

3.0 RESPONSES

3.1 MITIGATION FOR ADVERSE IMPACTS ON SPECIAL-STATUS PLANTS

Reviewer’s Statement: Landfill expansion on Phase II land will destroy populations of San Joaquin sparscale (*Atriplex joaquiniana*) and crownscale (*Atriplex coronata*).

Recommendation 1. Appropriate mitigation measures include planting seeds and monitoring populations in appropriate habitats within mitigation properties.

Response 1. Small colonies of San Joaquin sparscale (CNPS List 1B) were mapped in 1998 on the Phase II Expansion parcel. Likely due to a combination of heavy grazing, disking for fire breaks, and non-optimal rainfall, this sparscale was not observed for several years. A few small colonies reappeared in 2004 and then again in 2006 (about 10 individuals). In 2007, approximately 40 individuals were observed on the parcel [E. Buxton (LSA), September 13, 2007]. Crownscale (CNPS List 4) has never been recorded from the Phase II Expansion parcel proper. This species occurs in one small stand directly west of Pond 3 on the Eastern Valley parcel. In 2007, the stand consisted of three plants [Z. Akulova (LSA), July 6, 2007].

Large, robust populations of San Joaquin sparscale and crownscale are present on the Director’s Guild parcel which is proposed for preservation as part of the mitigation plan. Colonies were found in 2004 and additional colonies were located during surveys in 2006 and 2007. The populations were mapped (Figure 2) and monitored in 2007 to assess impacts to the plants from grazing (May 2007). Approximately 1,000 individuals of San Joaquin sparscale and 3,000 individuals of crownscale were counted during the 2007 monitoring. Although many tops of plants were removed during grazing, side branches grew, flowered, and set seed.

San Joaquin sparscale and crownscale require alkaline soils and little or no competition from other species. Such conditions are not present on the other mitigation parcels; therefore, seeding of the two species on Griffith Ranch or Southern Hills is not recommended.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*), a plant recently included in CNPS’s List 1B (March 2004), was observed on the Phase II site during the 2000 survey (EDAW, 2003) when it was not considered a special-status species. This plant population will be lost during the Phase II landfill expansion. It was mapped by LSA based on surveys in 2006 and 2007 (Figure 3). Pappose tarplant occurs in abundance on the Director’s Guild parcel (Figure 2) as well as in a few stands on the Griffith Ranch parcel.

San Joaquin sparscale, crown scale, and pappose tarplant will be preserved in perpetuity on the Director’s Guild parcel. Monitoring of the three species to assess distribution and reproductive success will occur every three years.

