Preliminary

Habitat Restoration Plan

for

501 Sand Point Road

Santa Barbara County

Prepared for

Siemens Planning
5210 Carpinteria Avenue #103
Carpinteria, CA 93013

by

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Cover Page: View of Property looking southeast, November 20, 2017.

1 INTRODUCTION

This preliminary habitat restoration plan (Plan) provides dune habitat restoration and enhancement within approximately 1.2 acre of upland habitat at 501 Sand Point Road (Property). Restoration is proposed adjacent to the Carpinteria Salt Marsh in Santa Barbara County California. The Owner/Applicant proposes to construct a single-family home on caissons (Project) to minimize its footprint and maximize opportunities for plants and wildlife to utilize the shaded corridor adjacent to restored habitat. Althouse and Meade, Inc. botanists and restoration specialists prepared the restoration plan and plant list. Van Atta and Associates, Inc. provided an exhibit to illustrate proposed site layout for the restoration area, and additional native plantings in the vicinity of the home and driveway. Two Trees Architects designed the home, and Siemens Planning provided team coordination and collaboration opportunities to optimize restoration of native habitats.

TABLE 1. RESPONSIBLE PARTIES

Owner/Applicant	Project Planner	Biological Consultant
Sanddew LLC 501 Sand Point Road Carpinteria, CA 93013 (831) 200-4015 Contact: Mark Massara mark@markmassara.com	Siemens Planning 5210 Carpinteria Ave. #103 Carpinteria, CA 93013 (805) 403-1199 Contact: Jennifer Siemens jennifer@siemensplanning.com	Althouse and Meade, Inc. 1602 Spring Street Paso Robles, CA 93446 (805) 237-9626 LynneDee Althouse lynnedee@althouseandmeade.com

Lead Agency	Architect	Landscape Architect
County of Santa Barbara Department of Planning and Development 123 E. Anapamu Street Santa Barbara, CA 93101 805-884-8068 Contact: Nicole Liu nlieu@countyofsb.org	Two Trees Architects 407 Bryant Circle, Suite A-1 Ojai, CA 93023 (805) 403-6595 Contact: Danny Longwill danny@twotrees-architect.com	Van Atta Associates, Inc. 235 Palm Street Santa Barbara, CA 93023 (805) 730-7446 Contact: Susan Van Atta sva@va-la.com

2 PROJECT INFORMATION

2.1 Project Location

The proposed Restoration Project is located west of the mouth of the Carpinteria Salt Marsh (CSM) depicted in Figures 1 and 2. The Property is located at the end of Sand Point Road about 1.25-miles from the intersection with Santa Claus Lane near southbound U.S. Highway 101 on ramp within a much larger 8.95-acre parcel (APN 004-098-011), the balance of which will be either restored or both restored and permanently protected as a result of the Project.

Approximate coordinates for the center of the Property are 34.3975° N / -119.5380° W (WGS84) in the United States Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1). Elevation ranges from approximately 0 to 16 feet above mean sea level. The Property is located in an unincorporated portion of Santa Barbara County within the Coastal Zone.

The parcel extends north into CSM, and south into the Pacific Ocean (Figure 2). North of the parcel is CSM, a 230-acre estuary that lies within the jurisdictional boundaries of Santa Barbara County. Portions of CSM are privately owned, and 120 acres known as the Carpinteria Salt Marsh Reserve (CSMR) are owned and managed by the University of California. CSM is managed by the University as a single reserve within an integrated ecosystem (Ferren et al. 1997).

2.2 Project Description

The proposed Restoration Project is associated with a floating single-family residence with a living roof, attached carport and decks, permeable-paver driveway, landscaping and minimal grading. Proposed development is located within 0.20-acre (8,878 square feet) development impact area. The permanent footprint plus a 5-ft buffer totals 0.24-acre (10,454 square feet) shown in Figure 3. Habitat restoration will remove iceplant from the mouth of Carpinteria Salt Marsh to the western property boundary within the remaining open habitat on the subject parcel.

The landscape plan in Exhibit A was developed in cooperation with Van Atta Associates Inc. Sheet L1.0 shows the dune mat habitat available, sheet L1.1 shows representative plant photos for the Restoration Project and plants compatible with the native restoration site to be used adjacent to the house, on the green roof, and near the western property boundary. The Dune Mat/Coastal Strand and Salt Grass Flats species are proposed for the Restoration Project. Sheet L1.2 shows native planting areas next to the proposed driveway. Sheet L1.3 provides a drone aerial image by Althouse and Meade, Inc. drone pilot with a visual simulation of the site after restoration is complete. Sheet L1.4 provides details for elements associated with the house. The Restoration site does not require detailed planting layout, as the entire area will be planted with native dune plants, leaving patches of open sand for the benefit of native burrowing insects.

A total of 1.00 acre is proposed to be restored, protected and maintained with native vegetation (Table 2). Wetland habitats (0.08 acre) of salt grass (sandy beach; 0.07 acre) and alkali heath (0.01 acre) will be preserved, and non-native plants removed. Restoration of dune habitat will be implemented on 0.75 acre of dune habitat to be managed and maintained as natural habitat, plus weeding and restoration along 0.04-acre path area (0.79 acre, total area restored). This plan focuses on restoration of dune habitat east and north of the house, between the Project and the salt marsh habitats.

The remainder of undeveloped upland habitat, including the residence buffer and area between the house and the revetment (currently ice plant mat) will be restored with native species per the Van Atta landscape plan (approximately 0.09 acre south and west of the house plus 0.04 acre around the house buffer). That portion of their plan is intended to buffer the residence from the west neighbor's property between the driveway and house, south to the existing revetment.

TABLE 2. HABITAT RESTORATION SUMMARY

Areas to be restored.

Areas to be Restored, Protected, Revegetated	Acre	Square Feet
Restore dune habitat (remove ice plant and weeds from upland habitats and replace with native coastal species)	0.75	32,670
Remove weeds along path and replant edges with native central coast species (approximately 5-ft wide path and buffer)	0.04	1,742
Preserve wetland – salt grass/sandy beach habitat	0.07	3,049
Preserve wetland- alkali heath habitat	0.01	361
Landscape with coastal native species: Replace ice plant mat between house and revetment with native central coast species	0.09	3,920
Plant native coastal species in house buffer	0.04	1742
Total Restoration and Preservation	**1.00**	**43,484**

2.3 Restoration Project Purpose and Scope

The purpose of this Plan is to ensure removal of extensive invasive species throughout the restoration area and re-establishment of local native dune vegetation. Degraded habitats will be restored within 0.79 acres on the Property. An additional 0.13 acre around the house and adjacent to the west neighbor's property will be landscaped with local native plants compatible with dune vegetation. Adjacent wetland and sandy beach habitat will be protected.

A 2:1 mitigation ratio was applied for temporary impacts and a 4:1 ratio for permanent impacts (Table 3, Figure 4). A 4:1 ratio for permanent impacts would require 0.32 acre of dune mat habitat, and the 2:1 mitigation ratio for temporary impacts would require 0.22 acre, for a total of 0.54 acre (23,522 square feet) of restored dune mat habitat.

TABLE 3. ESH IMPACTS AND MITIGATION REQUIRED SUMMARY

Areas of potential Project impacts (temporary and permanent) to dune mat habitat.

Measurement Type	Impacts		Mitigation		Total Mitigation
	Temporary	Permanent	Temporary (2:1)	Permanent (4:1)	

Dune Mat Habitat Acre	0.11	0.08	0.22	0.32	0.54
Square Feet	4,791	3,485	9,582	13,940	23,522

3 ENVIRONMENTAL SETTING

The County of Santa Barbara Coastal Land Use Plan (republished May 2014) shows existing residential properties on both sides of the mouth of CSM. The estuary is identified as "El Estero" in the County's generalized land use plan for the Carpinteria Valley Planning Area.

A visual assessment of satellite imagery suggests that the Property has been regularly disturbed until about 2009 (Google Earth aerial imagery). A dirt road connects from the end of Sand Point Road to the center of the Property, with a small gravel parking area that is located on the west end. No structures exist on the Property. Two existing seawalls border the Property to the south, and CSM borders the Property to the north with the marsh's connection to the Pacific Ocean bordering the east side of the Property.

