

FOCUSED BIOLOGICAL ASSESSMENT  
LANDSLIDE REPAIR SITE AND STAGING AREA  
PALO CORONA REGIONAL PARK

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# I. SUMMARY

I was contacted in late May 2018, by Nathaniel Milam, Civil Engineer with Whitson Engineers in Monterey, and asked to conduct a focused Biological Assessment in a small area where landslide repairs are proposed on the Palo Corona Regional Park, APN 417-011-033. During the winter of 2018, a small road slip-out occurred that impedes access along a primary internal roadway serving the center and southern portion of the 4350-acre Regional Park, which is owned and managed by the Monterey Peninsula Regional Park District. A hilfiker welded-wire wall has been proposed to repair the slide.

The immediate vicinity of the slide site is known to support the federally endangered Smith's Blue Butterfly (*Euphilotes enoptes smithi*) and its host plant seacliff buckwheat (*Eriogonum parvifolium*). Records from the California Department of Fish and Wildlife, California Natural Diversity Database (CNDDDB), also map a nearby location of Hutchinson's larkspur (*Delphinium hutchinsoniae*), which has a California Native Plant Society Rare Plant Rank of 1B.2, indicating it is rare, threatened or endangered in California. The rare larkspur only occurs in coastal Monterey County. Seacliff buckwheat is widespread, however the endangered Smith's Blue Butterfly is found only in association with seacliff buckwheat plants growing in Northern Coastal Scrub vegetation heavily influenced by predictable summer fog. The endangered butterfly occurs in coastal Monterey County, with small populations in Santa Cruz County and northern San Luis Obispo County.



Figure 1 – Hutchinson's larkspur.  
Photo by Aaron Schusteff, Calflora.



Figure 2 – Seacliff buckwheat.  
Photo by Robert Sikora, Calflora.



Figure 3 – Smith's Blue Butterfly.  
Photo from inaturalist.

## Findings:

1. Seacliff buckwheat does not occur in the immediate slide area or in proximity to the area required to stage equipment, construction materials and excavated soil at the slide site. However, abundant buckwheat plants grow along both shoulders of the narrow roadway and adjoining hill slopes between the slide and the construction staging and vehicle turn-around area. Smith's Blue Butterfly was not observed during field work on May 28 or June 2, since the butterfly is only active during a brief flight period that coincides with the peak flowering period of its buckwheat host plant. During most summers, the butterfly hatches, feeds and reproduces in just a few days between the last week of June through first week of August.
2. Damage to seacliff buckwheat plants resulting in potential take of federally endangered Smith's Blue Butterfly will not occur if appropriate signage, flagging and fencing occurs along the roadway to the slide repair site. Suggested actions to avoid protect buckwheat plants and avoid potential take are described in the Recommendations section of this report.
3. No Hutchinson's larkspur was noted along the roadway, at the slide construction site, or anywhere near the staging and vehicle turn-around area.
4. The slide repair project may impact the stability of a large cluster of redwood trees (*Sequoia sempervirens*), since lateral tree roots may occur in the excavation area required to construct the hilfiker wall. Suggestions to minimize potential jeopardy to the cluster of trees are included in the Recommendations section of the following report.



Figure 4 depicts the general location of Palo Corona Regional Park south of Carmel Valley and east of the Carmel Highlands. Map from MPRPD website.