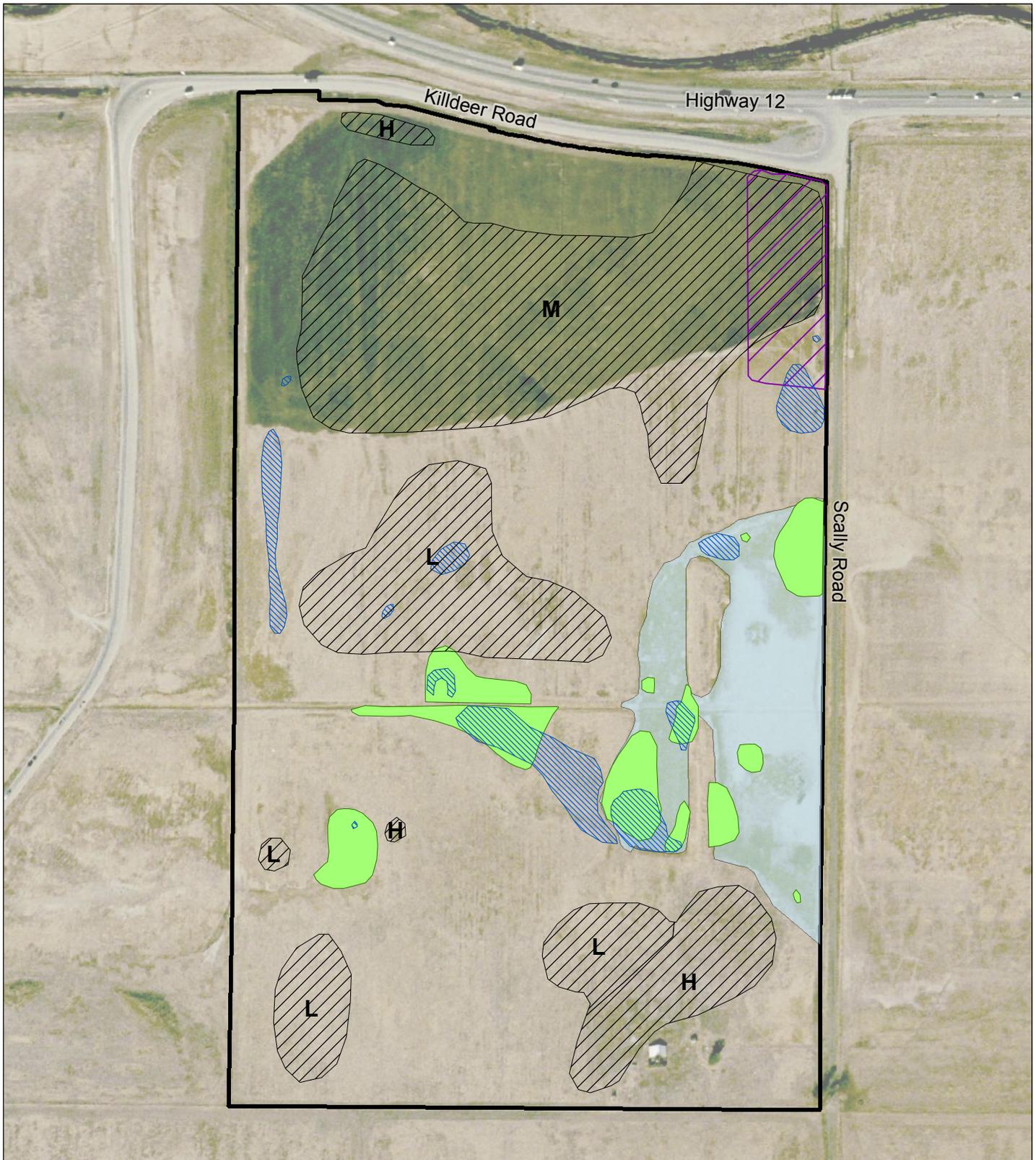
3.2 MITIGATION FOR ADVERSE IMPACTS ON SENSITIVE PLANT COMMUNITIES/HABITATS

Reviewer’s Statement. Landfill expansion on the Phase II parcel will result in the permanent loss of 179 acres² of grassland habitats that are potentially suitable for sensitive plant communities found on the mitigation sites, i.e., Wildflower Field, Valley Needlegrass Grassland, and Elderberry Shrubs. Species typical of these communities were found on the Phase II Expansion site, but their condition is degraded due to human-caused disturbances.

Recommendation 2. Vegetation sampling showed that cover of native species varies from 8 – 20 percent in the Phase II expansion area. Native Species Component (NCS) = [(# acres) x (percent native species cover)] can be calculated. With a mean of 14 percent cover of native species, the expansion area supports 25 acres of 100 percent cover by native species. Because achieving 100 percent cover is unrealistic, the mitigation goal should be set as achieving an increase in native species abundance on mitigation lands to offset losses on Phase II expansion lands. Management of the mitigation properties should focus on restoration and active improvement of existing native vegetation.

Response 2. The Mitigation and Monitoring Plan (MMP) (LSA and ESP, 2006) was developed to address the typical regulatory issues that are considered on projects similar to that of the Potrero Hills Landfill. It is not intended to mitigate for every resource present such as non-native grasslands, impacts to which are not significant in CEQA analysis unless these grasslands also provide habitat for special-status species or contain jurisdictional wetlands. In our opinion, the actual cover on most of the Phase II expansion area consists of non-native species. During surveys in August 2006, LSA visually estimated the cover by natives at about one percent, but this percentage will vary with the season. It is highest in the late spring at which time cover by natives were visually estimated at <5 percent. Certain areas, such as along the northern edge of the parcel which supports some common natives, including turkey mullein (*Eremocarpus setigerus*), soaproot (*Chlorogalum pomeridianum*), hog-fennel (*Lomatium utriculatum*), and blue-dicks (*Dichelostemma capitatum*) and the north-facing slope, which supports relatively large colonies of Fitch’s tarweed (*Hemizonia fitchii*), hayfield tarweed (*H. congesta*), and virgate tarweed (*Holocarpha virgata*), are not representative of most of the expansion site. It is, therefore, misleading to assume that the average cover by natives is 14 percent throughout the expansion area, thus 25 acres with a 100 percent cover by natives. Toad rush (*Juncus bufonius*), a common native, is present in wet swales in the lower portions of the site.

² The current revised footprint is now only 167.63 acres (See Revised Mitigation Proposal, Section 1.3).



— PARCEL BOUNDARY

PLAYA POOL

SAN JOAQUIN SPEARSCALE (*ATRIPLEX JOAQUINANA*)
(2007 SURVEY)

CROWNSCALE (*ATRIPLEX CORONATA*)
(2007 SURVEY)

ALKALI MILKVETCH (*ASTRAGALUS TENER* VAR. *TENER*)
(SPARSE) (2006 SURVEY)

PAPPOSE TARPLANT
(*CENTROMADIA PARRYI* SSP. *PARRYI*)
DENSITY (PER 10M²) (2006 SURVEY)

H = HIGH (~200 PLANTS)

M = MEDIUM (~50 PLANTS)

L = LOW (1-5 PLANTS)

[Contra Costa Goldfields (*Lasthenia conjugens*) Not Shown on Map]