Terrestrial habitats within the Property include alkali heath marsh, sandy beach, dune mat, and ice plant mats. Coastal marine habitats include intertidal zone, subtidal channel and revetment (Figure 3). A gravel road is primarily un-vegetated with a low abundance of ruderal species. See Althouse and Meade, Inc. 2020 Biological Report for 501 Sand Point Road, Santa Barbara County, California, for detailed information regarding biological resources on the Property.

Two individual soil map units from the Natural Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) overlap the Study Area: Aquents, fill areas (AC); and Beaches (BE) (Soil Survey Staff 2017).

4 RESTORATION SITE SELECTION AND JUSTIFICATION

Ice plant may be removed on site and replaced with native dune plants. Dense mats of ice plant (*Carpobrotus* spp.) occur on the Property with density ranging from monoculture (ice plant mats) to consistently scattered (degraded dune mat habitat). Ice plant is an invasive introduced species associated with disturbed land, sand dunes, and bluffs in coastal environments (Sawyer et al. 2009), rated to have potentially high impacts on natural habitats by California Invasive Plant Council (Cal-IPC 2020). This habitat is suitable for restoration.

Figure 4 shows locations of the wetland habitats to be preserved (0.08 acre), a 0.79-acre restoration area east and north of the home site, plus the 0.13 acre of ice plant removal and native plantings in the house buffer and areas south and west of the house.

Invasive species removal is achievable. Ice plant, Bermuda grass (*Cynodon dactylon*), pampas grass (*Cortaderia selloana*), and Myoporum (*Myoporum laetum*) shall be removed. Native plant re-establishment will utilize locally sourced and habitat appropriate plant material. Native plants will be installed, seeded and maintained until establishment (typically five years). Habitat restoration and enhancement will increase the habitat value by restoring native species as the dominant vegetative cover.

The pedestrian pathway will be maintained and managed as part of the native landscape within the restored mitigation area. This will allow maintenance workers, visitors, and scientists to access the Restoration Site with minimal impact to the habitat.

Disturbed soil in immediate vicinity of the house and edge of pathway will also be revegetated with native plants per the landscape plan by Van Atta and Associates. This treatment will provide a native plant buffer between western neighboring property and the restored habitat.

The Property contains suitable sand dune conditions for dune habitat restoration.

5 RESTORATION SITE GOALS AND OBJECTIVES

The goal of this Plan is to convert one acre of degraded dune habitat dominated by weedy species to native dune habitat within one acre of non tidally submersed sandy habitat onsite.

Objectives listed below will be used to establish this goal within the Restoration Area:

- Restore habitat through the removal of ice plant and other invasive weeds to create additional dune mat habitat
- Enhance habitat through the removal of scattered ice plant from degraded dune mat habitat
- Salvage propagules (e.g., seeds) of existing suitable native plants from the permanent impact area and relocate to the Restoration Site
- Achieve natural cover of native vegetation within dune mat habitat through plant installation and hand broadcast seeding
- Irrigate only container stock to aid in shrub container planting establishment around perimeter of areas treated only by seeding.
- Provide large unirrigated patches for the benefit of dune arthropods that require dry soil conditions.
- Utilize erosion control methods to prevent excessive soil loss during restoration activities
- Minimize/avoid use of herbicides.
- Respond to climate change—allow natural variability in native species composition and density, depending on climate conditions and storm surge.

6 RESTORATION WORK PLAN

Restoration activities will be implemented in four phases: I) preparation, II) habitat restoration and enhancement, III) maintenance and monitoring, and IV) final clean-up. The first phase will be implemented upon approval of the Plan by the regulatory agencies. The second phase will commence in fall during the first year of Project related activities, the third phase will be implemented immediately after Phase II, for a minimum of five years. The fourth phase will be implemented once the Restoration Site satisfies the performance standards. See Sections 7.0 Performance Standards and 9.0 Adaptive Management for more information regarding Restoration Site Success Criteria. Measures to protect biological resources during restoration activities are addressed in Section 6.5.

- **Phase I: Preparations (Fall to Spring)**
  - Document Restoration Area baseline conditions through photo points establishment and 'Insect Diversity' sampling as described in Section 8.2 Monitoring Plan
  - Collect seeds for outplanting and broadcasting
  - Propagate plants (Section 6.1.1)
- **Phase II: Habitat Restoration and Enhancement (Spring to Winter)**
  - Remove invasive plants
  - Install erosion control measures
  - Salvage propagules, as available
  - Install irrigation per Van Atta landscape plans
  - Install plants
  - Broadcast seeds
- **Phase III: Maintenance and Monitoring (Immediately after Phase II implementation)**
  - Implement Maintenance Plan (Section 8.1)
  - Manage irrigation per Van Atta landscape plans
  - Implement Monitoring Plan (Section 8.2)
- **Phase IV: Year 5 of Maintenance and Monitoring Plans**
  - Final clean-up
  - Final Monitoring Plan Success Criteria assessment and 'Insect Diversity' sampling (Section 8.2)

6.1 Phase I: Preparations

1.1.1 *Document baseline conditions*

Document Restoration Site baseline conditions by establishing photo points described in Section 8.2 Monitoring Plan. Document baseline native and non-native percent cover by using UAV aerial imagery, including drone survey, or quadrat sampling (Section 8.2.2). Document 'Insect Diversity' baseline condition by performing sampling described in Section 8.2.1.

Timing: Spring prior to proposed work activities.

6.1.1 Seed collection and Plant propagation

Collect seed from local stock to the greatest extent possible. The biological consultant will verify that plant materials specified in this Plan are readily available from local stock. Plants will be propagated under contract with a native plant nursery or qualified native plant horticulturist with demonstrated experience propagating native plants. A seed collection and plant propagation contract will be obtained at least one year prior to planting to allow enough time for seed collection and grow-out period. Refer to Section 6.2.3 Planting Plan for additional information.

6.2 Phase II: Habitat Restoration and Enhancement

6.2.1 Non-native Plant Removal

Ice plant will be removed manually by hand using hand tools. Manual removal is effective at any time of year by tearing up plants by the roots (DiTomaso et al. 2013). No herbicide application or solarization efforts will be utilized on ice plant in attempt to preserve and encourage the existing native seed bank and invertebrates that will serve key roles in the pollination of newly restored dune mat habitat. Care will be taken to avoid removal of existing native plant species within the Restoration Site.

Bermuda grass will be removed manually by hand using hand tools. Persistent manual removal of rhizomes and stolons can eliminate Bermuda grass from small areas (DiTomaso et al. 2013). Removal efforts will occur prior to seed set. Crews will be trained how to properly identify Bermuda grass to avoid incidental removal of native salt grass (*Distichlis spicata*) which co-occurs in the Restoration Site.

Pampas grass will be removed by cutting the above ground portion off, carefully removing and bagging any inflorescence (plumes) containing seeds. The root mass and all large root fragments shall be dug out and removed. The entire plant body shall be bagged and disposed of properly (Holloran et al. 2004).

Large established Myoporum trees exist within the Project footprint and will be removed.

Timing: After Phase I, prior to seed set when possible.

1.1.2 *Temporary irrigation installation*

A temporary irrigation system will be designed and installation supervised by a landscape architect for the eastern portion of the Restoration Site where proposed shrub outplanting will occur. Many factors must be considered in determining how much water to apply. Plant species differ in their water requirements and water exits various soil types at different rates. In areas of high evaporation (hot, dry, windy), drought tolerant plantings still will require available water to establish.

- Run temporary above-ground lines for landscape irrigation.
- Install valves and irrigation controller. Prepare site for installation of irrigation system.
- Irrigation will be used to help container stock to establish roots in the sandy soils of the Restoration Site and to artificially “extend” the rainy season.
- Establish automatic irrigation controller with a weather station.

6.2.2 Native plant propagule collection

Existing native herbaceous perennials that occur within the Project permanent impacts may be collected utilizing hand tools and/or heavy equipment. Plants species to be considered for propagule collection include beach bur-sage (*Ambrosia chamissonis*), beach evening-primrose (*Camissoniopsis cheiranthifolia* ssp. *suffruticosa*), red sand-verbena (*Abronia maritima*), beach salt bush (*Atriplex leucophylla*), Menzies' goldenbush (*Isocoma menziesii* var. *vernioides*), western marsh-rosemary (*Limonium californicum*), and seaside heliotrope (*Heliotropium curassavicum* var. *oculatum*). Plants propagated as container stock from propagules will be planted in areas provided irrigation.