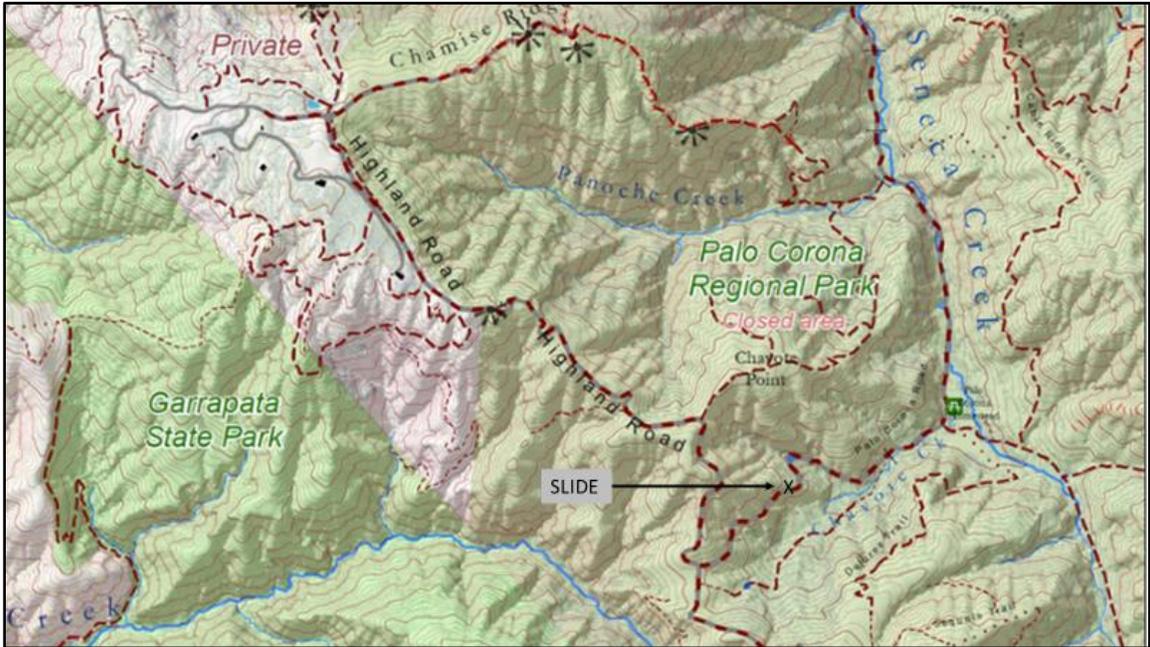


Figure 5 points out the landslide site. Basemap by Fred Watson (draft, in press).



Figure 6 is a Google Earth image with work and staging sites noted by Nathaniel Milam, Whitson Engineers.

## II. SURVEY METHODS

Local maps, literature references, Internet-based searches and consultations with knowledgeable individuals were used as information sources during the preparation of this Focused Biological Assessment. Floristic field survey methods utilized in the Biological Assessment conform to protocols outlined by the California Native Plant Society and the California Department of Fish and Wildlife (November 2009). The purpose of the statewide survey protocols is to facilitate a comprehensive, consistent and systematic approach for the identification of plants, natural communities and special status elements in areas proposed for development. The goal of surveying with the CNPS and State protocols is to produce reliable information and maximize the potential for locating special status species and natural communities that may occur in project areas.

Field survey for the Focused Biological Assessment in the Palo Corona slide area focused on the following objectives:

- Identify natural communities.
- Locate and map special status plants and wildlife species.
- Identify and map significant biological features and hazards.
- Identify potential revegetation and restoration needs.

Botanical and habitat surveys were conducted on May 28, 2018, and June 2, 2018. Botanical and habitat surveys around and through the landslide site, staging area, and surrounding natural habitat were conducted on foot. The late spring survey period was appropriate for the identification of special status species documented by the California Department of Fish and Wildlife – California Natural Diversity Database (CDFW - CNDDDB).

To identify known and potential element occurrences of special status habitats, plants and wildlife species, a records search was initiated with CNDDDB. CNDDDB classifies and maps occurrences of taxa and natural communities considered uncommon, special or listed by either the state or federal government. CNDDDB data and maps for the coastal area around Palo Corona Regional Park, and in particular the vicinity of the landslide site, were consulted prior to focused field survey. In addition, the CDFW RareFind and BIOS data base, as well as the List of Special Animals (2008), were reviewed online for information about sensitive plant and wildlife species in the project area. The California Native Plant Society web-based "Inventory of Rare and Endangered Vascular Plant Species" was also consulted to identify occurrences and rarity rankings of special status plant species in the region surrounding the subject property.