FIGURE 2

Potrero Hills Landfill
Phase II Expansion

Director's Guild Parcel
Special-status
Plant Locations



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FIGURE 3

— BOTANICAL SURVEY AREA BOUNDARY

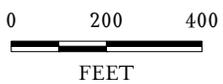
▣ PAPPPOSE TARPLANT (*CENTROMADIA PARRYI* SSP. *PARRYI*)
2007 SURVEY

■ PAPPPOSE TARPLANT (*CENTROMADIA PARRYI* SSP. *PARRYI*)
2006 SURVEY

▨ SAN JOAQUIN SPEARSCALE (*ATRIPLEX JOAQUINANA*)
2007 SURVEY

Potrero Hills Landfill
Phase II Expansion

Phase II Expansion Area
Special-status
Plant Locations



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Although strictly speaking, no mitigation is required under CEQA for impacts to non-native grassland proper, the revised mitigation plan for the Phase II expansion proposes to preserve, manage, and enhance over 565 acres of grassland as mitigation for impacts to this habitat. The focus of the mitigation is in large part for California tiger salamander (*Ambystoma californiense*) upland habitat, but mitigation for grassland vegetation will also occur on the Director's Guild parcel, Southern Hills parcel, Pond 5 Buffer area, and the Griffith Ranch parcel. Grassland vegetation enhancement will be accomplished by a carefully managed grazing regime and periodic mowing during the appropriate time of the year based on monitoring results in order to minimize thatch and non-native grass competition. Mowing, when deemed appropriate by the resource manager, will occur before seedset, the timing of which may vary from year to year. This may be combined with re-seeding with native grasses and forbs to provide competition for the non-native grasses.

Elderberry shrubs on the north-facing slope of the Phase II area will not be impacted by the landfill expansion. The locations of the shrubs were recently mapped using GPS and all the elderberry shrubs lie outside the proposed Phase II expansion area. The Southern Hills parcel will be preserved and managed in perpetuity as plant and animal habitat and no impacts to elderberry shrubs will occur.

See *Response 5* (below) for further discussion on measures to enhance native plant diversity with grazing, mowing, invasive non-native plant control, and native plant revegetation as proposed in the revised Grassland Management Plan (LSA, 2007).

Recommendation 3. Twenty-five (25) acres of 100 percent native grassland should be used as a measurement of mitigation success. Cover estimates should be based on a statistically defensible number of observations, as well as more objective measurement of species cover.

Response 3. See *Response 2*. The Potrero Hills Landfill will adhere to a monitoring plan that is acceptable by the agencies. The collection of data for a statistically defensible number of observations could be extremely time-consuming and costly depending on the variation in cover, if done on all the mitigation sites. Enhanced grassland/wildflower fields on the Director's Guild and Southern Hills parcels will be monitored, using an adequate number of observation sites to determine the approximate cover by native and non-native species. A relatively objective method of assessing cover by various species can be obtained by having at least two "evaluators."

Recommendation 4. Restoration and management protocols should be more specific and clarified in the MMP. Seed mixtures should be identified. (Seed mixtures described in the Sections 6.1.2, 6.2.1, and 6.2.2 of the MMP include both upland and wetland species.)

Response 4. An exotic-species control/restoration/management plan will be developed that will outline a protocol in more detail than the present MMP (LSA and ESP, 2006). Due to an oversight when assembling the list of species recommended in a seed mixture for wetlands (in the MMP), species associated with wetlands as well as uplands were included in the list.

Appropriate species based on ecological requirements will be used in revegetation efforts. Bicolor lupine (*Lupinus bicolor*) and tomcat clover (*Trifolium wildenovii*), both upland species, will not be used in created-wetland seeding, nor will Pacific meadow-foxtail (*Alopecurus saccatus*), an obligate wetland plant, be used in upland areas.

3.3 GRASSLAND MANAGEMENT PLAN

Reviewer's Statement. “The Grassland Management Plan focuses on estimating rangeland carrying capacity for livestock but does not address the effect of grazing on native species. The plan does not show that grazing will enhance the percentage or cover of native species, or indicate a desire to do so. Studies in California’s inner northern Coast Ranges (Safford and Harrison, 2001) showed that grazing effects on floristic composition depends on soil fertility. On fertile soils, grazing increased the proportion of exotic species, whereas grazing on serpentine soils with low fertility increased the proportion of native species. Soils in the Landfill grasslands are not serpentine, and the high abundance of the non-native *Avena fatua*, *A. barbata*, *Bromus diandrus*, *Hordeum murinum* ssp. *leporinum*, and *Lolium multiflorum* typical of rich soils indicates high soil fertility in the mitigation sites. Therefore, we can expect that, in Landfill grasslands, continuation of existing grazing practices will maintain the existing dominance by exotic species and will not increase native species composition. Thus, I am not convinced that, in this case, grazing alone is an adequate tool for mitigation.”

Recommendation 5. To increase the likelihood of enhancing the native vegetation component on mitigation lands, grazing should be used as only one management and restoration tool, and other tools—such as burning, mowing, control of noxious weeds through appropriate management techniques, and plant seeding—also should be considered.