Timing: Prior to Project potential impacts, preferably in fall when weather is cool.

6.2.3 Planting Plan

Native plant installation and broadcast hand-seeding will be implemented to restore and enhance habitats in the Restoration Site. Locally sourced native plant stock and seeds will used.

Native Plant Installation: recommended native plant stock to be installed is provided in Table 4. Irrigation shall be provided immediately following installation. Plants can be pruned at the time of installation to promote a higher root-to-shoot ratio and thus minimize water stress and transpiration rates during initial plant establishment (if necessary).

Western marsh-rosemary (aka California sea lavender) can be planted in the protected wetland to augment the two individuals observed in September 2020. Other plants adapted to wetland habitat such as wooly seablight can be planted in and adjacent to existing wetland habitat. The other plants in Table 4 are primarily upland species.

Timing: After Phase I and ice plant removal and temporary drip irrigation, fall to winter.

TABLE 4. PLANT INSTALLATION

The recommended native plant species for container stock installation for the Restoration Site.

Scientific Name	Common Name	Form
Abronia maritima	Sand Verbena	Perennial herb
Abronia umbellata	Beach Sand Verbena	Perennial herb
Achillea millefolium	Yarrow	Perennial herb
Ambrosia chamissonis	Beach Bur Sage	Perennial herb
Calystegia soldanella	Beach morning glory	Perennial herb
Camissoniopsis cheiranthifolia ssp. *suffruticosa*	Beach Evening Primrose	Perennial herb
Ericameria ericoides	Mock heather	Shrub
Eriogonum parvifolium	Sea cliff buckwheat	Shrub
Isocoma menziesii var. *vernonioides*	Coastal Goldenbush	Shrub
Lupinus arboreus	Coastal Bush Lupine	Shrub

Scientific Name	Common Name	Form
Lupinus chamissonis	Dune Bush Lupine	Shrub
Phacelia ramosissima	Branching Phacelia	Perennial herb
Solanum douglasii	Douglas' nightshade	Perennial herb
Suaeda taxifolia	Wooly Seablite	Shrub

Broadcast Seeding: The recommended seed mix for the hand broadcast seeding for the Restoration Site is provided in Table 5 Rake prior to broadcast seeding to facilitate seed catchment and even dispersal.

Timing: After Phase I and ice plant removal, with winter rains, usually November to December.

TABLE 5. Seed Mix

The recommend seed mix for the Restoration Site, organized alphabetically by scientific name. Rate to be determined in final plan.

Scientific Name	Common Name	Form
Abronia maritima	Sand Verbena	Perennial herb
Abronia umbellata	Beach Sand Verbena	Perennial herb
Achillea millefolium	Yarrow	Perennial herb
Atriplex leucophylla	Beach salt bush	Perennial herb
Calystegia soldanella	Beach Morning Glory	Perennial herb
Camissoniopsis cheiranthifolia ssp. *suffruticosa*	Beach Evening Primrose	Perennial herb
Castilleja affinis ssp. *affinis*	Coast Indian paintbrush	Perennial herb
Corethrogyne filaginifolia	Common Sandaster	Perennial herb
Croton californicus	Croton	Perennial herb
Distichlis spicata	Salt grass	Perennial grass
Eschscholzia californica var. *maritima*	Coastal California Poppy	Annual herb
Heliotropium curassavicum var. *oculatum*	Seaside Heliotrope	Perennial herb
Jaumea carnosa	Fleshy jaumea	Perennial herb
Lupinus chamissonis	Dune Bush Lupine	Shrub
Lupinus succulentus	Arroyo Lupine	Annual herb
Phacelia ramosissima	Branching Phacelia	Perennial herb

Plant larger shrub species including mock heather, coastal bush lupine, and coastal goldenbush along the toe of rocky revetment areas located within the Restoration Area (See Figure 4). Plant beach evening primrose, sand verbena, beach sand verbena, and wooly sea blite more centrally

within the Restoration Area and towards the water line. Seed fleshy jaumea and seaside heliotrope within the 'Alkali Heath Marsh', where ice plant is removed from that habitat. Seed salt grass within 'Sandy Beach/Salt Grass' areas.

6.2.4 Erosion control

Erosion will be minimized through avoiding and/or minimizing soil disturbance when possible during habitat restoration activities. Establishing native vegetation through plant installation and hand-broadcast seeding is the primary preventative erosion control measure. Temporary erosion control measures such as certified weed free, natural, biodegradable material/fabric may be installed following ice plant removal. No monofilament, plastic, or metal materials shall be installed onsite. If excessive erosion begins to negatively affect the Restoration Site, additional erosion control techniques shall be implemented, as described in Section 9.0 Adaptive Management.

Timing: Immediately, upon initiation of restoration activities.

6.3 Phase III: Maintenance and Monitoring

Refer to Sections 8.1 and 8.2 for detailed information of the Maintenance and Monitoring Plans, respectively.

Timing: Immediately after Phase II implementation.

6.3.1 Remove temporary irrigation when plants are established.

Timing: Prior to final clean-up, preferably by Year 3.

6.4 Phase IV: Final Clean-up

6.4.1 Remove temporary erosion control measures

Remove any remaining temporary erosion control measures from the Restoration Site, if applicable.

6.4.2 Verify success with regulatory agencies

Restoration Site success criteria (see Section 7) will be met and verified by regulatory agencies.

Timing: When plants have successfully established and performance criteria have been met.

6.5 Measures to Protect Fish, Wildlife, and Other Sensitive Resources

Restoration activities shall follow Best Practices and Mitigation Measures (MMs) provided in Sections 5 and 6 of the 2020 Biological Report for the Project to ensure protection of biological resources (Althouse and Meade, Inc. 2020). A qualified biologist and/or landscape architect will implement and/or spot check that all applicable Mitigation Measures are implemented as necessary during all restoration activities (Restoration Project) conducted. Relevant MM's from the Biological Report are listed below, edited for relevance to the Restoration Project:

BR 1 Pre-construction survey. A P&D-approved, qualified biological monitor shall perform a preconstruction survey within one week of Restoration Project commencement to ensure special status animals are not observed onsite. The survey shall be conducted by a qualified biologist approved to relocate common wildlife should they occur. If any special status species are located during the pre-construction survey, consultation will be conducted with the CDFW and USFWS as appropriate to the species' status prior to commencement of project activities. This survey will be repeated should more than two weeks of no-activity occur in the restoration area.

BR 2 Worker Environmental Awareness Program Training. Prior to the initiation of restoration project activities (including staging and mobilization), the Owner/Applicant shall ensure all personnel associated with Project construction attend a Worker Environmental Awareness Program training. The training shall be conducted by a qualified biologist, to aid workers in recognizing special status resources and ESH that occur in the project area. The Training program shall include:

a. Identify sensitive species and habitats.

b. Describe the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of restoration and avoidance measures required to reduce impacts to biological resources within the work area.

c. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employees, and other personnel involved with construction of the project.

d. All workers shall sign a form confirming that they have received training provided by a qualified biologist documenting they have attended the and understand the information presented to them.

BR 3 Monitoring. The Owner/Applicant shall submit to Santa Barbara County Planning & Development compliance monitoring staff the names and contact information for approved biologists prior to commencement of construction/pre-construction meeting. Compliance monitoring staff shall site inspect at least weekly during active work periods. Biologist to be onsite for earth disturbance and activities which may impact ESH resources. Duties include the responsibility to ensure compliance with County conditions of approval. The Owner/Applicant shall submit to Planning & Development compliance monitoring staff the name and contact information for the approved biologists prior to commencement of construction/pre-construction meeting. Planning & Development compliance monitoring staff shall inspect the restoration area as appropriate.

BR 4 During construction, heavy equipment and vehicles shall be operated in accordance with standard Best Management Practices (BMPs). All equipment used onsite shall be properly maintained such that no leaks of oil, fuel, hydraulic fluid or residues occur. Provisions shall be in place to remediate any accidental spills, in both the terrestrial and marine environments. All equipment shall only be stored in the designated equipment staging area. Motorized vehicles shall be confined to a pre-defined equipment access path no greater than the minimum width necessary to complete necessary activities.