Based on CNDDDB records and the presence of typical Redwood Forest, Northern Coastal Scrub and Coastal "Prairie" Grassland vegetation in the vicinity, focused biological survey was conducted at the landslide work site, around the staging area, and along the roadway that connects the slide repair site with the construction staging area. The project areas were specifically surveyed for the following special status plants and animals:

- Smith's Blue Butterfly (*Euphilotes enoptes smithi*), Federally Endangered. Habitat found.
- Monterey Dusky-footed Woodrat, *Neotoma fuscipes luciana* (Species of Concern). Not found.
- Hutchinson's larkspur (*Delphinium hutchinsoniae*), CNPS 1B.2. Not found.

### III. PROPOSED LANDSLIDE REPAIRS

A hilfiker welded-wire retaining wall is proposed to repair the section of ranch road where the slide occurred. The repair project will involve excavating approximately 14-feet below current road grade and installing a series of inter-connected welded-wire L-shaped mats that are filled with compacted soil and crushed drain rock. The wall behaves as a gravity structure to fill in the damaged slope and recreate the roadbed above. Detailed drawings and specifications for wall construction are included in the plans submitted by Whitson Engineers.

The maximum depth of excavation for the hilfiker wall will be 14-feet below current road grade at the slide site. The length of the excavation will be approximately 60-feet long and 15-feet wide at the top, and 40-feet long and 10-feet wide at the base. The inboard limit of grading is proposed to be at the toe of the roadcut that creates the roadbed.

The construction area is approximately 1000 square feet, with a 10,000 square foot area proposed for construction staging. 30 cubic yards of crushed drain rock will be imported and no native materials will be “borrowed” for landslide repair fill.

Figure 7 (next page) is a plan view from the engineering drawings prepared by Whitson Engineers. It displays the cluster of clonal redwoods above the landslide and the shoulder area to be used a stockpile location for excavated soil.