Response 5. The revised Grassland Management Plan (GMP) (LSA, 2007) proposes moderate levels of seasonal grazing in the winter and spring, under close direction of a Resource Manager trained and experienced in rangeland ecology and using an adaptive management approach. The GMP “focus” on carrying capacity is only one of many suggestions to ensure that grazing is conducted in a manner most likely to enhance grassland resource values. The study cited by the reviewer (Safford and Harrison, 2001) was conducted on higher elevation lands that were grazed during a different season (spring-summer) and without professional rangeland management for resource objectives. Hence, those findings do not apply to conservation grazing under careful management during the winter and spring. A more relevant study (Marty, 2005) found that moderate season-long (winter-spring) livestock grazing significantly reduced non-native grass cover and increased native plant diversity as compared with no grazing in vernal pool landscapes of the Sacramento Valley. In addition, the GMP does not propose grazing alone to increase native grassland species diversity; it also includes mowing, burning, invasive non-native plant control, and re-seeding with native grassland species along with carefully managed grazing and can be expected to substantially enhance native plant diversity.

For mowing and seeding, please see **Response 2**; for control of noxious weeds, please see **Response 11**.

3.4 IMPACTS OF HABITAT CONVERSION FOR MITIGATION USES

Reviewer's Statement. It is unclear where the 3.78-acre wetland area will be created, near Pond 7 on the Southern Hills parcel or on Griffith Ranch. A valuable wetland (wet meadow) is located within the Southern Hills parcel near Pond 7.

Recommendation 6. The location of created ponds should be specified. It is important that the wet meadow on the Southern Hill mitigation site not be converted to a stock-pond or that this wetland is deprived of any substantial portion of its water source.

Response 6. The 3.78-acre wetland will be created on the Griffith Ranch parcel. No seasonal wetland or stock-pond will be created in, or near the location of the wet meadow; therefore, the hydrology in this area will not be altered and the wet meadow will not be impacted. The location of ponds and wetlands to be created are shown in Figures 11, 13, 14 of the MMP (LSA and ESP, 2006).

Recommendation 7. Topsoil from existing stock ponds should not be used to inoculate plant species in new pools.

Response 7. Topsoil from stock-ponds will not be used in the seeding of newly created vernal pools/seasonal wetlands on the Director's Guild and Griffith Ranch parcels; instead, with permission from the USFWS due to the presence of a federally endangered species [Contra Costa goldfields (*Lasthenia conjugens*)], topsoil from vernal pools on the Director's Guild will be used on both parcels. The amount of seed-containing topsoil to be taken will be evaluated in order not to impact the seedbank in the existing pools.

The removal of the berm/road within the playa pool on the Director's Guild parcel will create additional habitat (0.42 acre) for vernal pool species. It is expected that the newly created pool area will reseed naturally, but some seeds will be raked and vacuumed from adjacent pool areas to supplement the natural reseeding. Additionally, a swale connecting the playa pool with the western vernal pool area on the Director's Guild parcel will add 0.77 acre of Contra Costa goldfields habitat. As described in the MMP, Section 4.6.2 (LSA and ESP, 2006), the uplands around the created pools may be seeded with commercial seeds. These seeds would not, however, be used in the created seasonal wetlands. Commercial seed would be used in the wetlands only if seed collection from existing onsite vernal pools is not allowed. This is in agreement with Dr. Muick's recommendation [Table 3-1, 4.6 *Vegetation* (pages 3-14) (Chapter 3)] to preserve the biological diversity currently found on the sites.

3.5 MITIGATION AT DIRECTOR'S GUILD PARCEL

Reviewer's Statement. The aquatic habitats at the Director's Guild parcel are very different from those in the Phase II extension area; therefore, mitigation is out-of-kind rather than in-kind.

Recommendation 8. The rationale for using the Director's Guild parcel as mitigation for the Phase II expansion area should be clearly articulated and justified. Functional ecosystem values should be evaluated on a unit-per-unit basis and mitigation ratios calculated. Measurement of the mitigation success should be specifically identified.

Response 8. Floristically, the aquatic habitats on the Director's Guild parcel are different from the aquatic habitat on the Phase II expansion area. However, mitigation for aquatic habitats on the Phase II site is not only required because they are jurisdictional areas, but because they occur within designated critical habitat for two listed species: vernal pool tadpole shrimp and vernal pool fairy shrimp. The Director's Guild site provides high quality, occupied habitat for these species that would be preserved and managed in perpetuity. The *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (U.S. Fish and Wildlife Service, 2005) has set criteria for the percent of suitable habitat to be protected within each of the core areas of the vernal pool regions. For the vernal pool fairy shrimp and vernal pool tadpole shrimp the percent of suitable habitat that must be protected within the Jepson Prairie core area in order to recover the species has been set at 95 percent. In terms of this project, for every 0.5 acre of suitable habitat lost, 9.5 acres of suitable habitat must be protected (i.e. a 19:1 mitigation ratio). In the Phase II expansion area, 0.61 acre of habitat possessing the primary constituent elements for vernal pool fairy shrimp and vernal pool tadpole shrimp will be impacted by the proposed project.