BR 5 Equipment Storage-Construction. The Owner/Applicant shall designate one construction equipment filling and storage areas within the designated development to contain spills, facilitate clean-up and proper disposal and prevent contamination from discharging to ESH. The areas shall be no larger than 50 x 50 foot unless otherwise approved by P&D and shall be located at least 20 feet from any storm drain, wetland, or water body.

BR 6 The Restoration Plan shall include the following components:

a. Landscaping shall be with native dune species described in the Restoration Plan.

b. Species shall be from locally obtained plants and seed stock.

c. New plantings shall be irrigated per the approved Restoration Plan.

d. Non-native species, (e.g., ice plant, European sea-lavender, pampas grass, etc.) shall be removed from the Study Area.

PLAN REQUIREMENTS: The Owner/Applicant shall incorporate this requirement into a landscape plan to be prepared by a P&D-approved landscape architect. The Owner/Applicant shall post a performance security to ensure installation prior to Final Building Inspection Clearance and maintenance for five years.

TIMING: Landscaping shall be installed prior to Final Building Inspection Clearance. The owner shall maintain plants for five years (or until performance standards have been satisfied) following Final Building Inspection Clearance.

MONITORING: The Owner/Applicant shall demonstrate to P&D compliance monitoring staff that all required components of the approved plan(s) are in place as required prior to Final Inspection Clearance and maintained throughout maintenance period. The landscape architect shall verify to P&D compliance monitoring staff, in writing, using receipts, etc., the use of native seed stock on the property prior to release of performance security. P&D compliance monitoring staff signature is required to release the installation security upon satisfactory installation of all items in approved plans and maintenance security upon successful implementation of this plan.

- **Habitats**

BR 7 Mitigation for impacts to environmentally sensitive habitats (ESH). The minimum recommended mitigation ratio for temporary impacts to all ESH resources will be at a 2:1 ratio (habitat restored to habitat impacted). The minimum recommended mitigation ratio for permanent impacts to ESH will be 4:1 (habitat restored to habitat lost).

BR 8 Wetland Habitat Setback. Except for the existing gravel driveway on the parcel, and removal of ice plant mats onsite, all ground disturbances and vegetation removal shall be prohibited within a 20-foot setback from federal and state wetland habitat (intertidal zone of CSM).

PLAN REQUIREMENTS: The wetland habitat area shall be shown on all restoration plans.

BR 9 Mitigation, Monitoring, and Reporting Plan. The Owner/Applicant shall submit for P&D approval a Mitigation, Monitoring, and Reporting Plan (MMRP) prepared by a P&D approved biologist and designed to offset temporary and permanent impacts of development to ESH resources and including the following components:

a. Description of the project/impact site (i.e. location, responsible parties, areas to be impacted by habitat type);

b. Location, habitat types and areas of habitat to be established, restored, or enhanced;

c. Mitigation ratios for temporary and permanent impacts to ESH;

d. Include final Habitat Restoration Plan as attachment to MMRP.

e. Site preparation, planting plan with species lists, container sizes, and seeding rates, and implementation and monitoring schedule;

f. Identification of a reference site for monitoring success criteria;

g. Responsible parties and financial assurances;

h. Mitigation landscaping shall use locally sourced native plants and seed stock for landscaping;

i. New plantings shall be irrigated with drip irrigation on a timer and shall be weaned off irrigation over a period of two to three years;

j. Site maintenance for invasive plant management, specifically for freeway ice plant and pampas grass, and other species as needed; and

k. Annual reporting with a final report prior to project close-out.

PLAN REQUIREMENTS: Include the components of the plan in Landscape and Irrigation Plans

TIMING: Plans shall be submitted prior to approval of coastal development permit. The Owner/Applicant shall post a performance security to ensure installation prior to Final Building Inspection Clearance and maintenance for five years, or until five-year success criteria has been achieved. The OWNER shall maintain the plants and irrigation for five years following Final Building Inspection Clearance.

MONITORING: The Owner/Applicant shall demonstrate to P&D compliance monitoring staff that all required components of the approved plan(s) are in place as required prior to Final Inspection Clearance and maintained throughout maintenance period. P&D compliance monitoring staff signature is required to release the installation security upon satisfactory installation of all items in approved plans and maintenance security upon successful implementation of this plan.

BR 10 Restoration of Dune mat habitat. Per Santa Barbara County Coastal Plan Policy 9-2, restoration of dune habitat requires that re-vegetation shall be with native California plants propagated from the disturbed sites or from the same species at adjacent sites. Where possible, collect topsoil and native seed and plants from dune mat habitat prior to initiation of construction activities for use in onsite restoration.

BR 11 No vehicles, equipment, activities, or staging shall be permitted within 20 feet of wetland habitat, except for the approved driveway.

BR 12 Within one week of ground disturbance activities, if work occurs between February 1 and August 31 (March 1 through September 30 for western snowy plover), nesting bird survey**s** shall be conducted**.** If surveys do not locate nesting birds, construction activities may begin. If nesting birds are located, no construction activities shall occur within 100 feet of nests (300 feet for western snowy plover) until chicks have fledged. A pre-construction survey report shall be submitted to the lead agency immediately upon completion of the survey. The report shall detail appropriate fencing or flagging of the buffer zone and make recommendations on additional monitoring requirements. A map of the Project site and nest locations shall be included with the report. The Project biologist conducting the nesting survey shall have the authority to reduce or increase the recommended buffer depending upon site conditions.

BR 13 Legless lizard pre-construction surveys. [Note: as of the last inspection in September 2020, legless lizards have not been detected on site.] Maintain coverboards for long-term monitoring of legless lizards prior to restoration activities. Survey for legless lizards in proposed work areas immediately prior to and during ground-breaking activities that would affect potentially suitable habitat, as determined by the project biologist. Surveys would be conducted by a qualified biologist familiar with legless lizard ecology and survey methods. Approval from CDFW to relocate legless lizards will likely be required. If they are detected:

a. Prepare a legless lizard relocation plan in coordination with CDFW and University of California Natural Reserve System Carpinteria Salt Marsh Reserve (UCNRS CSM) to relocate legless lizards to upland Carpinteria Salt Marsh habitat.

b. Install coverboards in the Study Area for long-term monitoring of legless lizard.

c. Monitor construction activities during all new ground-disturbance activities located within legless lizard habitat.

d. Approved biologist would relocate legless lizards to an appropriate location.

e. Letter reports would be submitted to Agencies within 30 days of legless lizard relocation.

BR 14 If special-status invertebrates (e.g., obscure bumble bee, sandy beach tiger beetle, or globose dune beetle) are discovered during pre-construction surveys, they shall be protected in place where practicable. A minimum 15 ft buffer shall be placed near the special status insect.

7 PERFORMANCE STANDARDS

The goal of this Plan is to remove ice plant mat habitat, restore native dune mat habitat, and enhance degraded native habitats on the Property. Specific performance standards outlined to quantify annual progress and success of restoration efforts are provided below (Table 6). The following discussion describes the basis we used to establish performance standards for this restoration project.

It is worth noting that native vegetation within the existing Property is comprised of transitional dune mat scrub. Typically, this habitat type has sparse relative cover and experiences regular temporal and spatial shifts in species distribution and dominance (CNPS 2020). Previous restoration work conducted in this vegetation community attest to low rates of container outplanting survivorship, high variability in vegetation relative percent coverage, and high success of broadcast seeding efforts (Knapp 2014, Cristina Sandoval pers. comm. February 28, 2020).

A one-acre reference site containing a similar vegetation assemblage as well as proximity to applicable intertidal zones was selected within the Coal Oil Point Reserve (COPR) in Isla Vista, a University of California Natural Reserve. The reference area contains intact foredune dune mat habitat. This area was actively restored and has been successfully managed since the 1980's (See Figure 5, UCSB 2020). The selected reference site also demonstrates how these systems are subject to ambulatory changes in vegetative percent cover.

We used Image J v.1.49 software (Rueden et al. 2016) to process Google Earth historical aerial imagery. The one-acre COPR reference site in February of 2016 shows 20 percent native cover while October of 2016 shows 16 percent native cover. Aerial photography taken two years later in November of 2018 shows native percent cover of 23 percent of the same area. This fluctuation observed within intact dune mat habitat across a 2-year time period further demonstrates the transitional nature of the system in terms of temporal and spatial shifting as well the overall naturally sparse relative cover.