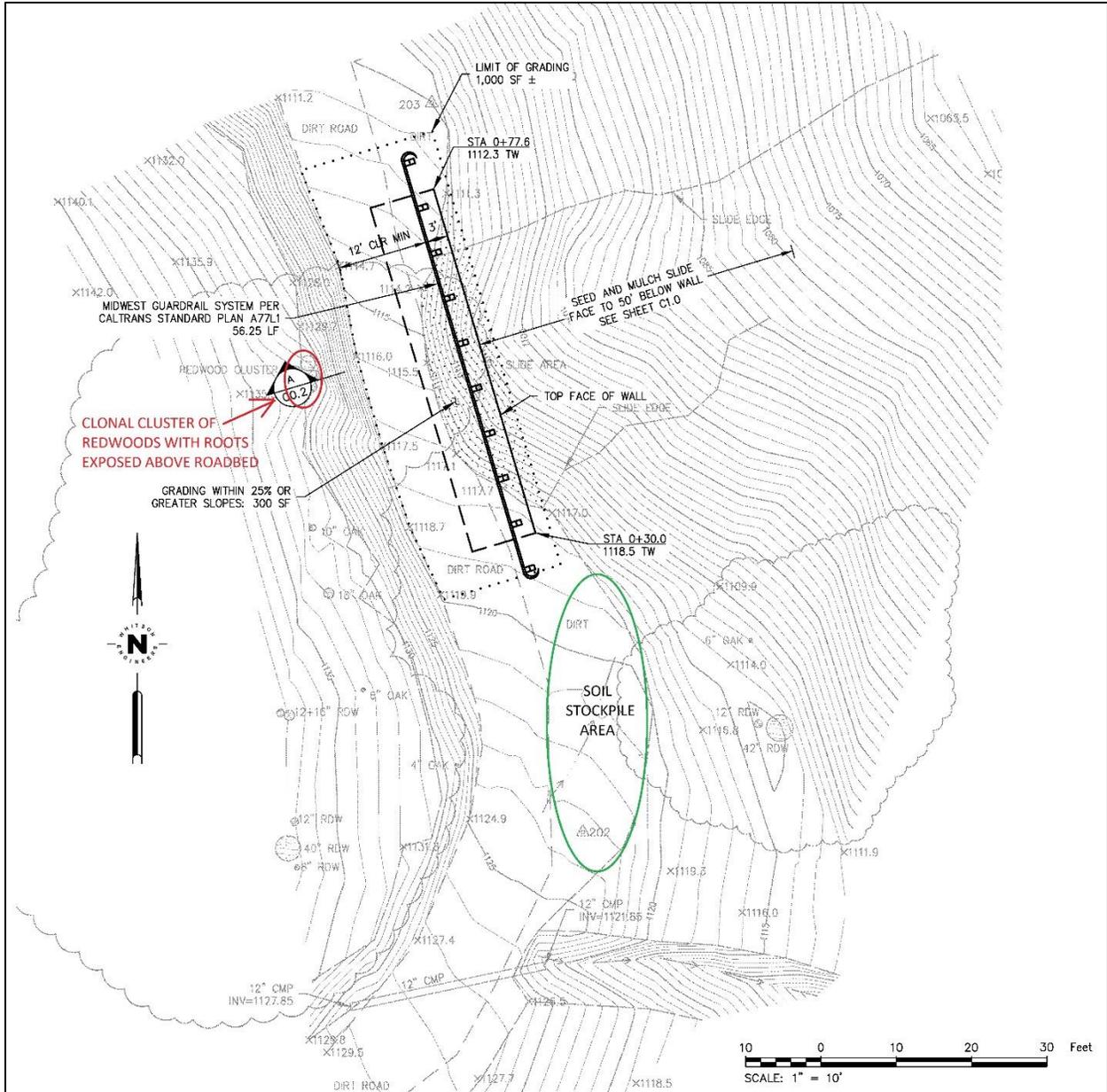


Figure 7

## IV. HABITAT CONDITIONS

The landslide repair site on the Palo Corona Regional Park is located on a historic, internal park roadway that traverses between lush Coastal Grasslands, Northern Coastal Scrub and Redwood Forest natural communities. The Coastal Grasslands and intermixed areas of Northern Coastal Scrub on Palo Corona Regional Park are among the most biologically diverse habitat types in the Central Coastal region of Monterey County. Coastal Grasslands on Palo Corona support a variety of native, perennial bunchgrasses, as well as a floristically rich number of native, flowering forbs. The area in and around the landslide is actively being grazed by cattle and has a long history of use as livestock range, consequently abundant non-native, weedy species also occur in the matrix of native plant communities, including various thistles, genista, and invasive, annual grasses and weedy forbs.

A. Staging and vehicle turn-around: Coastal Grassland habitat occurs in the area to be used for construction staging, vehicle turn-around and stockpiling of soil and crushed drain rock that will be used in in the hilfiker wall. The staging area is at the junction of two internal ranch roads. The area is relatively flat and occurs at the watershed divide between Chavote Creek to the east and Malpas Creek to the west. Small patches of invasive Italian and milk thistles, along with poison hemlock occur in the mix of native and non-native grasses at this site. Approximately 300 yards to the southeast of the staging area is the historic Chavote homestead, which is marked by horticultural rose bushes, red-hot poker aloe and a stalwart pear tree. No sensitive, or special status species will be impacted in the staging area if suggestions outlined in the Recommendations section of this report are implemented.