In order to meet the 19:1 mitigation requirement necessary to achieve the 95 percent recovery goal outlined in the recovery plan, PHLF would have to preserve 11.59 acres of suitable habitat for vernal pool crustaceans within the designated critical habitat unit (Jepson Prairie core area). To meet this requirement PHLF is proposing to preserve 8.83 acres of playa pool habitat on the Director's Guild parcel and 4.57 acres of habitat on the Southern Hills parcel (Pond 5 – 0.45 acre, Pond 7 – 0.34 acre, and Seasonal Wetland 4 – 3.78 acres). This equates to 13.4 acres of protected habitat for vernal pool crustaceans within designated critical habitat, offering almost 15 percent more than what would be necessary to meet the recovery plan goals.

In addition to requirements for vernal pool crustaceans, the aquatic habitats on the Phase II expansion area have been severely degraded by intensive grazing and other human disturbances. It is reasonable to justify mitigating for floristically mediocre wetlands on the Phase II expansion parcel by preserving high quality vernal pool habitat (playa pools) on the Director's Guild parcel. The vernal pools on the Director's Guild parcel supports the largest known population of the federally endangered Contra Costa goldfields and, as mentioned, provides habitat for the listed vernal pool tadpole shrimp (*Lepidurus packardi*) and conservancy fairy shrimp (*Branchinecta conservatio*). It is, therefore, our opinion that no functional ecosystem values on a unit-per-unit basis need to be evaluated.

3.6 MITIGATION AT SOUTHERN HILLS PARCEL

Reviewer's Statement. A moist wetland meadow is present along the drainage west of Pond 7 on the Southern Hills parcel. Native species present are *Rorippa nasturtium-aquaticum*, *Scirpus robustus*, *Juncus balticus*, *Hordeum brachyantherum*, and *Agrostis exarata*. It was not clear in the MMP where the proposed new ponds will be constructed and whether they could affect this wetland area.

Recommendation 9. Exotic species (*Trifolium fragiferum*, *Lolium multiflorum*, *Polypogon monspeliensis*, *Hordeum marinum* ssp. *gussoneanum*, *Lotus corniculatus*, and *Centaurea calcitrapa*) should be controlled. A restoration and management plan should be developed for the meadow to enhance its native species component. The meadow could be used for out-of-kind mitigation of native species loss on the Phase II expansion parcel.

Response 9. Please see **Response 6** for the location of the created wetlands. It is our opinion that non-native species are dominant in the wet meadow; nevertheless, an exotic-species control/restoration/management plan will be developed that includes this wetland. This plan will outline the steps to be taken to control the weeds in the wet meadow and propose a seeding/planting plan of native species, potentially including appropriate shrub and tree species. In order for such a plan to be successfully implemented, the area will be fenced off from cattle with the option to have the area grazed as deemed appropriate based on monitoring results.

Recommendation 10. The relatively narrow bottom of the valley is covered by mostly non-native species and has bare ground along cattle paths, and erosion. This bottom of the valley likely represents a temporal stream habitat that formerly supported riparian vegetation, including trees and shrubs. Sustainable management practices that can support the establishment of native vegetation should be developed.

Response 10. There is no indication that woody riparian vegetation existed along the stream channel in the Southern Hills in the past. This intermittent stream most likely did not support trees and shrubs as cattle-grazing would not have eliminated all such vegetation or evidence of such vegetation. It is our opinion that establishing a riparian corridor supporting native vegetation is not feasible as long as there are cattle on the site. The narrow valley bottom is the natural “route” for the cattle; therefore, trampling and grazing by cattle is unavoidable and restoration to native vegetation is not advisable in this area. However, restoration of native species, including appropriate shrub and tree species, is proposed in the wet meadow, which will be fenced off from cattle. Please see **Response 9** for the restoration/management of the wet meadow adjacent to the stream.

3.7 CONTROL OF NOXIOUS WEEDS

Reviewer's Statement. Noxious weeds such as *Carduus pycnocephalus*, *Centaurea calcitrapa*, *C. solstitialis*, *Convolvulus arvensis*, *Cynodon dactylon*, *Malvella leprosa*, and *Taeniatherum*

caput-medusae are common and abundant on the Landfill lands. Control of these weeds requires measures including controlled burning, mowing, hand-pulling, and application of herbicides.

Recommendation 11. An exotic species control plan should be developed for all mitigation areas, and for the existing Landfill and Phase II expansion areas, to increase post-operation habitat values and reduce seed sources that could affect adjacent mitigation and non-project lands. Special attention should be given to re-vegetation of open ground that will be created when the vertical height of the landfill will be increased. Open ground located at a higher elevation than the surrounding landscape increases the potential for spread of noxious weed species. Measures for controlling weeds on newly disturbed areas should be directly and clearly address in the MMP or subsequent implementation plans.