Foredune areas located on the leading edge of the degraded dune mat habitat within the Project area are subjected to salt spray, storm surge, and wind. Consequently, the suggested percent coverage goals take into account conditions observed at the COPR reference site as well as the location and transitional nature of dune mat habitat within the Property and are meant to serve as an overall expected average of natural conditions. Open sandy areas provide important habitat for native wildlife such as dune beetles, certain butterfly larvae, and legless lizards. Open, unirrigated sandy areas in the middle of the restoration site are important to maintain for wildlife habitat.

TABLE 6. SUCCESS CRITERIA

Performance standards are provided for a five-year monitoring period. Percent cover is the primary performance standard used to determine restoration success.

Feature	Performance Criteria and Assessment Method	Frequncy of On-site Monitoring	Year 1	Year 2	Year 3	Year 4	Year 5
Vegetation Cover	Percent cover can be assessed using UAV aerial imagery. If unavailable, vegetative cover and species diversity can be assessed using 20 1-m^2 quadrats in representative restoration areas according to methods outlined in Section 8.2.1 Aerial photography may also be used as a complement to quadrat sample results.	Annual	10%	20%	25%	30%	35%
Shrub container planting Installation	Survival Rate	Annual	75%	65%	55%	50%	50%
Invasive Species Cover	Assess percent cover of invasive species	Annual	<50%	<25%	<15%	<10%	<5%
Invertebrate Community (Species Diversity)	Demonstrate overall increase in 'Species Richness' across observed invertebrate groups. Compare baseline condition to Year 5* *See Invertebrate sampling methods included in Section 8.2.1.	Yes, sampling conducted before and after restoration work.	Baseline	--	--	--	Increase in native species diversity
Objective 1	Restore habitat through the removal of ice plant and other invasive weeds to create additional dune mat habitat – Yes/No	Annual in spring					

Objective 2	Enhance habitat through the removal of scattered ice plant from degraded dune mat habitat – Yes/No						
Objective 3	Salvage propagules (e.g., seeds) of existing suitable native plants from the permanent impact area and relocate to the Restoration Site—Yes/No	Twice: Prior to house construction and prior to restoration					
Objective 4	Achieve natural cover of native vegetation within dune mat habitat through plant installation and hand broadcast seeding – Yes/No	Year 5					
Objective 5	Irrigate only container stock to aid in shrub container planting establishment around perimeter of areas treated only by seeding. – Yes/No	Years 1, 2, 3					
Objective 6	Provide large unirrigated patches for the benefit of dune arthropods that require dry soil conditions. – Yes/No	Annual					
Objective 7	Utilize erosion control methods to prevent excessive soil loss during restoration activities – Yes/No	Annual					
Objective 8	Minimize/avoid use of herbicides – Describe use with dates, materials and rates of application applied. – Describe methods used to minimize herbicide application.	Spot-check and talk with maintenance manager quarterly					
Objective 9	Respond to climate change—allow natural variability in native species composition and density, depending on climate conditions and						

	storm surge. – Describe changes observed that may represent climate change effects.						
Objective 10	Restore habitat through the removal of ice plant and other invasive weeds to create additional dune mat habitat – Measure change from degraded dune mat dominated by weeds to habitat dominated by native species representative of dune habitats. Use three 10-meter square sample sites to illustrate changes in native cover each year.						

8 MAINTENANCE AND MONITORING PLAN

The Restoration Site will be monitored quarterly during Year 1 and annually thereafter to ensure consistency with performance standards. Annual site assessments will be made during the peak growing season, typically March or April. It is expected to take five years for successful establishment of dune mat habitat.

8.1 Maintenance Plan

Routine maintenance will be required throughout the Restoration Site. Site maintenance includes but is not limited to the following items. A checklist and schedule are provided in Table 7.

- The Restoration Site will be inspected regularly for signs of Erosion. Implemented Erosion Control measures will be inspected to ensure they are correctly installed and effective.
- Invasive plant species will be removed as necessary throughout the maintenance and monitoring period. Weeding will be accomplished with hand tools. Maintenance crews will receive training and supervision by a biologist, landscape architect, or other person experienced with working in sensitive native habitats. Invasive species will be bagged and removed to an appropriate compost area or landfill.
- The Restoration Site will be inspected regularly by landscape managers. Quarterly visits will be made during the first year after planting and annually thereafter by a biologist and/or landscape architect to evaluate the condition of weeds, plantings, irrigation, and inspect for signs of pests and any need for planting remediation.
- On a weekly basis the site will be inspected for accumulated trash. Any trash in, or in the vicinity of the Property will be collected and properly disposed.
- Maintain pedestrian access path and eliminate weeds brought in by foot traffic and wind.

TABLE 7. RESTORATION SITE CHECKLIST AND SCHEDULE

Tasks and timelines are provided for annual, quarterly, and monthly monitoring tasks. Tasks and timelines are provided for annual, quarterly, and monthly monitoring tasks.

Task	Timing	Frequency
Erosion: Check site for erosion issues and condition of implemented erosion control measures	October through April	Monthly
Soil Moisture: Monitor soil moisture, adjust irrigation accordingly	Year Round	Monthly
Weed Management: Inspect site for weeds and remove by hand	Year Round	Weekly
Weed Management: Application of herbicide on aggressive weeds with root nodes	Spring	Annual
Pest Management: Inspect and treat site for invertebrates, disease/fungi, rodents, or other mammals causing damage to Restoration Site.	Year Round	Quarterly
Remediation: Identify and replace dead plants	Fall	Annually as needed
Litter/Vandalism: Inspect site and clean up any trash or vandalism	Year Round	Weekly

8.2 Monitoring Plan

1.1.3 *Insect Diversity Sampling*

The overall invertebrate biodiversity of all regions within North America remains notably understudied (Kimsey et al. 2017). The state of California encompasses highly diverse climates, habitats, and invasive weed species as well as direct and indirect human impacts, all of which can affect invertebrate assemblages (Knapp 2014, Kimsey et al. 2017). To support long-term restoration success for the Project, a wholistic approach will be made to encourage the presence of native invertebrates that can serve as key pollinators of restored dune mat habitat. Pollinators play the valuable role of supporting genetic diversity by means of cross-pollination as well as ensuring the presence of a continuously viable seedbank.

In efforts to improve long-term restoration success as well as to gain valuable future information on the effects of dune mat restoration on invertebrate community, a basic comparative analysis of overall invertebrate diversity will be made between pre-restoration and post-restoration work (Section 7, Table 6. Performance Standards).

8.2.1.1 Sampling Methods – Insect Diversity

A qualified entomologist with experience working in similar dune mat habitats will sample the Restoration Site prior to the commencement of all Project related activities. The timing of seasonal sampling will be determined by a qualified entomologist to best capture a representative 'Species Richness' baseline condition present within the Restoration Site. Sampling date(s), time, weather, and methods employed will be documented. Methods that may be utilized include UV lighting, aerial net collecting, sand sifting through mesh screen, and hand capture supplemented by Malaise traps. Invertebrate species will be identified to species level whenever possible, inventoried, and quantified. Following Project implementation and successful restoration efforts, baseline sampling methods and timing will be replicated to be able to compare invertebrate diversity between before and after Restoration Site condition.

8.2.2 Native vs. Non-native Percent Cover and Quadrat habitat monitoring

The native and non-native percent cover of the Restoration Site habitats will be assessed utilizing UAV aerial imagery, including drone surveys, annually during monitoring visits. If unavailable, species richness and cover can also be assessed utilizing 20 1-meter x 1-meter quadrats. Sampling will be completed using a stratified, random design method (Stromberg et al. 2007). Species richness, absolute cover, and percent bare ground will be documented within each quadrat and averaged across the Restoration Site to calculate total native and non-native percent coverage.

8.2.3 Plant survival

Given the dynamic nature of dune mat habitat, including regular temporal and spatial shifts that are to be expected when working within this vegetation community as described in Section 7, planting survival will be limited to that of shrub outplantings. Following plant installation, the number of surviving shrub container stock will be counted, and percent survival of original planting will be assessed. Survival rate of installed container stock is a performance criterion. All data will be included in the annual monitoring report.