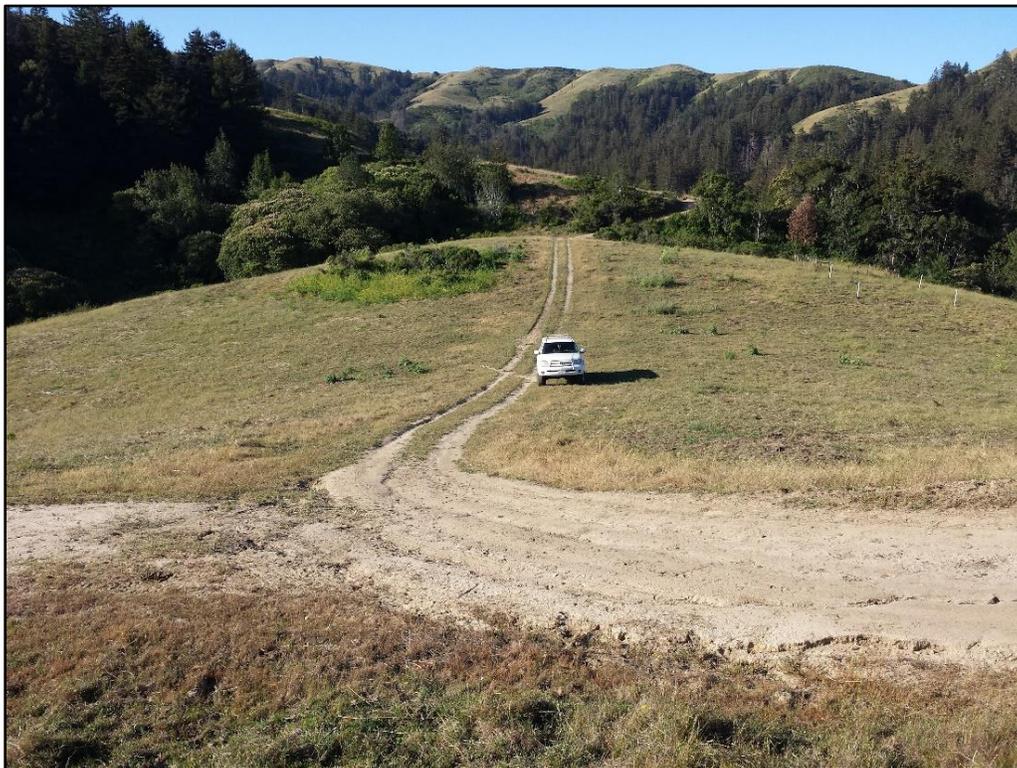


Figure 8 displays the construction staging area and vehicle turn-around site.

B. Roadway connecting staging area with landslide repair site: Both sides of the ranch road that connects the staging area with the landslide repair site are vegetated with a mosaic of Northern Coastal Scrub and Coastal Grassland species. Many pioneering Coastal Scrub species, including seacliff buckwheat, the host plant for the Federally Endangered Smith's Blue Butterfly, have recruited above and below the old roadcuts disturbed by the installation of the historic ranch road. Coastal Scrub vegetation is also the preferred habitat of the Hutchinson's larkspur. Silver bush lupine, golden yarrow, California fuchsia, phacelia, clarkia, purple needle grass, dudleya, Chinese houses, California poppies and common madia are among the many, diverse grasses, forbs and small shrubs observed during field survey on both sides of the roadway. It was noted that several seacliff buckwheat plants have been damaged, dislodged, or inadvertently killed by cattle grazing in this area of Palo Corona Regional Park.

If suggestions outlined in the Recommendations section of this report are adopted, no significant, or lasting impacts will occur to Coastal Grassland, Northern Coastal Scrub, or seacliff buckwheat as a result of repairing the landslide.



Figure 9 is a view looking uphill and “up-road” from the near the landslide repair site. Roadsides are vegetated with a diverse mix of Coastal Scrub species, including seacliff buckwheat.



Figure 10 is looking down-hill towards the landslide repair site, which is around the corner just out of view. The roadcut above the ranch road, as well as the slope below the roadbed are vegetated with a mix of Coastal Scrub species, including seacliff buckwheat.

C. Landslide site: The site where the landslide is located occurs along a very steep slope near the transition between Redwood Forest and more open Scrub/Grassland habitats. The arc of the slip-out is approximately 50-feet in length and measures about 12-feet from the apex of the headwall of the slope failure to the edge of where the outer road shoulder used to be. The actual free face and debris slope of the landslide is completely obscured by plastic sheeting to reduce further erosion, however it appears that the vegetation dislodged when the landslide occurred was composed of poison oak and a mixture of Coastal Scrub and Redwood Forest understory plants.

Shaded Redwood Forest habitat occurs on the hillside immediately above the landslide and “down-road” from the hilfiker wall repair location, with coast live oak, California bay and tanbark oak occurring in the canopy (please refer to Appendix A for a list of scientific names for plant species observed in the overall project area).

A small stand of black cottonwood occurs from 40-feet to 70-feet “down-road” of the apex of the slide headwall. The cottonwoods occur on the inside of the roadway and indicate that this area has a high degree of soil moisture, since black cottonwood readily sprouts and produces clonal tree stems from rhizomatous roots when abundant moisture persists in the root zone. The black cottonwood stand will not be impacted by landslide repair.



