BY: JRC
DATE: 9/28/12
SCALE: 1" = 30'
JOB NUMBER: 1214
SHEET NUMBER: L-7
7 OF 8 SHEETS

Attachment B

Photographs of Sample Plots



Photograph 1. Quadrat A facing northeast from southwest corner (December 13, 2023).



Photograph 2. Quadrat B facing northeast from southwest corner (December 13, 2023).



Photograph 3. Quadrat C facing northeast from southwest corner (December 13, 2023).



Photograph 4. Quadrat D facing northeast from southwest corner (December 13, 2023).



Photograph 5. Quadrat E facing northeast from southwest corner (December 13, 2023).



Photograph 6. Quadrat F facing northeast from southwest corner (December 13, 2023).



Photograph 7. Quadrat G facing northeast from southwest corner (December 13, 2023).



Photograph 8. Quadrat H facing northeast from southwest corner (December 13, 2023).



Photograph 9. Quadrat I facing northeast from southwest corner (December 13, 2023).



Photograph 10. Quadrat J facing northeast from southwest corner (December 13, 2023).



Photograph 11. Quadrat K facing northeast from southwest corner (December 13, 2023).



Photograph 12. Quadrat L facing northeast from southwest corner (December 13, 2023).

ATTACHMENT 5





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January 11, 2024
Project No: 21-11086

Paul D. Koster II
Environmental Manager
Republic Services
14747 San Fernando Road
Sylmar, California 91342
Via email: PKoster@republicservices.com

Subject: Coastal Sage Scrub City South B Trial Plot 4th Quarter 2023 Monitoring Report, Sunshine Canyon Landfill

Dear Mr. Koster,

This monitoring report has been prepared by Rincon Consultants, Inc. (Rincon) to inform Republic Services on the status of coastal sage scrub restoration at the Sunshine Canyon Landfill located at 14747 San Fernando Road, Sylmar, California 91342. Specifically, this letter report serves to document the abundance of vegetation at the Coastal Sage Scrub City South B Trial Plot in the fourth quarter of 2023.

Methods

On December 13, 2023, Rincon Consultants monitored the Coastal Sage Scrub City South B Trial Plot (trial plot) at the Sunshine Canyon Landfill, which constitutes the fourth quarter of monitoring for 2023. 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-meter² quadrats that are randomly located 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 in Attachment A, 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)

Absolute Cover

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

- **Percent basal cover (shrubs).** Visual estimate of the amount of basal cover within each quadrat for all shrub species.



- **Percent basal cover (herbs).** Visual estimate of the amount of basal cover within each quadrat for all herbaceous species.
- **Percent bare ground.** Visual estimate of the amount of available bare ground with no vegetation.
- **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.

Percent Cover

The following quantitative 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 meter point was tallied, including areas of bare ground, rock and other.

Field Results

Below are the average data collected for each planting method.

Absolute Cover (Qualitative)

Soil imprinting with hand broadcast overseeded drainage swales – Quadrats A and G (average)

- Percent basal cover (shrubs) – 3%
- Percent basal cover (herbs) – 13%
- Percent bare ground – 58%
- Percent rock or other – 3%
- Percent canopy (shrubs) – 27%
- Percent canopy (herbs) – 19%

Soil imprinting – Quadrats B, F, and H (average)

- Percent basal cover (shrubs) – 14%
- Percent basal cover (herbs) – 9%
- Percent bare ground – 47%
- Percent rock or other – 3%
- Percent canopy (shrubs) – 32%
- Percent canopy (herbs) – 20%

Broadcast seeding – Quadrat C

- Percent basal cover (shrubs) – 30%



- Percent basal cover (herbs) – 3%
- Percent bare ground – 15%
- Percent rock or other – 3%
- Percent canopy (shrubs) – 100%
- Percent canopy (herbs) – 6%

Broadcast seeding with soil imprinting – Quadrats D and I (average)

- Percent basal cover (shrubs) – 5%
- Percent basal cover (herbs) – 11%
- Percent bare ground – 65%
- Percent rock or other – 7%
- Percent canopy (shrubs) – 19%
- Percent canopy (herbs) – 17%

Soil Imprinting and hand broadcast – Quadrat E

- Percent basal cover (shrubs) – 10%
- Percent basal cover (herbs) – 2%
- Percent bare ground – 70%
- Percent rock or other – 1%
- Percent canopy (shrubs) – 34%
- Percent canopy (herbs) – 9%

Percent Cover (Quantitative)

The representation of each species within each 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 upon the point intercept method is presented in Table 1 through Table 5 below.