1.1.4 *Soil stability*

Inspect soil for rills and erosion. If signs of soil instability or erosion are present, the affected area will be photo documented and approximate measurements will be taken. Recommendations for how to address erosion control will be immediately recommended to the Landscape Architect to discuss measures to mitigate the issue.

8.2.4 Photo monitoring

Permanent photo points will be established at the Restoration Site by a qualified biologist prior to implementation of restoration activities to document baseline conditions. At least eight (8) photo points will be established throughout the Restoration Site. Photographs from designated points in the same cardinal direction will be taken once per year, during annual monitoring site visits, and shall be included in the final monitoring report to show site progress.

8.2.5 General site condition

Assess site condition for issues such as trash, erosion, vandalism, or pests.

8.2.6 Reporting

The annual monitoring report will summarize all data collected during the previous monitoring periods. A qualified biologist will indicate whether the Restoration Site is expected to meet Year 5 performance standards. If the Project is not expected to meet the performance standards, an adaptive management strategy will be implemented immediately (see Section 9.0). If Year 5 performance standards are met, the final monitoring report will include a notice of Plan completion. If the Restoration Site does not meet the required performance standards by Year 5, a remediation plan will be prepared, and annual monitoring of the site will continue until success is achieved.

9 ADAPTIVE MANAGEMENT

If performance standards are not met during each monitoring year, the monitoring report will indicate the source(s) of problem(s) and an adaptive management plan will be implemented. The monitoring report will indicate additional steps that would lead to success of the Restoration Site in the following year (e.g., additional water, weeding, erosion control measures, plant protection, etc.).

Annual monitoring site visits will indicate whether the Restoration Site is expected to meet Year 5 final performance standards. If performance standards for Year 5 are not expected to be met, a qualified biologist will provide details of problem areas and make recommendations for remediation.

In the event that the Restoration Site fails to meet the success criteria outlined in Section 7 of this document by Year 5, a qualified biologist in cooperation with a landscape architect will prepare a remediation report outlining the work that would need to be implemented for the Restoration Site success, including weed removal, replanting, irrigation, maintenance, and continued monitoring. The Restoration Site will be monitored annually until primary performance standards are met.

10 RESTORATION BENEFITS

Of the 1.2 acre of potential dune habitats onsite available for restoration (including the 0.11-acre existing dirt road), the Owner proposes to revegetate approximately one acre with native vegetation surrounding the 0.20-acre Project footprint. Sandy soil on Sand Point Road will be restored to a native vegetation type suitable for native pollinators, beetles, reptiles, and small mammals.

Existing habitat dominated by weedy species such as ice plant will be replaced by native vegetative cover. Locally native species will be used, and the site maintained weekly to prevent weed infestation. In addition, areas occupied by alkali heath (0.01 acre) and/or salt grass vegetation (0.07 acre) will be preserved, maintained and managed by weed and trash removal. Replacement of ice plant with native coastal species will also occur within 0.13 acre of ice plant mat around the proposed house and between the Project and the revetment as part of the landscape architect's plans.

A total of 1.00 acre will be revegetated and restored with native species (Table 8), and 0.08 acre of alkali heath and sandy beach/salt grass habitat will be protected

TABLE 8. RESTORATION, REVEGETATION, AND MAINTENANCE AREAS

Restored and protected habitats by acre.

Location	Acres
Restoration Site (this Plan)	0.67
Restoration Pedestrian Path (this Plan)	0.08
Native Landscape around and south of Project	0.25
Alkali heath and sandy beach/salt grass habitat protected	0.08
Total area revegetated with native species and protected	**1.08**

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12 FIGURES

- **Figure 1. Project Vicinity**
- **Figure 2. Project Location**
- **Figure 3. Habitat Impacts**
- **Figure 4. Restoration Site**
- **Figure 5. COPR Reference Site**

Figure 1. United States Geological Survey Topographic Map

Legend

★ Project Location

N

0 1,000 2,000 4,000 Feet

501 Sand Point Road
Map Center: 119.53814°W 34.39705°N
Santa Barbara County, California

USGS Quadrangle: Carpinteria

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
March 04, 2020 12:28 PM by JBB

Figure 2. Aerial Photograph

Legend

Study Area (2.89 acres)

Parcel Boundary

N

0 100 200 300 Feet

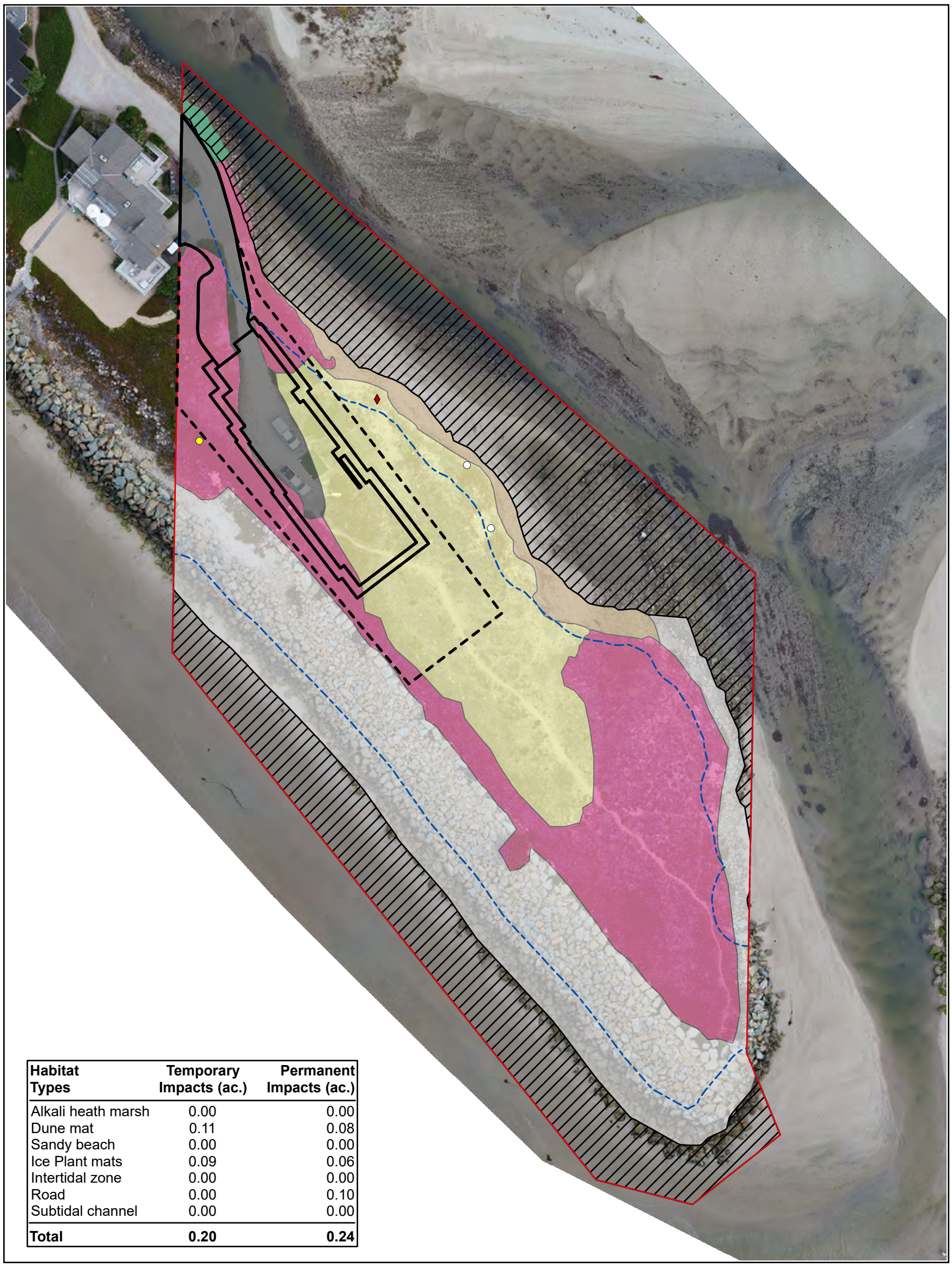
501 Sand Point Road
Map Center: 119.53779°W 34.39701°N
Santa Barbara County, California

Imagery Date: 09/28/2016

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
April 01, 2020 02:21 PM by JBB