Response 11. Based in part on guidelines from the Solano County Weed Management Area (Solano County Weed Management Area (SCWMA), 2002) and the Greater Jepson Prairie Ecosystem Regional Management Plan (Witham, 2006) some of the target species mentioned above can be controlled (but not necessarily eliminated) through a combination of treatments as described in the MMP (LSA and ESP, 2006) and the Grassland Management Plan (LSA, 2007). Species that will receive treatment are:

- **Artichoke thistle (*Cynara cardunculus*).** This species is of the highest priority for control, because it occurs in a relatively few, discrete patches that could easily be eradicated. It is also highly competitive and virtually eliminates desirable plant species where it grows. It can be controlled by removing the flower-heads and spraying with the selective herbicide Garlon 3A® in March, or by cutting and spraying the base with 25 percent glyphosphate (Roundup®) from February through May.

Note: Artichoke thistle occurs only on the Southern Hills parcel where it was mapped by LSA in 2006.

- **Barbed goatgrass (*Aegilops triuncialis*).** This species is a top priority for control because it is apparently a recent introduction and has a high risk of spreading. It is unpalatable to livestock and out-competes more desirable forage species. It spreads rapidly in the fur of livestock and through wind dispersal of the seed heads. This species will be targeted for eradication before it has a chance to spread further. The Southern Hills parcel will be thoroughly surveyed for occurrences of goatgrass, which will be eradicated. Barbed goatgrass is most effectively controlled by two consecutive years of burning prior to seed maturation in the late spring or early summer. If burning is not feasible, repeated treatments with glyphosphate (Roundup®) for at least two consecutive years may be conducted prior to seed maturation in the early spring (February-April) followed by seeding of natives. Since glyphosphate is a non-selective herbicide, it should be applied by wicking or site-specific spot spraying to minimize impacts on non-target species. Repeated mowing of spot infestations of goatgrass prior to seed maturation may also be effective.

- **Perennial pepperweed (*Lepidium latifolium*)**. This species is a Category B invasive noxious weed and is rated high as an invasive weed by Cal-IPC (California Invasive Plant Council [Cal-IPC], 2006). It occurs on the Director's Guild parcel. This species is a high priority for control as it spreads quickly and forms a monoculture that can cause significant degradation of wetland and riparian habitats. Heavy grazing or mowing in the winter (January-February) followed by spraying the resprouting plants from mid-March through mid-May with a form of glyphosphate (Rodeo®) that is approved for use in aquatic sites will be conducted as it was shown to be more effective than herbicide alone (Renz and DiTomaso, 1998; Renz and DiTomaso, 2004). Since glyphosphate is a non-selective herbicide, it should be applied by wicking or site-specific spot spraying to minimize impacts on non-target species. Selective herbicides that have proven effective on this species may also be used, including 2,4-D, Telar®, or Arsenal®/Chopper®/Stalker® (Solano County Weed Management Area (SCWMA), 2002). Repeated treatments will probably be necessary to eradicate perennial pepperweed. The latter two herbicides should not be used near standing water.

Note: Perennial (broad-leaved) peppergrass occurs in one vernal pool and in ditches within and along the Director's Guild parcel. In May of 2007, seedlings of this species were hand-pulled in the vernal pool and resprouts were sprayed with Rodeo® in September. This species occurs in greater densities on the Hill Slough West Habitat Restoration Demonstration Project (CDFG). Control of this species on this preserve will be necessary in order for the control/eradication on the Director's Guild parcel to be successful.

- **Purple star-thistle (*Centaurea calcitrapa*)**. Although rated as a moderate priority invasive weed by the Cal-IPC (California Invasive Plant Council [Cal-IPC], 2006), this species is a high priority for control on the Potrero Hills sites because it is prevalent throughout Solano County creating more impacts than a statewide rating system would indicate. This species, unlike yellow star-thistle, is unpalatable to livestock at all life stages and in some areas dense stands of this weed can preclude cattle from grazing (Witham, 2006). Therefore, this species is not effectively controlled by grazing. It is typically a biennial or perennial species, with rosettes forming the first year followed by flowering the second and subsequent years. Application of glyphosphate in the late spring-early summer on the rosettes and early blooming plants after adjacent desirable annual species have set seed is an effective control (Amme, 1985). Care must be taken to limit treatment to areas devoid of native perennials as this herbicide is non-selective. Selective herbicides that are effective in these cases include 2,4-D; Clopyralid (Transline®), Dicamba®; or Garlon 3A® (Solano County Weed Management Area (SCWMA), 2002). Areas to be treated will be mowed in the early spring prior to seed set to remove standing purple star-thistle flowers and open the treated areas to grazing (DiTomaso pers. com., reported in Witham, 2006). The herbicides should be applied on a site-specific basis

to minimize impacts as they can affect desirable non-target broadleaved plants (especially Transline).