Figure 11 - Landslide site.

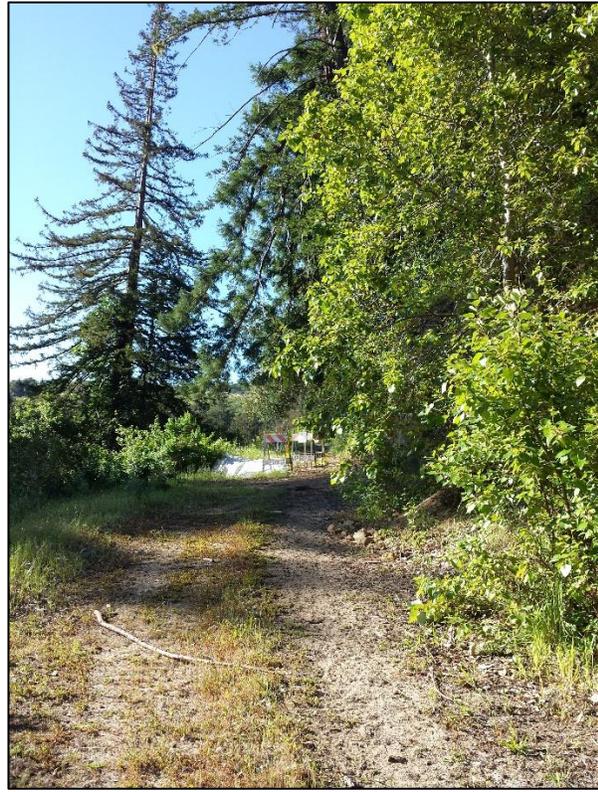


Figure 12 - Looking uphill to the landslide (photo center). The stand of cottonwoods is on the right.

Several coast live oak saplings with DBH (Diameter at Breast Height) less than 2-inches have recruited in soil exposed on the roadcut above the landslide. Immediately above the roadcut where the landslide occurred is a mature cluster of clonal redwood trees that appears to have sprouted from a common stump. A few of the major stump roots are exposed – it appears that the roots were likely damaged when the original Palo Corona ranch road was cut into the steep slope immediately below the trees. Over time, several of the primary roots have become increasingly exposed as the headwall of the roadcut eroded and sloughed away. Colluvium at the toe of the roadcut supports this observation.

The 14-foot deep excavation required to construct the hilfiker wall may further damage the root structure of this cluster of clonal redwood trees. Redwood roots are generally shallow and spread in a wide, lateral net around parent trees and it is possible that roots of the redwood cluster above the slide have penetrated below the roadbed that will be excavated to construct the hilfiker wall. However, it is not possible at this time to know definitively whether any redwood roots occur under the roadbed below the clonal cluster of redwoods. No roots were visible through the plastic sheeting covering the debris slope of the slide, so it could not be determined whether any redwood roots are growing under and through the roadway. If recommendations presented in the following section of the report are adopted, no significant, or lasting impacts will occur to the

cluster of clonal redwoods as a result of repairing the landslide. No adjacent Redwood Forest habitat and no black cottonwoods will be impacted as a result of repairing the landslide.

The wide area of the road shoulder just “up-road” from the landslide is proposed as a soil stockpile site. This area supports a variety of weedy grasses and small forbs, and is bordered by poison oak, coyote brush, golden yarrow, bracken fern and silver bush lupine. No impacts to sensitive species will occur as a result of stockpiling soil in the road shoulder above the landslide.

Exposed redwood roots from base of stump above the roadcut.



Figure 13 – Exposed redwood roots in the old Roadcut above the apex of the landslide.



Figure 14 – Exposed redwood roots.

## V. RECOMMENDATIONS TO MINIMIZE AND AVOID POTENTIAL IMPACTS

Schedule all landslide repair work, including stockpiling of imported rock, during late summer and fall months after the completion of nesting bird season and the flight period for Smith's Blue Butterfly.