Table 1 Soil Imprinting with Hand Broadcast Overseeded Drainage Swales – Quadrats A and G (Average)

Species	Quadrat A		Quadrat G	
	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs				
<i>Acmispon glaber</i>	1	2%	1	2%
<i>Artemisia californica</i>	1	2%		
<i>Atriplex lentiformis</i>			8	16%
<i>Atriplex polycarpa</i>			8	16%
<i>Atriplex spinosa</i>			1	2%
<i>Baccharis pilularis</i>	1	2%		
<i>Baccharis salicifolia</i>				
<i>Encelia californica</i>				
<i>Salvia apiana</i>				
<i>Salvia mellifera</i>				
Non-Native Shrubs				
<i>Atriplex semibaccata</i>				
Native Herbs				
<i>Achillea millefolium</i>				
<i>Eschscholzia californica</i>				
<i>Elymus triticoides</i>	3	6%	7	14%
<i>Nasella pulchra</i>				
<i>Sisyrinchium bellum</i>				
Non-Native Herbs				
<i>Centaurea melitensis</i>	3	6%		
<i>Erodium cicutarium</i>				
<i>Hirschfeldia incana</i>	3	6%	1	2%
<i>Hordeum murinum</i>				
<i>Salsola tragus</i>				
Bare ground	38	76%	24	48%
	Quadrat A	Quadrat G	A and G (% Cover)	
Percent Cover Native Shrub	6%	36%	21%	
Percent Cover Native Herb	6%	14%	10%	
Percent Cover Non-Native Shrub	0%	0%	0%	
Percent Cover Non-Native Herb	12%	2%	7%	
Percent Bare Ground	76%	48%	62%	



Table 2 Soil Imprinting – Quadrats B, F, and H (Average)

Species	Quadrat B		Quadrat F		Quadrat H	
	Number of Hits	Percent Cover	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs						
<i>Acmispon glaber</i>	1	2%			1	2%
<i>Artemisia californica</i>	11	22%				
<i>Atriplex lentiformis</i>			3	6%	4	8%
<i>Atriplex polycarpa</i>						
<i>Baccharis pilularis</i>	13	26%				
<i>Encelia californica</i>	1	2%				
<i>Encelia farinosa</i>	3	6%				
<i>Eriogonum fasciculatum</i>	1	2%	3	6%	7	14%
<i>Isocoma menziesii</i>	5	10%				
<i>Salvia apiana</i>	1	2%				
<i>Salvia leucophylla</i>	1	2%				
<i>Salvia mellifera</i>	8	16%				
<i>Sambucus mexicana</i>	1	2%				
Non-Native Shrubs						
<i>Atriplex semibaccata</i>						
Native Herbs						
<i>Elymus triticoides</i>	1	2%	1	2%	1	2%
<i>Helianthus annuus</i>						
Non-Native Herbs						
<i>Bromus diandrus</i>						
<i>Bromus rubens</i>			3	6%	2	4%
<i>Centaurea melitensis</i>						
<i>Festuca myuros</i>						
<i>Chenopodium album</i>						
<i>Hordeum murinum</i>						
<i>Mesembryanthemum nodiflorum</i>			16	32%	3	6%
<i>Polygonum aviculare</i>						
<i>Salsola tragus</i>						
Bare ground	3	6%	24	48%	32	64%
	Quadrat B		Quadrat F		Quadrat H	B, F, H (% cover)
Percent Cover Native Shrub	92%		12%		24%	43%
Percent Cover Native Herb	2%		2%		2%	2%
Percent Cover Non-Native Shrub	0%		0%		0%	0%
Percent Cover Non-Native Herb	0%		38%		10%	16%
Percent Bare Ground	6%		48%		64%	39%