Figure 3. Impacts to Habitats



Habitat Types	Temporary Impacts (ac.)	Permanent Impacts (ac.)
Alkali heath marsh	0.00	0.00
Dune mat	0.11	0.08
Sandy beach	0.00	0.00
Ice Plant mats	0.09	0.06
Intertidal zone	0.00	0.00
Road	0.00	0.10
Subtidal channel	0.00	0.00
Total	**0.20**	**0.24**

Legend

- Study Area (2.89 acres)

ESH Habitats (1.49 acres)

- Alkali heath marsh (0.01 ac)
- Dune Mat (0.46 ac)
- Sandy beach (0.07 ac)
- Intertidal Zone (0.67 ac)
- Subtidal Channel (0.28 ac)

Non-ESH Habitats (1.41 acres)

- Ice Plant mats (0.63 ac)
- Revetment (0.67 ac)
- Road (0.11 ac)

Special Status Plants

- Red Sand-verbena
- Wooly Seablite
- Inactive Nest

- 20-Foot Wetland Buffer
- **Permanent Impacts**
- **Temporary Impacts**

N

0 25 50 Feet

501 Sand Point Road
Map Center: 119.53813°W 34.39765°N
Santa Barbara County, California

Biological Survey Date: January 10, 2020

Figure 4. Vegetation Restoration Plan

Legend*

- Restoration Area (0.67 acre)
- Sandy Beach/Salt Grass to Preserve (0.07 acre)
- Building Footprint and Driveway
- Native 10-Foot Access Buffer
- Alkali Heath Marsh to Preserve (0.01 acre)

*Remainder to be revegetated with native species

N

0 25 50 Feet

501 Sand Point Road
Map Center: 119.53815°W 34.39778°N
Santa Barbara County, California
Imagery Date: 06/14/2017
Impact Data Received: 3/10/2020

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
April 01, 2020 02:24 PM by JBB

Figure 5. Coal Oil Point Reserve Reference Site

Legend

Coal Oil Point Dune Mat Reference Site (1.0 acre)

N

0 40 80 Feet

501 Sand Point Road
Map Center: 119.88004°W 34.40866°N
Santa Barbara County, California

Imagery Date: Google Earth, June 2018

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
March 04, 2020 12:51 PM by JBB

13 PHOTOGRAPHS

Photo 1. Dense ice plant mats habitat within Restoration Site. View northwest, February 28, 2020.

Photo 2. Degraded Dune mat habitat with scattered ice plant as dominant species within Restoration Site. View north, November 8, 2017.

Photo 3. Sandy beach with degraded dune mat in background. View southeast, February 28, 2020.

Photo 4. Myoporum, pampas grass, and ice plant need to be removed from the property. Drone imagery by Kyle Nessen. View west, July 22, 2019.

Photo 5. Coal Oil Point Reference Site showing intact dune mat habitat. View northwest, February 27, 2020.

EXHIBIT A – LANDSCAPE PLANS – JULY 30, 2020

Carpinteria Valley Water District Easement

Federal and/or State Waters and Wetland

Wetlands Edge Line

20' Wetlands Buffer Line

(E) Neighbor's Driveway

Existing sand path

STRINGLINE

SETBACK (Revetment)

PROPERTY LINE

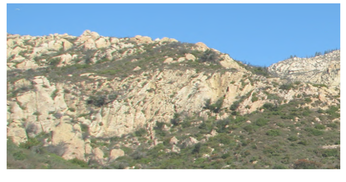
SIDEYARD

EASEMENT

N

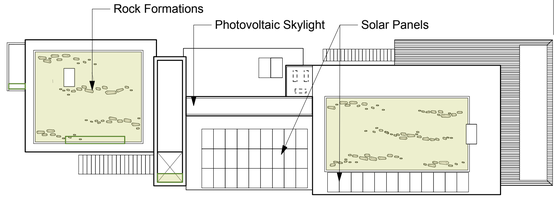
0 10 20 FT

SCALE: 1"= 20'



Green Roof Inspiration

The proposed green roof echoes the mountains in the background, bringing the neighboring landscape to the foreground.



Green Roof Concept Plan

SCALE: 1" = 20'

Material Palette

Green Roof with rocks

Santa Barbara Sandstone
Dry-stack Wall

Proposed Planting Zones

- Alkali Heath
- Dune Mat / Coastal Strand
- Coastal Bluff
- Dune Swale/House Screening
- Green Roof Butterfly Habitat

Plan Legend

- 20' Wetland Buffer
- Property Line
- Roof Outline
- Building Planters
- Sandy Beach
- Permeable Paving
- Santa Barbara Sandstone

Dune Mat/Coastal Strand

These plants are uniquely adapted to salt-spray, wind, and sandy soil. Invaluable for dune stabilization and habitat, they also create a scenic landscape of long-lasting colorful flowers, showy grey-green foliage, and low spreading forms.

Dune Mat/ Coastal Strand

Botanical Name	**Common Name**
Shrubs	
Ericameria ericoides	Mock Heather
Isocoma menziesii (var. *vernonioides)*	Coastal Goldenbush
Lupinus arboreus	Coastal Bush Lupine
Lupinus chamissonis	Dune Bush Lupine
Lupinus succulentus	Arroyo Lupine
Suaeda taxifolia	Wooly Seablite
Grasses/Sedges	
Carex praegracilis	Field Sedge
Elymus triticoides	Beardless Wildrye
Hordeum depressum	Alkali Barley
Hordeum intercedens	Bobtail Barley
Perennial Herbs	
Abronia maritima	Sand Verbena
Abronia umbellata	Beach Sand Verbena (Purple)
Achillea millefolium	Yarrow
Ambrosia chamissonis	Beach Bur-Sage
Calystegia soldanella	Beach Morning Glory
Camissoniopsis cheiranthifolia (spp.*suffruticosa)*	Beach Evening-Primrose
Castilleja affinis	Indian Paintbrush
Corethrogyne filaginifolia	Common Sandaster
Croton californicus	Croton
Heliotropium curassavicum var. *oculatum*	Seaside Heliotrope
Phacelia ramosissima (var. *suffrutescens)*	Branching Phacelia
Solanum douglasii	Douglas' Nightshade
Annual Wildflowers	
Eschscholzia californica var. *maritima*	Coastal California Poppy


Dune Bush Lupine | *Lupinus chamissonis*


Beach Evening-Primrose | *Camissoniopsis cheiranthifolia*


Sand Verbena | *Abronia maritima*


Beach Morning Glory | *Calystegia soldanella*


Beach Sand Verbena | *Abronia umbellata*


Field Sedge | *Carex praegracilis*


Coastal California Poppy | *Eschscholzia californica var. maritima*


Beach Bur Sage | *Ambrosia chamissonis*

Green Roof- Butterfly & Hummingbird Habitat

These native coastal bluff plants will provide butterfly and hummingbird habitat on the green roof. They are well adapted to shallow soil, low water, high wind, and sun exposure of the roof microclimate – similar to the rocky California coast. Their colorful nectar and pollen-rich flowers attract native bees, butterflies and hummingbirds.

Green Roof- Butterfly & Hummingbird Habitat

Botanical Name	**Common Name**
Shrubs	
Eriogonum parvifolium	Sea Cliff Buckwheat
Isocoma menziesii (var. *vernonioides)*	Coastal Goldenbush
Grasses/Sedges	
Carex praegracilis	Clustered Field Sedge
Stipa pulchra	Purple Needle Grass
Succulents	
Dudleya caespitosa	Coast Dudleya
Dudleya lanceolata	Lanceleaf Liveforever
Dudleya pulverulenta	Chalk Dudleya
Perennial Herbs	
Achillea millefolium	Yarrow
Acmispon glaber	Deerweed
Epilobium canum spp. *Canum*	California Fuchsia
Eriophyllum staechadifolium	Lizard Tail
Grindelia spp.	Gumweed
Annual Wildflowers	
Eschscholzia californica var. *maritima*	Coastal California poppy
Lasthenia californica	Goldfields
Layia platyglossa	Tidy Tips
Lupinus nanus	Sky Lupine
Sisyrinchium bellum	Western Blue-Eyed Grass


Deerweed | *Acmispon glaber*


Sky Lupine | *Lupinus nanus*


Lanceleaf Liveforever | *Dudleya lanceolata*


Field Sedge | *Carex praegracilis*


Western blue eyed grass | *Sisyrinchium bellum*


Coast Dudleya | *Dudleya caespitosa*


California Fuchsia | *Epilobium canum spp. Canum*


Lizard Tail | *Eriophyllum staechadifolium*


Chalk Dudleya | *Dudleya pulverulenta*


Tidy Tips | *Layia platyglossa*

Dune Swale and Coastal Bluff - Around House

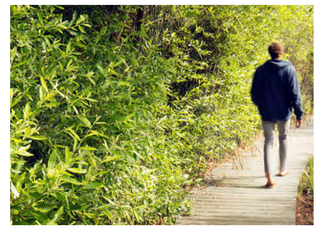
Lower-lying swales within sand dunes host more water-loving plants such as willows and rushes. Growing along the coast at elevations just above sand dunes and beaches, coastal bluff plants are adapted for salt-spray, wind, and steep rocky soils.