A. Staging and vehicle turn-around: The goal is to minimize compaction and damage to the Coastal Grassland area in the staging and turn-around site with the following suggestions:

1. Locate the imported rock stock-pile and any surplus excavated soil in the flat area on the west side of the ranch road.
2. Encircle surplus soil and imported rock with securely fastened fiber wattle. Remove wattle after project completion and dispose of in an appropriate waste facility.
3. Minimize the turn-around area used by construction vehicles and clearly designate areas of no-access with appropriate signage, particularly on the east side of the roadway above the historic Chavote homestead site.
4. If needed, upon project completion reseed any exposed soil with a seed mix of 60% barley (18lbs) and 40% purple needle grass (*Stipa pulchra*, 12lbs) at 30lbs/acre and mulch with 2000lbs/acre sterile, weed-free rice straw to avoid seed predation by birds and rodents.
4. It is suggested that Regional Park District staff monitor this area during regular park patrols and remove invasive thistles and poison hemlock, as well as other invasive shrubs and forbs if they are observed.
5. Remove cattle from this portion of the grazing allotment during the construction period required to complete the repair project.

B. Roadway connecting staging area with landslide repair site: The goal is to avoid damaging seacliff buckwheat plants and minimizing potential impacts to adjoining Coastal Scrub and Grassland habitat. The actual road bed of the ranch road is sparsely vegetated with a variety of mostly non-native grasses and forbs.

1. To protect seacliff buckwheat plants growing along the road shoulder, all buckwheat plants on the road shoulder and within 2-feet of the both uphill and down-slope edges of the roadbed should be flagged for protection by the Project Biologist. This includes all plants above the toe of the roadcut, as well as below the roadbed.
2. No colluvial material shall be displaced or removed from the toe of the roadcut where seacliff buckwheat occurs and no grading or road blading should occur unless supervised by the Project Biologist.
3. No soil or vegetative material should be sidecast.
4. Reseed any exposed soil with the 60% barley/40% purple needle grass mix at a ratio of 30lbs/acre, and mulch with sterile, weed-free rice straw.
5. Develop signage reminding construction workers to be mindful of seacliff buckwheat and post at regular intervals along the road, particularly in areas supporting high concentrations of the endangered butterfly host plant.

C. Landslide Site: The goal is to minimize damage to habitat areas in the work area and stabilize the redwood cluster immediately above the landslide.

1. The outside edge of the wide road shoulder immediately up-road from the landslide will serve as the primary material stockpile. The outer edge of the road shoulder should be fringed with securely fastened fiber wattle and silt fencing to prevent the downhill movement of any loose material.
2. All soil excavated for the hilfiker wall should be placed in the wide shoulder area immediately up-road from the landslide repair site. Ideally, excess soil will be transported to the staging area for eventual removal, however if temporary storage space is needed for excavated soil, shoulder areas where no seacliff buckwheat is located may be identified by the Project Biologist as storage sites. Fiber wattle and silt fencing should be placed at the outer margins of any additional soil stockpiles.
3. No vegetative material or soil should be sidecast.
4. The debris slope of the landslide should be disturbed as little as possible and should be hand-seeded with the barley/purple needle grass mix and heavily mulched with sterile, weed-free rice straw after project completion.
5. Tree branches hanging over the work site may be trimmed in an ecologically appropriate manner, as directed by the Project Biologist.
6. Stage a bio-monitor at the landslide repair site during all excavation to observe whether redwood tree roots are encountered during soil removal. Knowing whether roots are impacted by the excavation will provide direction for potential future action to stabilize the trees.
7. If possible, during excavation for the hilfiker wall, avoid severing redwood roots that may be growing below the roadway.
8. Avoid damaging or further exposing redwood tree roots that are currently visible above the roadbed.
9. If possible, protect the toe of the roadcut below the redwoods by confining the width of excavation to the minimum required to install the hilfiker wall.
10. If tree roots are damaged during excavation, consult with of a Registered Professional Forester, or a Certified Arborist and develop a strategy to stabilize the trees, if necessary.
11. Reseed exposed soil, including the debris slope below the hilfiker wall, with the barley/purple needle grass mix at 30lbs/acre and mulch with sterile, weed-free rice straw.
12. Upon project completion, regularly monitor slope stability above and below the hilfiker wall to identify signs of erosion, tree movement, or slope failure and address potential hazards appropriately.
13. During regular park patrols, monitor the slope below the hilfiker wall for invasive plants and remove carefully if weedy species are observed colonizing the disturbed soil area.