Table 3 Broadcast Seeding – Quadrat C

Species	Quadrat C	
	Number of Hits	Percent Cover
Native Shrubs		
<i>Acmispon glaber</i>	12	24%
<i>Artemisia californica</i>	25	50%
<i>Atriplex lentiformis</i>		
<i>Atriplex polycarpa</i>		
<i>Atriplex spinosa</i>		
<i>Baccharis pilularis</i>		
<i>Encelia californica</i>	2	4%
<i>Encelia farinosa</i>		
<i>Eriogonum fasciculatum</i>		
<i>Isocoma menziesii</i>		
<i>Salvia apiana</i>		
Native Herbs		
<i>Achillea millefolium</i>		
<i>Eschscholzia californica</i>		
<i>Elymus triticoides</i>		
<i>Nasella pulchra</i>		
<i>Sisyrinchium bellum</i>		
<i>Vulpia microstachys</i>		
Non-Native Herbs		
<i>Centaurea melitensis</i>		
<i>Echinochloa crus-galli</i>		
<i>Erodium cicutarium</i>		
<i>Hirschfeldia incana</i>	3	6%
<i>Hordeum vulgare</i>		
<i>Marrubium vulgare</i>		
Bare ground	8	16%
Quadrat C (% cover)		
Percent Cover Native Shrub	78%	
Percent Cover Native Herb	0%	
Percent Cover Non-Native Shrub	0%	
Percent Cover Non-Native Herb	6%	
Percent Bare Ground	16%	



Table 4 Broadcast Seeding with Soil Imprinting – Quadrats D and I (Average)

Species	Quadrat D		Quadrat I	
	Number of Hits	Percent Cover	Number of Hits	Percent Cover
Native Shrubs				
<i>Acmispon glaber</i>				
<i>Artemisia californica</i>				
<i>Atriplex lentiformis</i>	4	8%		
<i>Atriplex polycarpa</i>			2	4%
<i>Eriogonum fasciculatum</i>			5	10%
<i>Isocoma menziesii</i>			3	6%
<i>Opuntia littoralis</i>				
Non-Native Shrubs				
<i>Atriplex semibaccata</i>			7	14%
Native Herbs				
<i>Achillea millefolium</i>				
<i>Descurainia pinnata</i>				
<i>Elymus triticoides</i>	2	4%	4	8%
<i>Nasella pulchra</i>				
<i>Sisyrinchium bellum</i>				
<i>Vulpia microstachys</i>				
Non-Native Herbs				
<i>Amaranthus albus</i>			1	2%
<i>Avena barbata</i>				
<i>Bromus diandrus</i>			1	2%
<i>Bromus rubens</i>	3	6%	7	14%
<i>Centaurea melitensis</i>				
<i>Festuca myuros</i>				
<i>Hirschfeldia incana</i>	1	2%		
<i>Hordeum murinum</i>				
<i>Mesembryanthemum nodiflorum</i>	7	14%		
<i>Polygonum aviculare</i>				
<i>Salsola tragus</i>			1	2%
Bare ground	33	66%	19	38%
	Quadrat D		Quadrat I	D and I (% cover)
Percent Cover Native Shrub	8%		20%	14%
Percent Cover Native Herb	4%		8%	6%
Percent Cover Non-Native Shrub	0%		14%	7%
Percent Cover Non-Native Herb	22%		20%	21%
Percent Bare Ground	66%		38%	52%



Table 5 Soil Imprinting and Hand Broadcast – Quadrat E

Quadrat E		
Species	Number of Hits	Percent Cover
Native Shrubs		
<i>Acmispon glaber</i>		
<i>Artemisia californica</i>	2	4%
<i>Atriplex lentiformis</i>	5	10%
<i>Atriplex polycarpa</i>	3	6%
<i>Atriplex spinosa</i>		
<i>Baccharis pilularis</i>		
<i>Encelia californica</i>		
<i>Encelia farinosa</i>	2	4%
<i>Eriodictyon californicum</i>	3	6%
<i>Eriogonum fasciculatum</i>	6	12%
<i>Isocoma menziesii</i>	3	6%
<i>Opuntia littoralis</i>		
<i>Salvia apiana</i>		
<i>Salvia mellifera</i>		
Non-Native Shrubs		
<i>Atriplex semibaccata</i>		
Native Herbs		
<i>Achillia mellifolium</i>		
<i>Eschscholzia californica</i>		
<i>Elymus triticoides</i>		
Non-Native Herbs		
<i>Bromus diandrus</i>		
<i>Centaurea melitensis</i>		
<i>Hirschfeldia incana</i>		
<i>Hordeum vulgare</i>		
<i>Mesembryanthemum nodiflorum</i>	2	4%
Bare ground	24	48%
Quadrat E (% cover)		
Percent Cover Native Shrub	48%	
Percent Cover Native Herb	0%	
Percent Cover Non-Native Shrub	0%	
Percent Cover Non-Native Herb	4%	
Percent Bare Ground	48%	