Note: Control/eradication of purple starthistle, which is prevalent on the Griffith Ranch parcel and less common on the Director's Guild, will be carried out by using a combination of mechanical and chemical means. This plant will also be removed in, and around the wet meadow on the Southern Hills parcel.

- **Yellow star-thistle (*Centaurea solstitialis*).** This species is rated as a high priority invasive species by the Cal-IPC (California Invasive Plant Council [Cal-IPC], 2006). A combination of techniques is most effective in controlling this annual species, including grazing, mowing, burning, herbicide use, and biological controls. Mid- to late spring grazing (May-June), before the plant has produced spines but after bolting, may control seed production and spread to a limited degree (Thomsen et al., 1996). Early summer grazing could be expected to reduce the number of flowers and the biomass of the plants but probably not the density of this plant on the landscape. If needed in the opinion of the Resource Manager, the grazing termination date may be extended to allow continued grazing at specified areas of infestation of star-thistle.

Where the Resource Manager determines that infestations of star-thistle are threatening the biological integrity of undeveloped lands, particularly with respect to listed animal species, a more focused management approach may be implemented. Under this approach, the infested area could be separated with temporary fencing. Grazing would be postponed within the enclosure to allow growth and elongation of the grasses and star-thistle, and then high intensity grazing would be applied during the period when star-thistle begins to emerge from the rosette and flower. Repeated treatments would be required to maintain that control. Extra livestock management would be required to keep extra animals at the site past the normal grazing period, maintain the fencing, and manage the animals. If the Resource Manager deems it appropriate, sheep or goats may be used instead of cattle for intensively managed grazing treatment of invasive species. In small areas where grazing is not feasible, mowing during the same period will be used to control yellow star-thistle. If possible, prescribed burning during this period would also help to control this species.

The Resource Manager may also consider use of one or more of the biological control agents offered by the U.S. Department of Agriculture (USDA) for yellow star-thistle. Six species of insects have been approved by the USDA for use in controlling yellow star-thistle. Three weevil species (*Bangasternus orientalis*, *Eustenopus villosus* and *Larinus curtus*) and three fly species (*Urophora sirunaseva*, *Chaetorellia australis* and *C. succinea*) can significantly reduce seed production over the long term if applied properly (Pitcairn, 1998). This option, in combination with the regular grazing regime, may be an effective long term management approach. This option would be developed by the Resource Manager in close consultation with and the approval of the USDA and the California Department of Agriculture. Finally,

herbicides such as Roundup®; 2,4-D; Dicamba; or Garlon 3A® can be used to control infestations of this species if applied by personnel with a QAL prior to seed set. Clopyralid (Transline) is effective on yellow star-thistle as both a pre- and post-emergent. It is most effective when applied to the early rosette stage in January or February. Transline can severely impact certain desirable native broadleaved plants so should be used on a site-specific basis.

- **Medusa-head (*Taeniatherum caput-medusae*).** Although this plant is not palatable after flowers have developed because of stiff pointed awns, and is low in palatability the rest of the year due to high silica content, early spring grazing when the plant is still relatively palatable may limit the spread of medusa-head (Bossard et al., 2000). If deemed appropriate by the Resource Manager, intensive grazing treatments such as those described above for star-thistle using temporary fencing could be conducted where concentrations of medusa-head occur. A carefully managed combination of prescribed fire, grazing, herbicide treatments and reseeding with native perennial grasses may be the most effective treatment of medusa-head (McKell et al., 1962) and will be considered where medusa-head is seriously threatening resource values. Medusa-head may be susceptible to intensive grazing prior to seed set from mid-February to mid-May. Treatment with glyphosphate between mid-March and mid-May may also be effective in controlling medusa-head.
- **Spiny and rough cocklebur (*Xanthium spinosum*, *X. strumarium*).** These species are not listed by Cal-IPC, but are known as “among of the world’s worst weeds” (Holm et al., 1977). The seeds are easily spread as the “hooks” on the fruits get caught in animal fur and human clothing. The species frequently outcompetes other, more desirable wetland plants, and the seeds are poisonous to livestock (Pitcher 1989 and 2001). This species occurs in and around stock ponds and seasonal wetlands in the mitigation areas, especially around stock ponds 3, 5, and 7. Hand pulling or mowing prior to the burs (fruits) forming can be an effective control as is spraying (again prior to burs forming) with a broadleaf selective herbicide such 2,4-D or Banvel (Pitcher 1989 and 2001).
- **Other invasive species.** Other invasive non-native plants that have been identified on the mitigation parcels include sweet fennel (*Foeniculum vulgare*), bull thistle (*Cirsium vulgare*), Skeleton weed (*Chondrilla juncea*), field bindweed (*Convolvulus arvensis*), prickly ox-tongue (*Picris echioides*), Italian thistle (*Carduus pycnocephalus*), and milk thistle (*Silybum marianum*). These species will be inventoried and considered for control when they present a significant management problem, show evidence of rapid spread, or when they become priority targets as other higher priority invasive species are controlled.