Dune Swale/House Screening

Botanical Name	**Common Name**
Trees/Shrubs	
Salix exigua	Dune Willow
Lupinus succulentus	Arroyo Lupine
Rushes	
Juncus textilis	Basket Rush

Coastal Bluff

Botanical Name	**Common Name**
Shrubs	
Morella californica	Wax Myrtle
Rhus integrifolia	Lemonade Berry
Perennials	
Eriogonum parvifolium	Sea Cliff Buckwheat
Isocoma menziesii (var. *vernonioides)*	Coastal Goldenbush


Dune Willow | *Salix exigua*


Dune Willow | *Salix exigua*


Basket Rush | *Juncus textilis*


Sea Cliff Buckwheat | *Erigonum parvifolium*


Arroyo Lupine | *Lupinus succulentus*


Lemonade Berry | Rhus integrifolia


Coastal Goldenbush
Isocoma menziesii (var. vernonioides)

Salt Grass Flats

Salt Grass periodically covers at least 30% of this community living between salt marshes and sand dunes. These plants have a high tolerance of tidal fluctuations and saline, sandy soil. Closer to fore-dunes, Salt Grass forms dense grass stands mixed with other species but is sparse closer to the tidal waters.

Salt Grass Flats

Botanical Name	**Common Name**
Shrubs	
Atriplex lentiformis	Quailbush Scrub/Big Saltbush
Suaeda taxifolia	Woolly Seablite
Grasses/Sedges	
Distichlis spicata	Salt grass


Salt grass | *Distichlis spicata*


Quailbush Scrub | *Atriplex lentiformis*


Woolly Seablite | *Suaeda taxifolia*

Wetlands Edge Line

20' Wetlands Buffer Line

8

9

10

12

13

15

PROPERTY LINE

SIDEYARD

EASEMENT

Building Outline

N

0 5 10 FT

SCALE: 1"= 10'

Proposed Plant Legend

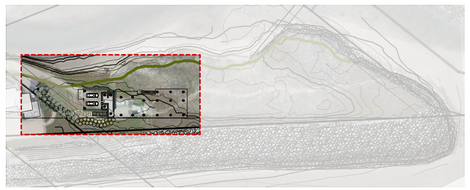
Symbol	*Botanical Name*	Common Name
Trees/Shrubs		
	Morella californica	Wax Myrtle
	Rhus integrifolia	Lemonade Berry
	Salix exigua	Dune Willow
Rushes/Sedges		
	Carex praegracilis	Field Sedge
JT	*Juncus textilis*	Basket Rush

Proposed Planting Zones

- Alkali Heath
- Dune Mat / Coastal Strand
- Coastal Bluff
- Dune Swale/House Screening

Plan Legend

- 20' Wetland Buffer
- Property Line
- Roof Outline
- Direction of flow
- Sandy Beach
- Santa Barbara Sandstone
- Santa Barbara Sandstone



Key Plan N.T.S.

SANDDEW - HOUSE SCREENING PLANTING PLAN

501 Sand Point Road, Carpinteria, CA 93013

Before

After

Legend

- 20' Wetland Buffer
- Property Line
- Direction of flow
- Dune Mat / Coastal Strand

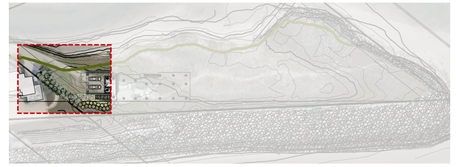
Proposed Plant Legend

Symbol	*Botanical Name*	Common Name
Trees/Shrubs		
	Morella californica	Wax Myrtle
	Rhus integrifolia	Lemonade Berry
	Salix exigua	Dune Willow
Rushes/Sedges		
	Carex praegracilis	Field Sedge
Jt	*Juncus textilis*	Basket Rush

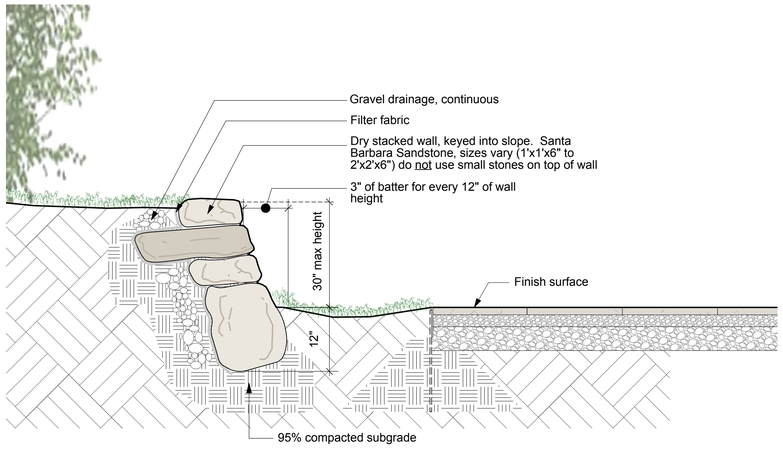
Partial Planting Plan

feet 0 4' 8' 16'

1/8" = 1'0"



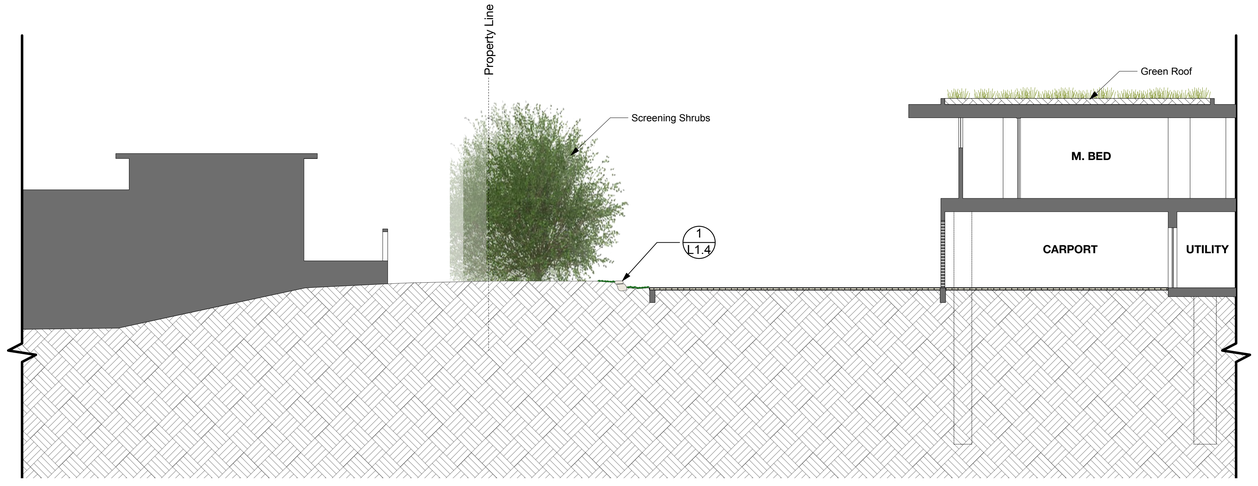
Key Plan N.T.S.



Dry Stacked Retaining Wall 1

feet 0 .5' 1' 2'

1" = 1'0"



Cross Section A

feet 0 4' 8' 16'

1/8" = 1'0"

SANNDDEW SCREENING EXHIBIT

501 Sand Point Road, Carpinteria, CA 93013

VAI VanAtta Associates Inc.
landscape architecture + planning

L1.4