Discussion

Table 6 below provides a summary of the percent cover of native and non-native shrubs and herbs, including areas of bare ground within the Coastal Sage Scrub City South B Trial Plot.

Table 6 Summary of Percent Cover for Each Planting Method Using the Point Intercept Method

	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 (Quadrats D and I)	Soil Imprinting and Hand Broadcast (Quadrat E)
Percent Cover Native Shrub	21%	43%	78%	14%	48%
Percent Cover Native Herb	10%	2%	0%	6%	0%
Percent Cover Non-Native Shrub	0%	0%	0%	7%	0%
Percent Cover Non-Native Herb	7%	16%	6%	21%	4%
Percent Bare Ground	62%	39%	16%	52%	48%

The trial plot was established in November 2018. As described in previous monitoring reports, the 2019 Saddleridge Fire burned a large portion of the trial plot, but mostly spared the sample plots. The fire damaged the irrigation system, which is no longer functioning.

As discussed in previous reports, native species have established since the fire, and primarily include shrub species such as brittlebush (*Encelia farinosa*), coast prickly pear (*Opuntia littoralis*), big saltbush (*Atriplex lentiformis*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), and coastal goldenbush (*Isocoma menziesii*). Native shrub species resprouted from burned stumps following the Saddleridge Fire, from the pre-existing seedbank, and from seeds installed during the seeding treatments performed during creation of the trial plot. The trial plot appears to have mostly recovered from the fire, as evidenced by substantial native shrub establishment and growth within the trial plot. Below-average rainfall in 2021 and 2022 throughout southern California negatively impacted native species growth in the trial plot. In particular, native herbaceous species quantitative cover remained at or below five percent cover in 2021 and 2022. In the winter of 2022 and spring of 2023, above-average rainfall was observed throughout southern California. This above-average rainfall positively influenced native shrub and herbaceous species cover (Table 6). Native shrub species that increased in cover include California sagebrush, California buckwheat, coyote brush (*Baccharis pilularis*), blue elderberry (*Sambucus mexicana*), black sage (*Salvia mellifera*), deerweed, big saltbush, allscale saltbush (*Atriplex polycarpa*), and coastal goldenbush. Additionally, beardless wild rye (*Elymus triticoides*; a native herbaceous grass species) showed a notable increase in cover.

Non-native plant cover, which increased in all of the treatment types between the fourth quarter of 2022 and the first quarter of 2023, has declined between the first and fourth quarters of 2023 (Table 6). Commonly occurring non-native plant species observed in the trial plot include small flowered iceplant (*Mesembryanthemum nodiflorum*), redstem filaree (*Erodium cicutarium*), tocalote (*Centaurea melitensis*), short podded mustard (*Hirschfeldia incana*), foxtail barley (*Hordeum murinum*), and red brome (*Bromus rubens*). Non-native plant species were not observed in flower during the fourth quarter of 2022, as they were either setting seed or germinating. Small flowered iceplant, which was observed



throughout the trial plot in the third quarter of 2023, has substantially declined due to natural senescence. Non-native plant species cover is expected to increase throughout the winter and into the spring of 2024 when precipitation is more abundant.