Malvella leprosa, mentioned by the reviewer, is a native species growing on alkaline soils. This species may be considered a noxious weed in agronomic crops, orchards, and pasture lands

(toxic to sheep and cattle), but in our opinion it is not a weed to be eliminated in those alkaline areas on the mitigation sites where it grows.

Revegetation with native species to increase post-operation habitat values and reduce non-native seed sources on the future landfill cells is not practical considering the constraints imposed by a capped landfill such as no ponding of water, soils imported of a certain depth from other areas onsite, the presence of pipelines for removal of gases generated within the landfill, etc.

Revegetation of the cells will be governed by the California Integrated Waste Management Board. Please see CHAPTER 3, *Response to Comment I*, which includes California Integrated Waste Management Board (CIWMB) Regulations (Title 27, Article 2, §2190: Closure and Post-closure Requirements for Solid Water Landfills).

A large portion of the land surrounding the expanded landfill (Griffith Ranch, Pond 5 Buffer Area, Southern Hills and Director's Guild parcels) will be preserved and managed in perpetuity as mitigation for the operation of the expanded landfill. Management measures outlined in the MMP (LSA and ESP, 2006) and GMP (LSA, 2007) are designed to control noxious weeds using a variety of management techniques, such as grazing, mowing, and burning (where feasible). In addition to these plans, an exotic-species control/restoration/management plan will also be developed as a supplement to the other plans. The exotic-species control/restoration/management plan will utilize the monitoring results, from monitoring conducted for the MMP and GMP, to develop additional management measures for controlling noxious weeds.

3.8 INSTALLATION OF SEDIMENT CONTROL BASIN

Reviewer's Statement. The sediment control basin represents a potential threat to the vernal pools located downslope at the Director's Guild parcel. Adding nutrient-rich waters could change the chemical balance of the pool and destroy the vernal pool ecosystem.

Recommendation 12. A sedimentation control basin or any other modification with even a remote possibility of modifying the hydrology or water quality of the vernal pools on the Director's Guild parcel should be avoided. An alternative location for the basin is within the valley adjacent to the Phase II expansion area.

Response 12. Based this recommendation as well as input from BCDC, the development plans have changed and no sedimentation basin will be constructed upslope from the Director's Guild parcel, thus the hydrology and water quality of the vernal pools will not be altered. All sedimentation basins will be placed within the footprint of the Phase II expansion area.

3.9 GOALS AND TARGETS FOR RESTORATION AND MANAGEMENT

Reviewer's Statement. The MMP focuses almost entirely on new wetland creation, management, and monitoring, as well as special-status species and their habitats. Management

of upland areas (addressed in the *Grassland Management Plan*) assumes that grassland is the only ecosystem that should be maintained in upland areas. Upland habitats maintain various assemblages of native plants indicating that a diversity of plant communities once occupied the Potrero Hills landscape. These differences suggest that management objectives should be site specific and defined on a finer scale.

Recommendation 13. The only way to mitigate for the loss of habitats caused by the Landfill extension is to improve and restore mitigation lands to more natural conditions. I recommend conducting research that will identify natural vegetation for the mitigation and compiling lists of additional species that likely were present historically or have been eliminated. This information can help define the targets for ecological restoration and management for mitigation areas. Such an approach would allow adequate mitigation to be developed for the loss of biodiversity due to the Landfill expansion.

Response 13. Impacts to grasslands dominated by non-native species do not meet the significance standards (criteria) under CEQA and, therefore, do not require mitigation. Mitigation is required for impacts to sensitive resources in their present conditions rather than for what was present before man-made disturbances. In general, mitigation devised for impacts to botanical resources on the Phase II expansion parcel consists of the *preservation, enhancement, long term management*, including *monitoring* and *invasive species control* on the three mitigation sites - the Director's Guild, Griffith Ranch, and Southern Hills parcels (including Pond 5 Buffer Area), which will be preserved in perpetuity. It is our opinion that little biodiversity is lost by the Landfill expansion; all species present on this parcel also occur on the mitigation sites (LSA and ESP, 2006), Appendix B; (LSA, 2006), Appendix A).

The permanent loss of 164.60 acres of non-native grassland (i.e. upland impact area) is mitigated by the preservation and enhancement of more than 565.29 acres (3.4:1 ratio) on the mitigation parcels. As the Landfill expansion is not impacting native grasslands but rather non-native grasslands with a relatively high number of native forbs (43 percent of the total number of species recorded) but with a low percent cover (visually estimated at <5 percent), PHLF is not proposing to reestablish native grasslands throughout the mitigation parcels but will attempt to enhance the present grasslands and wetlands on the Director's Guild and Southern Hills parcels, as well as areas to be disturbed in conjunction with the creation of wetlands on the Griffith Ranch parcel. Woody vegetation may be installed in the wet meadow on the Southern Hills parcel. Suitable habitat and/or conditions for shrubs and trees do not exist on the remainder of the Southern Hills parcel or on the other mitigation parcels.

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