## VI. CONCLUDING REMARKS

If suggestions noted in the Recommendations section above are incorporated into the landslide repair work plan, no impacts will occur to Smith's Blue Butterfly or Hutchinson's larkspur. Redwood tree roots may be impacted by project excavation, however project work will seek to minimize root damage and the cluster of clonal redwoods can be stabilized if needed. The proposed project will not result in significant impacts to biological resources conserved in Palo Corona Regional Park.

## REFERENCES

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PLANTS OBSERVED DURING FOCUSED BIOLOGICAL SURVEY  
May 28 and June 2, 2018

Trees:

*Acer macrophyllum*, big-leaf maple  
*Notholithocarpus densiflorus*, tanbark oak  
*Populus trichocarpa*, black cottonwood  
*Quercus agrifolia*, coast live oak  
*Sequoia sempervirens*, coast redwood

Shrubs:

*Acmispon americanus*, Spanish lotus  
*Acmispon glaber*, deerweed  
*Antirrhinum multiflorum*, sticky snapdragon  
*Diplacus aurantiacus*, sticky monkey flower  
*Epilobium canum*, California fuchsia  
*Eriogonum parvifolium*, seacliff buckwheat  
*Eriophyllum staechadifolium*, golden yarrow  
*Frangula californica*, coffeeberry  
*Garrya elliptica*, coast silk tassel  
*Toxicodendron diversilobum*, poison oak

Forbs:

*Achillea millefolium*, yarrow  
*Anthriscus caucalis*, bur-chervil  
*Cardionema ramossissimum*, sandmat  
*Chlorogalum pomeridianum*, soap plant  
*Cirsium occidentale*, cobwebby thistle  
*Clarkia amoena*, farewell-to-spring  
*Clarkia lewisii*, Lewis' clarkia  
*Clarkia purpurea*, winecup clarkia  
*Clarkia unguiculate*, elegant clarkia  
*Clinopodium douglasii*, yerba buena  
*Collinsia heterophylla*, Chinese houses  
*Cryptantha* sp., cryptantha  
*Digitalis purpurea*, foxglove\*  
*Dudleya*, cymose, canyon dudleya  
*Erodium cicutarium*, filaree\*  
*Eriogonum nudum*, wild buckwheat  
*Eschscholzia californica*, California poppy  
*Fragaria vesca*, woodland strawberry  
*Galium aparine*, bedstraw  
*Galium porigenes*, climbing bedstraw  
*Geranium mole*, dove's foot geranium  
*Horkelia californica*, California horkelia  
*Logfia gallica*, narrow-leaved filago\*

Lupinus albus, silver bush lupine  
Lupinus nanus, sky lupine  
Lysimachia arvensis, scarlet pimpernel  
Madia elegans, common madia  
Phacelia distans, common phacelia  
Phacelia malvifolia, stinging phacelia  
Plantago lanceolata, English plantain\*  
Rumex acetosella, sheep sorrel\*  
Silene gallica, catchfly\*  
Sparganium angustifolium, red sandspurrey\*  
Stachys bullata, wood mint  
Trifolium arvense, rabbitfoot clover\*  
Trifolium dubium, Little hop clover\*  
Trifolium hirtum, rose clover\*

Grasses, Ferns and Vines:

Agrostis sp., bent grass  
Aira caryophylla, silver hair grass\*  
Briza maxima, rattlesnake grass  
Bromus diandrus, ripgut brome  
Dactylis glomerata, orchard grass\*  
Elymus glaucus, blue wild-rye  
Festuca perennis, rye grass\*  
Koeleria macrantha, june grass  
Lonicera hispidula, hairy honeysuckle  
Marah fabacean, wild cucumber  
Pellaea andromedifolia, coffee fern  
Pentagramma triangularis, goldback fern  
Pteridium aquilinum, bracken fern  
Rubus ursinus, wild blackberry  
Stipa pulchra, purple needle grass

\* indicates a non-native, and usually invasive species