Broadcast seeding (Quadrat C) had the highest percent cover of native shrubs using the point intercept method (78 percent) and represents an increase in cover (14 percent) since the fourth quarter of 2022. This increase is likely a result of the aforementioned above-average rainfall that southern California received in the winter of 2022 and spring of 2023. Deerweed, which is one of the most dominant species in Quadrat C, is an early-successional shrub species that is extremely beneficial for restoration purposes, as it fixes nitrogen into the soil and thereby increases soil fertility for other native plant species. The second highest percent cover of native shrubs was in the soil imprinting and hand broadcast treatment (Quadrat E; 48 percent), and the third highest was the soil imprinting treatment (Quadrats B, F, and H; 43 percent; Table 6). The percent cover of native herbaceous plant species was low in all planting methods, ranging between zero and 10 percent in the fourth quarter of 2023. This is consistent with observations made in previous sampling events.

Recommendations

Successional Growth and Weed Control

Wildfires in Southern California have become more common in recent years and have impacted on the native landscape. Non-native weed control is essential in establishing post-fire restoration sites and is recommended by organizations such as the California Department of Fish and Wildlife Service and the California Society of Ecological Restoration. Successional regrowth of herbaceous non-native species is to be expected within the first two to three years following a wildfire, which is currently occurring at the trial plot. Native shrubs are expected to recover over a longer period through germination of existing seed within the topsoil and basal growth from charred plants. Native shrubs have shown notable growth in the past two years, and now appear to be well established in the trial plot.

Successional growth of herbaceous species is also important, as native herbaceous species provide natural erosion of topsoil. To promote establishment and growth of native herbaceous species, controlling the spread of non-native herbaceous species such as foxtail barley, red brome, and short podded mustard is essential. Reducing non-native herbaceous species growth minimizes negative competitive effects on native herbaceous and woody species for water, nutrients, and sunlight. Weed maintenance should occur no less than every four months, and special attention should be afforded to minimizing impacts to native grasses that may appear to be non-native (i.e., beardless wild rye), native seedlings, and native shrub resprouts. Weed maintenance should be scheduled to maximize removal of non-native species prior to seed set, which typically occurs in spring between the months of February and April, but may also occur throughout the growing season based upon water availability.

Supplemental Irrigation

While southern California received above-average rainfall in the winter of 2022 and spring of 2023, supplemental irrigation is a valuable restoration technique to promote re-establishment of native vegetation, particularly during the dry months of the year (i.e., summer and fall). As described above, native herbaceous vegetation has continued to be notably low throughout all planting methods. If native herbaceous vegetation continues to be sparse throughout the trial plot, and/or if native shrubs senesce or show indicators of drought stress, the irrigation system within the trial plot should be re-installed to increase water availability and promote seed germination and re-establishment of native vegetation.



References

John Minch and Associates, Inc. (JMA). 2014. 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.

Thank you for the opportunity to work with you on this important Project. Please contact Greg Ainsworth if you have questions concerning the contents of this report. He may be reached by telephone at (818) 564-5544, or by email at gainsworth@rinconconsultants.com.

Sincerely,
Rincon Consultants, Inc.

A handwritten signature in black ink, appearing to read "Greg Ainsworth", with a large, sweeping flourish at the end.

Greg Ainsworth
Natural Resources Director

A handwritten signature in black ink, appearing to read "Kyle Gern", with a large, sweeping flourish at the end.

Kyle Gern
Biologist

Attachments

- Attachment A Deck B Revegetation Area Quadrat Layout
- Attachment B Representative Site Photographs

Attachment A

Deck B Revegetation Area Quadrat Layout

Deck B Revegetation Area Quadrat Layout



Attachment B

Photographs of Sample Plots



Photograph 1. Quadrat A facing northeast from southwest corner (December 13, 2023).



Photograph 2. Quadrat B facing northeast from southwest corner (December 13, 2023).



Photograph 3. Quadrat C facing northeast from southwest corner (December 13, 2023).



Photograph 4. Quadrat D facing northeast from southwest corner (December 13, 2023).



Photograph 5. Quadrat E facing northeast from southwest corner (December 13, 2023).



Photograph 6. Quadrat F facing northeast from southwest corner (December 13, 2023).



Photograph 7. Quadrat G facing northeast from southwest corner (December 13, 2023).



Photograph 8. Quadrat H facing northeast from southwest corner (December 13, 2023).



Photograph 9. Quadrat I facing northeast from southwest corner (December 13, 2023).

ATTACHMENT 6



DRAWING 1



